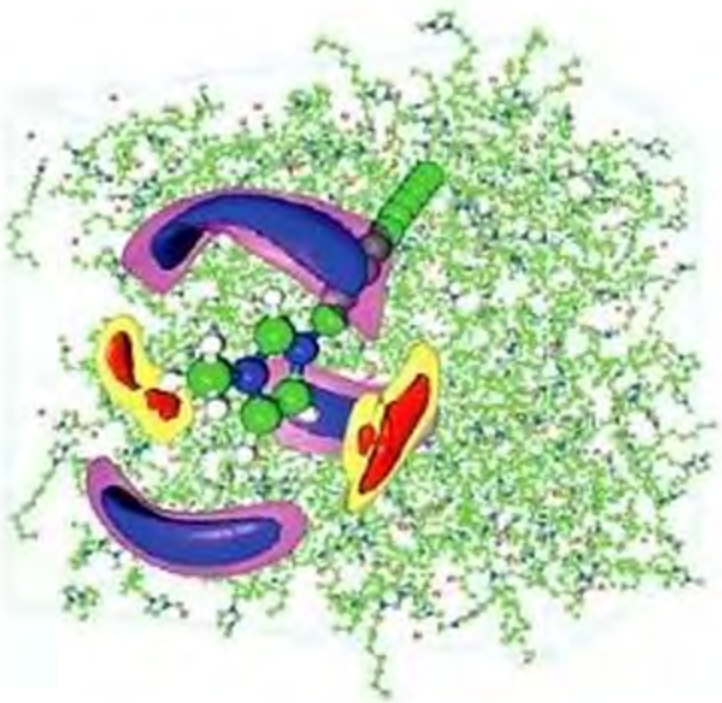
# Ionic Liquids

## Physicochemical Properties



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# Preface

The unprecedented growth in the field of ionic liquids has resulted in an unprecedented appetite for information about ionic liquids by scientists, engineers, regulators, and policy makers worldwide. To date, there is still not a single coherent source of validated information on even the simplest physical properties of ionic liquids, although encouraging efforts are starting to take shape within such organizations as IUPAC and the US National Institute of Standards and Technology (NIST). With over 10,000 ionic liquid publications in the past decade, it would be a herculean task to produce a compilation of all of the data, much less a critical analysis and searchable database.

With this book, Professor Suojiang Zhang attempts to bring some coherency and order to the myriad of data points on ionic liquids in the published literature. The work itself will be of tremendous value to researchers in need of information about specific types of ionic liquids. It should also broaden the perspective of many new to the field who still believe that only imidazolium salts can be classified as ionic liquids. One can hope that works such as this book will lead to a better understanding of ionic liquids and through that understanding a continuation of the new chemistry and new applications which the field has already generated.

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# 1 Database of Ionic Liquids

## 1.1. Introduction

Ionic liquids, as a new class of compounds, have become a hot topic since the mid-1990s. The number of papers published on this topic has grown almost exponentially (see Figure 1.1). Due to their unique physicochemical characteristics, ionic liquids were designed as greener solvents to replace conventional volatile solvents that were believed to result in photochemical smog, ozone depletion, and global climate change. Ionic liquids are showing increasingly promising perspectives in the diverse fields of synthesis, catalysis/biocatalysis, materials science, electrochemistry, and separation technology at both the laboratory level and on the industrial scale. And the first industrial application (the BASF BASIL process) was announced at the end of March 2003.

With the development of industrial processes and commercial applications, the systematic knowledge of the physicochemical properties of ionic liquids such as volumetric, transport, electrochemical, spectrometric, ecological and environmental properties, becomes especially important, because physicochemical properties are indispensable for the choice and design of ionic liquid in the industry applications. The development of novel processes, synthesis and application of ionic liquids further accelerates the growth of our fundamental and engineering understanding. The toxicity and environmental assessment of ionic liquids are of critical importance for their large scale applications. These aspects of ionic liquids are closely correlated with their industrial applications and sustainable process. On the other hand, for academic research, physicochemical properties are also essential in order to establish theoretical models or select proper ionic liquids.

Based on the above notion, we began to collect the physicalchemical properties data of ionic liquids in 2003. The collection of data initially began in 2003. After one year, the first phase of the database was established in 2004. That part of the work was published in the *Journal of Physical and Chemical Data*. With the development of ionic liquids, its kind has greatly increased to approximately 1800 from previous about 600. Their various structures result in multiplicate properties. The aim of this handbook of ionic liquids extracted from a large number of scattered publications in the literature is to establish the properties relationships of ionic liquid-structures and provide clues to discovering the potentially over one million simple ionic liquids.

## 1.2. Database of Ionic Liquids

A comprehensive database of physical properties of pure ionic liquids, which has been collected from more than 100 dependable literature sources in the period from 1982 to June 2008, is available. There are more than 8000 data points on the 29 kinds of physicochemical properties for 1789 available ionic liquids, from which 714 different cations and 189 different anions were extracted. The more than 7000 data points collected in this database are only derived from pure ionic liquids, and do not include binary mixture systems and ternary mixture systems containing ionic liquids and their thermodynamic and thermochemical properties, and also do not include the CAS registry numbers. Almost all kinds of important physicochemical properties are collected in this database. It covers 29 different physicochemical properties: melting temperature, glass transition temperature, crystallization temperature, decomposition temperature, freezing point, density, dynamic viscosity, kinematical viscosity, surface tension, conductivity, molar conductivity, electrochemical window, isobaric heat capacity, isentropic compressibility, isobaric expansibility, saturated vapor pressure, refractive index, speed of sound, toxicity (minimum inhibitory concentration and minimum bactericidal or fungicidal concentration), etc. The particular properties and the correlative data points are listed in Table 1.1. The main applications of each ionic liquid, such as solvent, catalyst, etc., are also listed in their respective records. But the description of applications is relatively simple since the format of the records limits the possibility of including detailed information and the emphasis of this book is not on the applications of ionic liquids. In addition, the chemical name, the abbreviation, molecular formulae, molar mass, structure and character are presented too. The sample purification and measurement methods presented in the literature are also listed.

## 1.3. Usage of the Database

There are comparatively abundant data available for 22 species of cations including imidazolium salts from monosubstituted to pentasubstituted compounds, triazolium, pyrrolidinium, piperidinium, pyrroline, pyridinium, isoquinolinium, thiazolium,

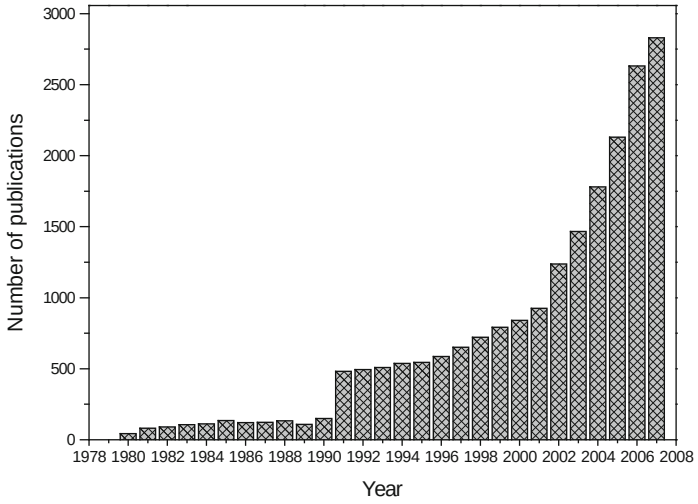



Figure 1.1. Number of publications on ionic liquids.

Table 1.1
The properties and data points of ionic liquids

| Entry | Physicochemical Properties | Data Points |
|---|---|---|
| 1 | Melting point | 1103 |
| 2 | Glass transition temperature | 591 |
| 3 | Crystallization temperature | 6 |
| 4 | Decomposition temperature | 795 |
| 5 | Solid–solid transition temperature | 69 |
| 6 | Freezing point | 74 |
| 7 | Density | 1475 |
| 8 | Dynamic viscosity | 593 |
| 9 | Kinematical viscosity | 11 |
| 10 | Surface tension | 139 |
| 11 | Conductivity | 462 |
| 12 | Molar conductivity | 28 |
| 13 | Electrochemical window | 64 |
| 14 | Isobaric heat capacity | 345 |
| 15 | Isentropic compressibility | 513 |
| 16 | Isobaric expansibility | 542 |
| 17 | Log *P* | 3 |
| 18 | Vapor pressure | 18 |
| 19 | Refractive index | 52 |
| 20 | Sound speed in ionic liquid | 505 |
| 21 | Optical activity | 47 |
| 22 | Friction coefficient | 3 |
| 23 | Crystallization Enthalpy | 6 |
| 24 | Fusion Enthalpy | 9 |
| 25 | Crystallization Entropy | 2 |
| 26 | Fusion Entropy | 4 |
| 27 | Toxicity (minimum inhibitory concentration) | 13 |
| 28 | Toxicity (minimum bactericidal or fungicidal concentration) | 13 |
| 29 | Parachor parameter | 17 |
| Amount to | | 7502 |

sulfonium, ammonium, guanidinium, phosphonium, polymeric ammonium, uronium, sodium, morpholinium, tetrazolium, oxazolidinium, piperazinium, pyridazinium, 4,4-dimethylimidazolium and amino acid, and 16 species anions such as halogen, containing boron, nitrogen, metal, etc. In accordance with the ionic liquid appearing sequence, the cations extracted from the reported ionic liquids are tabulated by a code, and the corresponding ID, abbreviation, name, formula, and molecular weight are listed in Table 1.2. In the same way, the corresponding information of anions is listed in Table 1.3. The properties and applications of ionic liquids can be easily searchable by these ID abbreviation, name, or formula investigated. For cations, when the code contains no more than three digits the first number is its type number. For example, "21" means the cation is disubstituted imidazolium and the number "1" represents the lowest molecular weight in this type. Since some ionic liquids were retrieved later (after the series of codes was established), their codes do not exactly reflect their molecular weight. The type number is listed from 1 to 28. Thus, when the code of a cation is four digits the first two digits describe its type. For example, for the cation coded "1109" the type number is "11", which represents pyridinium. There are also four-digit identification numbers where the type number is "2" because of the variety of this type. Therefore, the code beginning with "2" means the cation is disubstituted imidazolium. For the anions, the code is similar except that we added "0" before each identification number to differentiate them from cations. We can easily find the codes of a cation or anion of ionic liquids according to its type in Tables 1.2 and 1.3, respectively, and fit together, the new number is just of an ionic liquid. For example, if we take [emim][$BF_4$], we find the code number of [emim] is "23" and the code number of [$BF_4$] is "21", so the code number of [emim][$BF_4$] is simply "23–21", and we can find properties and applications of [emim][$BF_4$] by "23–21" in Chapter 2.

Table 1.2
Information of cations

| Cid | Name | Typical Abbreviation | Formula | M/g mol$^{-1}$ |
|---|---|---|---|---|
| 11 | 1-Methylimidazolium | $C_1$Im | $C_4H_7N_2$ | 83.11 |
| 12 | 1-Ethylimidazolium | $C_2$Im | $C_5H_9N_2$ | 97.14 |
| 14 | 1-Propylimidazolium | $C_3$Im | $C_6H_{11}N_2$ | 111.16 |
| 15 | 1-Butylimidazolium | $C_4$Im | $C_7H_{13}N_2$ | 125.19 |
| 16 | 1-Pentylimidazolium | $C_5$Im | $C_8H_{15}N_2$ | 139.22 |
| 17 | 1-Hexylimidazolium | $C_6$Im | $C_9H_{17}N_2$ | 153.24 |
| 18 | 1-Heptylimidazolium | $C_7$Im | $C_{10}H_{19}N_2$ | 167.27 |
| 19 | 1-Octylimidazolium | $C_8$Im | $C_{11}H_{21}N_2$ | 181.30 |
| 110 | 1-Nonylimidazolium | $C_9$Im | $C_{12}H_{23}N_2$ | 195.32 |
| 111 | 1-Decylimidazolium | $C_{10}$Im | $C_{13}H_{25}N_2$ | 209.35 |
| 112 | 1-Undecylimidazolium | $C_{11}$Im | $C_{14}H_{27}N_2$ | 223.38 |
| 113 | 1-Dodecylimidazolium | $C_{12}$Im | $C_{15}H_{29}N_2$ | 237.40 |
| 114 | 1-Butyloxymethylimidazolium | $C_4$OCIm | $C_8H_{15}N_2O$ | 155.22 |
| 115 | 1-Pentyloxymethylimidazolium | $C_5$OCIm | $C_9H_{17}N_2O$ | 169.24 |
| 116 | 1-Hexyloxymethylimidazolium | $C_6$OCIm | $C_{10}H_{19}N_2O$ | 183.27 |
| 117 | 1-Heptyloxymethylimidazolium | $C_7$OCIm | $C_{11}H_{21}N_2O$ | 197.30 |
| 118 | 1-Octyloxymethylimidazolium | $C_8$OCIm | $C_{12}H_{23}N_2O$ | 211.32 |
| 119 | 1-Nonyloxymethylimidazolium | $C_9$OCIm | $C_{13}H_{25}N_2O$ | 225.35 |
| 120 | 1-Decyloxymethylimidazolium | $C_{10}$OCIm | $C_{14}H_{27}N_2O$ | 239.38 |
| 121 | 1-Undecyloxymethylimidazolium | $C_{11}$OCIm | $C_{15}H_{29}N_2O$ | 253.40 |
| 122 | 1-Dodecyloxymethylimidazolium | $C_{12}$OCIm | $C_{16}H_{31}N_2O$ | 267.43 |
| 21 | 1,3-Dimethylimidazolium | $C_1$MIm | $C_5H_9N_2$ | 97.14 |
| 22 | 1,2-Dimethylimidazolium | DMIM | $C_5H_9N_2$ | 97.14 |
| 23 | 1-Ethyl-3-methylimidazolium | EMIM or $C_2$MIm | $C_6H_{11}N_2$ | 111.17 |
| 24 | 1-Ethyl-2-methylimidazolium | E′MIM | $C_6H_{11}N_2$ | 111.17 |
| 26 | 1-Trifluoroethyl-3-methylimidazolium | $CF_3CH_2$MIM | $C_6H_8F_3N_2$ | 165.14 |
| 27 | 1,3-Diethylimidazolium | DEIM | $C_7H_{13}N_2$ | 125.19 |
| 28 | 1-Propyl-3-methylimidazolium | $C_3$MIm | $C_7H_{13}N_2$ | 125.19 |
| 29 | 1-Isopropyl-3-methylimidazolium | i-$C_3$MIm | $C_7H_{13}N_2$ | 125.19 |
| 210 | 1-(2-Methoxyethyl)-3-methylimidazolium | $C_2$OCMIm | $C_7H_{13}N_2O$ | 141.19 |
| 211 | 1-Butyl-3-methylimidazolium | $C_4$MIm or BMIM | $C_8H_{15}N_2$ | 139.22 |
| 212 | 1-Isobutyl-3-methylimidazolium | i-$C_4$MIm | $C_8H_{15}N_2$ | 139.22 |
| 214 | 3-(4-Hydroxy-butyl)-1-methylimidazolium | $OH(CH_2)_4$MIm | $C_8H_{15}N_2O$ | 155.22 |
| 216 | 1-Amyl-3-methylimidazolium | $C_5$MIm | $C_9H_{17}N_2$ | 153.25 |
| 217 | 1-Butyl-3-ethylimidazolium | $C_4C_2$Im | $C_9H_{17}N_2$ | 153.25 |
| 218 | 1-Vinyl-3-butylimidazolium | VBIm | $C_9H_{15}N_2$ | 151.23 |
| 220 | 1-[2-(2-Methoxyethoxy)ethyl]-3-methylimidazolium | $C_5O_2$MIm | $C_9H_{17}N_2O_2$ | 185.25 |
| 221 | 1-Hexyl-3-methylimidazolium | $C_6$MIm | $C_{10}H_{19}N_2$ | 167.27 |
| 222 | 1-Phenylethanoyl-3-methylimidazolium | $PhCOCH_2$MIm | $C_{12}H_{13}N_2O$ | 201.24 |
| 224 | 1-Heptyl-3-methylimidazolium | $C_7$MIm | $C_{11}H_{21}N_2$ | 181.30 |
| 225 | 1-Hexyl-3-ethylimidazolium | $C_2C_6$Im | $C_{11}H_{21}N_2$ | 181.30 |
| 226 | 1,3-Dibutylimidazolium | $C_4C_4$Im | $C_{11}H_{21}N_2$ | 181.30 |
| 227 | 1-Benzyl-3-methylimidazolium | $PhCH_2$MIm | $C_{11}H_{13}N_2$ | 173.24 |
| 228 | 1-(4-Methoxyphenyl)-3-methylimidazolium | MPMIm | $C_{11}H_{13}N_2O$ | 189.24 |
| 229 | 1-Octyl-3-methylimidazolium | $C_8$MIm | $C_{12}H_{23}N_2$ | 195.33 |
| 230 | 1-Phenethyl-3-methylimidazolium | $PhCH_2CH_2$MIm | $C_{12}H_{15}N_2$ | 187.26 |
| 231 | 1-(1-Heptoxymethyl)-3-methylimidazolium | $C_8$OMIM | $C_{12}H_{23}N_2O$ | 211.33 |
| 232 | 1-Phenylethanoyl-3-propylimidazolium | $PhCOCH_2$PIm | $C_{14}H_{17}N_2O$ | 229.30 |
| 233 | 3-Propoxymethyl-1-butoxymethylimidazolium | $(C_4OCH_2)(C_3OCH_2)$Im | $C_{12}H_{23}N_2O_2$ | 227.32 |
| 234 | 1-Nonyl-3-methylimidazolium | $C_9$MIm | $C_{13}H_{25}N_2$ | 209.35 |
| 235 | 1-Octyl-3-ethylimidazolium | $C_2C_8$Im | $C_{13}H_{25}N_2$ | 209.35 |
| 236 | 1-Hydrocinnamyl-3-methylimidazolium | $ph(CH_2)_3$Mim | $C_{13}H_{17}N_2$ | 201.29 |
| 237 | 1,3-Di(1-butoxymethyl)imidazolium | $(C_4H_9OCH_2)_2$Im | $C_{13}H_{25}N_2O_2$ | 241.35 |
| 238 | 1-Octyl-3-propylimidazolium | $C_3C_8$Im | $C_{14}H_{27}N_2$ | 223.38 |
| 239 | 1-Decyl-3-methylimidazolium | $C_{10}$MIm | $C_{14}H_{27}N_2$ | 223.38 |
| 243 | 1-Undecyl-3-methylimidazolium | $C_{11}$MIm | $C_{15}H_{29}N_2$ | 237.41 |
| 246 | 1-Dodecyl-3-methylimidazolium | $C_{12}$MIm | $C_{16}H_{31}N_2$ | 251.44 |
| 249 | 1-Trimdecyl-3-methylimidazolium | $C_{13}$MIm | $C_{17}H_{33}N_2$ | 265.46 |
| 251 | 1-Tetradecyl-3-methylimidazolium | $C_{14}$MIm | $C_{18}H_{35}N_2$ | 279.49 |
| 253 | 1-Pentadecyl-3-methylimidazolium | $C_{15}$MIm | $C_{19}H_{37}N_2$ | 293.52 |
| 255 | 1-Hexadecyl-3-methylimidazolium | $C_{16}$MIm | $C_{20}H_{39}N_2$ | 307.54 |
| 259 | 1-Octadecyl-3-methylimidazolium | $C_{18}$MIm | $C_{22}H_{43}N_2$ | 335.60 |

*Continued*

Table 1.2
Information of cations—cont'd

| Cid | Name | Typical Abbreviation | Formula | M/g mol$^{-1}$ |
|---|---|---|---|---|
| 260 | 1-Cosyl-3-methylimidazolium | $C_{20}$MIm | $C_{24}H_{47}N_2$ | 363.65 |
| 2108 | 1-Methoxymethyl-3-methylimidazolium | $C_2$OMIm | $C_6H_{11}N_2O$ | 127.16 |
| 2109 | 1-Methyl-3-(1,1,2,2-tetrafluoroethyl)imidazolium | $C_1CF_2CF_2$HIm | $C_6H_7F_4N_2$ | 183.13 |
| 2110 | 1-Ethyl-3-(1,1,2,2-tetrafluoroethyl)imidazolium | $C_2CF_2CF_2$HIm | $C_7H_9F_4N_2$ | 197.15 |
| 2111 | 1-Propyl-3-(1,1,2,2-tetrafluoroethyl)imidazolium | $C_3CF_2CF_2$HIm | $C_8H_{11}F_4N_2$ | 211.18 |
| 2112 | 1-Iso-propyl-3-(1,1,2,2-tetrafluoroethyl)imidazolium | *i*-$C_3CF_2CF_2$HIm | $C_8H_{11}F_4N_2$ | 211.18 |
| 2113 | 1-Butyl-3-(1,1,2,2-tetrafluoroethyl)imidazolium | *n*-$C_4CF_2CF_2$HIm | $C_9H_{13}F_4N_2$ | 225.21 |
| 2114 | 1-(1-(*R*)-Ethoxycarbonyl-ethyl)-3-methylimidazolium | [Ch1-MIm] | $C_9H_{15}N_2O_2$ | 183.23 |
| 2115 | 1,3-Dipropyloxymethylimidazolium | [$(C_3Om)_2$Im] | $C_{11}H_{21}N_2O_2$ | 213.30 |
| 2116 | 1,3-Dibutyloxymethylimidazolium | [$(C_4Om)_2$Im] | $C_{13}H_{25}N_2O_2$ | 241.35 |
| 2117 | 1,3-Dipentyloxymethylimidazolium | [$(C_5Om)_2$Im] | $C_{15}H_{29}N_2O_2$ | 269.40 |
| 2118 | 1,3-Dihexyloxymethylimidazolium | [$(C_6Om)_2$Im] | $C_{17}H_{33}N_2O_2$ | 297.46 |
| 2119 | 1,3-Diheptyloxymethylimidazolium | [$(C_7Om)_2$Im] | $C_{19}H_{37}N_2O_2$ | 325.51 |
| 2120 | 1,3-Dioctyloxymethylimidazolium | [$(C_8Om)_2$Im] | $C_{21}H_{41}N_2O_2$ | 353.56 |
| 2121 | 1,3-Dinonyloxymethylimidazolium | [$(C_9Om)_2$Im] | $C_{23}H_{45}N_2O_2$ | 381.62 |
| 2122 | 1,3-Didecyloxymethylimidazolium | [$(C_{10}Om)_2$Im] | $C_{25}H_{49}N_2O_2$ | 409.67 |
| 2123 | 1,3-Diundecyloxymethylimidazolium | [$(C_{11}Om)_2$Im] | $C_{27}H_{53}N_2O_2$ | 437.72 |
| 2124 | 1,3-Didodecyoxymethylimidazolium | [$(C_{12}Om)_2$Im] | $C_{29}H_{57}N_2O_2$ | 465.78 |
| 2125 | 1-(2-Hydroxyethyl)-3-methylimidazolium | HEMIm | $C_6H_{11}N_2O$ | 127.16 |
| 2126 | Methyl 1-methylimidazolium-3-acetate | MEMIm | $C_7H_{11}N_2O_2$ | 155.17 |
| 2127 | 1-Sec-butyl-3-methylimidazolium | Sec-$C_4$MIm | $C_8H_{15}N_2$ | 139.22 |
| 2128 | 1-(3-Methyl-butyl)-3-methylimidazolium | *i*-amyl-mim | $C_9H_{17}N_2$ | 153.24 |
| 2129 | 1-(2′,3′-Dihydroxypropyl)-3-methylimidazolium | $C_3(OH)_2$mim | $C_7H_{13}N_2O_2$ | 157.19 |
| 2130 | 1-(2′,3′-Dimercaptoacetoxypropyl)-3-methylimidazolium | $C_3(OCOCH_2SH)_2$mim | $C_{11}H_{17}N_2O_4S_2$ | 305.40 |
| 2131 | 1,3-Di(2′,3′-dihydroxypropyl)imidazolium | $[C_3(OH)_2]_2$im | $C_9H_{17}N_2O_4$ | 217.24 |
| 2132 | 1,3-Di(2′,3′-dimercaptoacetoxypropyl)imidazolium | $[C_3(OCOCH_2SH)_2]_2$im | $C_{17}H_{25}N_2O_8S_4$ | 513.65 |
| 2133 | 1-Trimethylsiyl-2-(oxoethyl-*N*-methyl)imidazolium | $Me_3SiOCH_2CH_2$ImMe | $C_9H_{19}N_2OSi$ | 199.35 |
| 2134 | 1-Trimethylsiyl-2-(oxoethyl-*N*-fluoroethyl)imidazolium | $Me_3SiOCH_2CH_2ImCH_2CH_2F$ | $C_{10}H_{20}N_2OSiF$ | 231.36 |
| 2135 | 1-Trimethylsiyl-2-(oxoethyl-*N*-3′,3′,3′-trifluoropropyl) imidazolium | $Me_3SiOCH_2CH_2ImCH_2CH_2CF_3$ | $C_{11}H_{20}N_2OSiF_3$ | 281.37 |
| 2136 | 1-(2-Oxobutyl)-3-(3′,3′,3′-trifluoropropyl)imidazolium | $CF_3$-$CH_2CH_2ImCH_2CH_2OCH_2CH_3$ | $C_{10}H_{16}N_2OF_3$ | 237.24 |
| 2137 | 1-[1-(Phenyl-chromium tricarbonyl)methyl]-3-methylimidazolium | $Cr(CO)_3(\eta^6$-$C_6H_5CH_2$MIM) | $C_{14}H_{13}N_2CrO_3$ | 309.26 |
| 2138 | 1-[1-(Phenyl-chromium tricarbonyl)propyl]-3-methylimidazolium | $Cr(CO)_3(\eta^6$-$C_6H_5(CH_2)_3$MIM) | $C_{16}H_{17}N_2CrO_3$ | 337.31 |
| 2143 | 1-Methylnitrile-3-methylimidazolium | $C_1$CNmim | $C_6H_8N_3$ | 122.15 |
| 2144 | 1-Ethylnitrile-3-methylimidazolium | $C_2$CNmim | $C_7H_{10}N_3$ | 136.17 |
| 2145 | 1-Propylnitrile-3-methylimidazolium | $C_3$CNmim | $C_8H_{12}N_3$ | 150.21 |
| 2146 | 1-Butylnitrile-3-methylimidazolium | $C_4$CNmim | $C_9H_{14}N_3$ | 164.23 |
| 2147 | 1-(Ferrocenylmethyl)-3-methylimidazolium | Fc$C_1$mim | $C_{15}H_{17}N_2Fe$ | 281.15 |
| 2149 | 1-Butyl-3-[2-(diethoxyphosphinyl) ethyl]-1H-imidazolium | DPEBIM | $C_{13}H_{26}N_2O_3P$ | 289.33 |
| 2150 | 1-Butyl-3-[3-(diethoxyphosphinyl)propyl]-1H-imidazolium | DPPBIM | $C_{14}H_{28}N_2O_3P$ | 303.36 |
| 2151 | 1-Hexyl-3-[2-(diethoxyphosphinyl) ethyl]-1H-imidazolium | DPEHIM | $C_{15}H_{30}N_2O_3P$ | 317.38 |
| 2152 | 1-Hexyl-3-[3-(diethoxyphosphinyl) propyl]-1H-imidazolium | DPPHIM | $C_{16}H_{32}N_2O_3P$ | 331.41 |
| 2153 | 1-Octyl-3-[2-(diethoxyphosphinyl) ethyl]-1H-imidazolium | DPEOIM | $C_{17}H_{34}N_2O_3P$ | 345.44 |
| 2154 | 1-Octyl-3-[3-(diethoxyphosphinyl) propyl]-1H-imidazolium | DPPOIM | $C_{18}H_{36}N_2O_3P$ | 359.46 |
| 2155 | 1-Methyl-3-[(3*R*)-3,7-dimethyloct-6-enyl]-1H-imidazolium | [CitronellylMIm] | $C_{14}H_{25}N_2$ | 221.36 |
| 2156 | 1-Butyl-3-[(3*R*)-3,7-dimethyloct-6-enyl]-1H-imidazolium | [Citronellyl$C_4$Im] | $C_{17}H_{31}N_2$ | 263.44 |
| 2157 | 1-Hexyl-3-[(3*R*)-3,7-dimethyloct-6-enyl]-1H-imidazolium | [Citronellyl$C_6$Im] | $C_{19}H_{35}N_2$ | 291.49 |
| 2158 | 1-Dodecyl-3-[(3*R*)-3,7-dimethyloct-6-enyl]-1H-imidazolium | [Citronellyl$C_{12}$Im] | $C_{25}H_{47}N_2$ | 375.65 |
| 2159 | 1-Tetradecyl-3-[(3*R*)-3,7-dimethyloct-6-enyl]-1H-imidazolium | [Citronellyl$C_{14}$Im] | $C_{27}H_{51}N_2$ | 403.71 |
| 2160 | 1-Octadecyl-3-[(3*R*)-3,7-dimethyloct-6-enyl]-1H-imidazolium | [Citronellyl$C_{18}$Im] | $C_{31}H_{59}N_2$ | 459.81 |
| 2161 | 1,3-Bis[(3*R*)-3,7-dimethyloct-6-enyl]-1H-imidazolium | [(Citronellyl)$_2$Im] | $C_{23}H_{41}N_2$ | 345.59 |
| 2162 | 1-SF5(CF2)2(CH2)2–3-methylimidazolium | $SF_5(CF_2)_2(CH_2)_2$MIm | $C_8H_{10}F_9N_2S$ | 337.20 |
| 2163 | 1-SF5(CF2)2(CH2)4–3-methylimidazolium | $SF_5(CF_2)_2(CH_2)_4$MIm | $C_{10}H_{14}F_9N_2S$ | 365.28 |
| 2164 | 1-SF5(CF2)4(CH2)2–3-methylimidazolium | $SF_5(CF_2)_4(CH_2)_2$MIm | $C_{10}H_{10}F_{13}N_2S$ | 437.25 |
| 2165 | 1-(3,4,5,6-Perfluorohexyl)-3-methylimidazolium | [perfluoro-hmim] | $C_{10}H_{10}F_9N_2$ | 329.19 |
| 2166 | 1-(Hexyl acrylate)-3-methylimidazolium | Acrylate$C_6$MIm | $C_{13}H_{21}N_2O_2$ | 237.32 |
| 2167 | 1-(Hexyl acrylate)-3-ethylimidazolium | Acrylate$C_6$EIm | $C_{14}H_{23}N_2O_2$ | 251.34 |
| 2169 | 3-Methyl-1-[3-N,N-diethyldithiocarbamatepropyl]-imidazolium | M$Et_2$TioCPrIm | $C_{12}H_{22}N_3S_2$ | 272.46 |
| 2170 | 3-methyl-1-[3-N,N-dibutyldithiocarbamatepropyl]-imidazolium | M$Bu_2$TioCPrIm | $C_{16}H_{30}N_3S_2$ | 328.56 |
| 2171 | 3-methyl-1-[3-N,N-dioctyldithiocarbamate-propyl]-imidazolium | M$Oct_2$TioCPrIm | $C_{24}H_{46}N_3S_2$ | 440.77 |

Table 1.2
Information of cations—cont'd

| Cid | Name | Typical Abbreviation | Formula | M/g mol$^{-1}$ |
|---|---|---|---|---|
| 2172 | 3-Methyl-1-[3-*N*,*N*-diphenyldithiocarbamate-propyl]-imidazolium | $Mph_2$TioCPrIm | $C_{20}H_{22}N_3S_2$ | 368.54 |
| 2173 | 3-Methyl-1-[3-morpholinedithiocarbamate-propyl]-imidazolium | MMorTioCPrIm | $C_{12}H_{20}N_3OS_2$ | 286.44 |
| 2174 | 3-Methyl-1-[3-pyridinedithiocarbamate-propyl]-imidazolium | MPyTioCPrIm | $C_{13}H_{17}N_3S_2$ | 279.43 |
| 2175 | 3-Methyl-1-[3-imidazoledithiocarbamate-propyl]-imidazolium | MIMTioCPrIm | $C_{11}H_{15}N_4S_2$ | 267.40 |
| 2176 | 3-Methyl-1-(3-bromopropyl)-imidazolium | $BrC_3$MIm | $C_7H_{12}N_2Br$ | 204.09 |
| 2177 | 1-(4-Sulfonylbutyl)-3-methylimidazolium | $HSO_3(CH_2)_4$MIm | $C_8H_{15}N_2O_3S$ | 219.28 |
| 2178 | 1-(4-Chlorosulfonylbutyl)-3-methylimidazolium | $ClO_2S(CH_2)_4$MIm | $C_8H_{14}N_2O_2SCl$ | 237.73 |
| 2179 | 1-(2-Hydroxypropyl)-3-methylimidazolium | $CH_3CH(OH)CH_2$MIm | $C_7H_{13}N_2O$ | 141.19 |
| 2180 | 1-(2-Hydroxypropyl)-3-butylimidazolium | $CH_3CH(OH)CH_2$BIm | $C_{10}H_{19}N_2O$ | 183.27 |
| 2181 | 1-(Ethoxyethyl)-3-methylimidazolium | EOEMIm | $C_8H_{15}N_2O$ | 155.22 |
| 2182 | 3-Methyl-1-(ethoxycarbonylmethyl)imidazolium | $EtOCOCH_2$MIm | $C_8H_{13}N_2O_2$ | 169.20 |
| 2183 | 3-Methyl-1-(propoxycarbonylmethyl)imidazolium | $PrOCOCH_2$MIm | $C_9H_{15}N_2O_2$ | 183.23 |
| 2184 | 3-Methyl-1-(butoxycarbonylmethyl)imidazolium | $BuOCOCH_2$MIm | $C_{10}H_{17}N_2O_2$ | 197.25 |
| 2185 | 3-Methyl-1-(pentoxycarbonylmethyl)imidazolium | $PenOCOCH_2$MIm | $C_{11}H_{19}N_2O_2$ | 211.28 |
| 2186 | 3-Methyl-1-(hexoxycarbonylmethyl)imidazolium | $HexOCOCH_2$MIm | $C_{12}H_{21}N_2O_2$ | 225.31 |
| 2187 | 3-Methyl-1-(octoxycarbonylmethyl)imidazolium | $OctOCOCH_2$MIm | $C_{14}H_{25}N_2O_2$ | 253.36 |
| 2188 | 3-Methyl-1-(*N*-butylcarbamoylmethyl)imidazolium | $BuNHCOCH_2$MIm | $C_{10}H_{18}N_3O$ | 196.27 |
| 2189 | 3-Methyl-1-(*N*-butyl-*N*-methylcarbamoylmethyl)imidazolium | $BuNMeCOCH_2$MIm | $C_{11}H_{20}N_3O$ | 210.30 |
| 2190 | 3-Methyl-1-(*N*,*N*-diethylcarbamoylmethyl)imidazolium | $Et_2NCOCH_2$MIm | $C_{10}H_{18}N_3O$ | 196.27 |
| 2191 | 1-Butyl-3-[3-(2-hydroxybenzylamino)propyl]-3H-imidazolium | PAMPBIm | $C_{17}H_{26}N_3O$ | 288.41 |
| 2192 | (*N*-methyl-imidazole)(trimethylamine)$BH_2$ | $Me_3NBH_2$MIm | $C_7H_{17}N_3B$ | 154.04 |
| 2193 | (*N*-methyl-imidazole)(triethylamine)$BH_2$ | $Et_3NBH_2$MIm | $C_{10}H_{23}N_3B$ | 196.12 |
| 2194 | (*N*-methyl-imidazole)(methyldibutylamine)$BH_2$ | $(n\text{-Bu})_2$MeNB$H_2$MIm | $C_{13}H_{29}N_3B$ | 238.20 |
| 2195 | (*N*-butyl-imidazole)(trimethylamine)$BH_2$ | $ME_3NBH_2$BIm | $C_{10}H_{23}N_3B$ | 196.12 |
| 2196 | (*N*-butyl-imidazole)(triethylamine)$BH_2$ | $Et_3NBH_2$BIm | $C_{13}H_{29}N_3B$ | 238.20 |
| 2197 | (*n*-Butyl-imidazole)(quinuclidine)$BH_2$ | Qu$BH_2$BIm | $C_{14}H_{27}N_3B$ | 248.20 |
| 2198 | 1-Methyl-3-propargylimidazolium | CC≡Cmim | $C_7H_9N_2$ | 121.16 |
| 2199 | 1-Methyl-3-allylimidazolium | CC=Cmim | $C_7H_{11}N_2$ | 123.18 |
| 2200 | 1-Methyl-3-propylcarboxylimidazolium | $C_3$COOHmim | $C_8H_{13}N_2O_2$ | 169.20 |
| 2201 | 1,3-Dipropargylimidazolium | DiCC≡Cim | $C_9H_9N_2$ | 145.18 |
| 2202 | 1,3-Diallylimidazolium | DiCC=Cim | $C_9H_{13}N_2$ | 149.21 |
| 2203 | 1,3-Dibutylnitrileimidazolium | $(C_3CN)_2$Im | $C_{11}H_{15}N_4$ | 203.26 |
| 2204 | 1,3-Dipropylcarboxylimidazolium | $(C_3COOH)_2$im | $C_{11}H_{17}N_2O_4$ | 241.26 |
| 2205 | 1-[2-Benzoxylpropyl]-3-methylimidazolium | BzO-PMIm | $C_{14}H_{19}N_2O$ | 231.31 |
| 2208 | 1-(2,3-Dibromopropyl)-3-methylimidazolium | $CH_2BrCHBrCH_2$MIm | $C_7H_{11}Br_2N_2$ | 282.98 |
| 2209 | 1-(3,4-Dibromo-3,4,4-trifluorobutyl)-3-methylimidazolium | $CBrF_2CHBrF(CH_2)_2$MIm | $C_8H_{10}Br_2F_3N_2$ | 350.98 |
| 2210 | 1-(*trans*-2,3-Dibromoallyl)-3-(2′,3′-dibromopropyl) imidazolium | [(CBrH=$CBrCH_2$)Im ($CH_2BrCHBrCH_2$)] | $C_9H_{11}Br_4N_2$ | 466.81 |
| 2211 | 1,3-Di(2,3-dibromopropyl)imidazolium | [$(CH_2BrCHBrCH_2)_2$Im] | $C_9H_{13}Br_4N_2$ | 468.83 |
| 2212 | 1-(1,2-Dibromoethyl)-3-(2′,3′-dibromopropyl)imidazolium | [($CH_2BrCHBrCH_2$)Im ($CH_2BrCHBr$)] | $C_8H_{11}Br_4N_2$ | 454.80 |
| 2213 | 1-(2,3-Dibromopropyl)-3-(3′,4′-dibromo-3′,4′,4′-trifluorobutyl)-3-imidazolium | [($CF_2BrCBrFCH_2CH_2$)Im ($CH_2BrCHBrCH_2$)] | $C_{10}H_{12}Br_4F_3N_2$ | 536.83 |
| 2214 | 1-(4-Sulfonylbutyl)-3-butylimidazolium | [($SO_3H(CH_2)_4$)BIm] | $C_{11}H_{21}N_2O_3S$ | 261.36 |
| 2215 | 1,3-Divaleryleneimidazolium | [CH≡$C(CH_2)_3]_2$Im | $C_{13}H_{17}N_2$ | 201.29 |
| 2221 | 1-Butyl-3-trimethylsilylimidazolium | $C_4$tmsim | $C_7H_{15}N_2Si$ | 155.29 |
| 2223 | 1,3-Dibenzylimidazolium | BzImBz | $C_{17}H_{17}N_2$ | 249.33 |
| 2224 | 1-Triethylene glycol monomethyl ether-3-methylimidazolium | $C_7O_3$MIm | $C_{11}H_{21}N_2O_3$ | 229.30 |
| 2226 | 1-Hydroxyethyl-3-hexylimidazolium | HEHIm | $C_{11}H_{21}N_2O$ | 197.31 |
| 2227 | 1-Butyl-3-trimethylsilylimidazolium | Btmsim | $C_{10}H_{21}N_2Si$ | 197.37 |
| 2228 | 1-[12-(*N*-pyrrolyl)dodecyl]-3-methylimidazolium | (N-$PyC_{12}$)MIm | $C_{20}H_{34}N_3$ | 316.50 |
| 2229 | 1-[4-(*N*-pyrrolyl)butyl]-3-methylimidazolium | (N-$PyC_4$)MIm | $C_{12}H_{18}N_3$ | 204.29 |
| 2230 | 3-[2-(Anilinocarbonyl)ethyl]-1-methyl-1H-imidazolium | (PhNHCO$C_2$)MIm | $C_{13}H_{16}N_3O$ | 230.29 |
| 2231 | 1-Diethylsulfonyl-3-methylimidazolium | [desmim] | | 202.02 |
| 2232 | l-Methyl-3-[(2*S*)-2-methylbutyl]imidazolium | S-2-Me-BMIm | $C_9H_{17}N_2$ | 153.24 |
| 31 | 2,4,5-Trimethylimidazolium | M2,4,5IM | $C_6H_{11}N_2$ | 111.17 |
| 32 | 1,2,3-Trimethylimidazolium | M1,2,3IM | $C_6H_{11}N_2$ | 111.17 |
| 33 | 1,2-Dimethyl-3-ethylimidazolium | M1,2E3IM | $C_7H_{13}N_2$ | 125.19 |
| 34 | 1-Ethyl-3,5-dimethylimidazolium | E1M3,5IM | $C_7H_{13}N_2$ | 125.19 |
| 35 | 1-Ethyl-2,3-dimethylimidazolium | EDMIM | $C_7H_{13}N_2$ | 125.19 |
| 36 | 1,3-Diethyl-5-methylimidazolium | E1,3M5IM | $C_8H_{15}N_2$ | 139.22 |
| 37 | 1,2-Dimethyl-3-propylimidazolium | DMPIM | $C_8H_{15}N_2$ | 139.22 |

*Continued*

Table 1.2
Information of cations—cont'd

| Cid | Name | Typical Abbreviation | Formula | M/g mol$^{-1}$ |
|---|---|---|---|---|
| 38 | 1,2-Diethyl-3-methylimidazolium | E1,2M3IM | $C_8H_{15}N_2$ | 139.22 |
| 39 | 1-Propyl-2,3-dimethylimidazolium | P1M2,3IM | $C_8H_{15}N_2$ | 139.22 |
| 310 | 1-Butyl-2,3-dimethylimidazolium | BDMIM | $C_9H_{17}N_2$ | 153.25 |
| 312 | 1-Octyl-2,3-dimethylimidazolium | ODMIM | $C_{13}H_{25}N_2$ | 209.35 |
| 313 | 1-Benzyl-2-methyl-3-propylimidazolium | BzMPIM | $C_{14}H_{19}N_2$ | 215.31 |
| 314 | 1-Benzyl-2-methyl-3-butylimidazolium | BzMBIM | $C_{15}H_{21}N_2$ | 229.34 |
| 315 | 1-Benzyl-2-methyl-3-(3-methyl)propylimidazolium | BzMB′IM | $C_{15}H_{21}N_2$ | 229.34 |
| 316 | 1-Benzyl-2-methyl-3-amylimidazolium | BzMAIM | $C_{16}H_{23}N_2$ | 243.37 |
| 317 | 1-Decyl-2,3-dimethylimidazolium | DDMIM | $C_{15}H_{29}N_2$ | 237.41 |
| 318 | 1-Phenylethanoyl-2-styrene-3-methylimidazolium | PEStMIM | $C_{20}H_{20}N_2O$ | 304.39 |
| 319 | 1,3-Dimethyl-nimtrimleimidazolium | DMNiIM | $C_6H_8N_3S$ | 154.22 |
| 321 | 1,2-Dimethyl-3-phenylethanoyl(*p*-Cl)imidazolium | PClDMIM | $C_{13}H_{14}ClN_2O$ | 249.72 |
| 354 | 1-Propylnitrile-2,3-dimethylimidazolium | $C_3$CNdmim | $C_9H_{14}N_3$ | 164.23 |
| 355 | 1,3-Dimethyl-5-nitroimidazolium | $Me_2NO_2Im$ | $C_5H_8N_3O_2$ | 142.14 |
| 356 | 1-Methyl-2,3-trimethyleneimidazolium | [m-3C-im] | $C_7H_{11}N_2$ | 123.18 |
| 357 | 1-Butyl-2,3-trimethyleneimidazolium | [b-3C-im] | $C_{10}H_{17}N_2$ | 165.26 |
| 358 | 1-Hexyl-2,3-dimethylimidazolium | [hmmim] | $C_{11}H_{21}N_2$ | 181.30 |
| 359 | 1-(Hexyl acrylate)-2-methyl-3-ethylimidazolium | Acrylate$C_6$MEIm | $C_{15}H_{25}N_2O_2$ | 265.37 |
| 360 | 1-Dodecyl-2,3-dimethylimidazolium | DMDdI | $C_{17}H_{33}N_2$ | 265.46 |
| 361 | 1,2-Dimethyl-3-tetradecylimidazolium | DMTdI | $C_{19}H_{37}N_2$ | 293.51 |
| 362 | 1-Hexadecyl-2,3-dimethylimidazolium | DMHdI | $C_{21}H_{41}N_2$ | 321.56 |
| 363 | (1,2-Dimethyl-imidazole)(trimethylamine)$BH_2$ | $Me_3NBH_2$DMIm | $C_8H_{19}N_3B$ | 168.07 |
| 364 | (1-Decyl-2-methyl-imidazole)(trimethylamine)$BH_2$ | $Me_3NBH_2$BMIm | $C_{17}H_{37}N_3B$ | 294.31 |
| 365 | Cr(CO)3($\eta^6$-$C_6H_5CH_2$MMIM) | Cr(CO)3($\eta^6$-$C_6H_5CH_2$MMIM) | $C_{15}H_{15}N_2CrO_3$ | 323.29 |
| 366 | L-1-ethyl-3-(1′-hydroxy-2′-propanyl)imidazolium | L-EHyPIm | $C_8H_{15}N_2O$ | 155.22 |
| 367 | L-1-ethyl-3-(1′-hydroxy-3′-methyl-2′-butanyl)imidazolium | L-EHyMBIm | $C_{10}H_{19}N_2O$ | 183.27 |
| 368 | L-1-ethyl-3-(1′-hydroxy-4′-methyl-2′-pentanyl)imidazolium | L-EHyMPIm | $C_{11}H_{21}N_2O$ | 197.30 |
| 369 | 1,1′-Bis((1-(2,3-dimethyl)imidazolium)methyl)ferrocene | Fc(MMMIm)$_2$ | $C_{22}H_{28}N_4Fe$ | 404.33 |
| 370 | 1,3,1′-Tributyl-2,2′-biimidazolium | $Bu_3(Im)_2$ | $C_{18}H_{31}N_4$ | 303.46 |
| 371 | 1,3,1′,3′-Tetramethyl-2,2′-biimidazolium | $[(DMIm)_2]^{2+}$ | $C_{10}H_{16}N_4$ | 192.26 |
| 372 | 1,1′-Dibutyl-3,3′-dimethylbiimidazolium | $[(C_4MIm)_2]^{2+}$ | $C_{16}H_{28}N_4$ | 276.42 |
| 373 | 1,3,1′,3′-Tetrabutyl-2,2′-biimidazolium | $[(C_4C_4Im)_2]^{2+}$ | $C_{22}H_{40}N_4$ | 360.58 |
| 374 | 1,1′-Dibutyl-3,3′-di-(4,4,4-trifluorobutyl)-2,2′-biimidazolium | $[(CF_3(CH_2)_3BIm)_2]^{2+}$ | $C_{22}H_{34}F_6N_4$ | 468.52 |
| 375 | 1,3,1′-Trimethyl-2,2′-biimidazolium | [(MIm)(DMIm)] | $C_9H_{13}N_4$ | 177.23 |
| 376 | 1,3,1′-Triethyl-2,2′-biimidazolium | [(EIm)(DEIm)] | $C_{12}H_{19}N_4$ | 219.31 |
| 377 | 1,3,1′-Tripropyl-2,2′-biimidazolium | [(PIm)(DPIm)] | $C_{15}H_{25}N_4$ | 261.39 |
| 378 | 1,3,1′-Tributyl-2,2′-biimidazolium | [(BIm)(DBIm)] | $C_{18}H_{31}N_4$ | 303.46 |
| 379 | 1,1′-Dibutyl-3-(4,4,4-trifluorobutyl)-2,2′-biimidazolium | [(BIm)($CF_3(CH_2)_3$BIm)] | $C_{18}H_{28}F_3N_4$ | 357.44 |
| 380 | 1,3,1′-Tri-(4,4,4-trifluorobutyl)-2,2′-biimidazolium | [($CF_3(CH_2)_3$Im)($CF_3(CH_2)_3)_2$Im)] | $C_{18}H_{22}F_9N_4$ | 465.38 |
| 381 | 1,1′-Dimethyl-3-(3,3,3-trifluoropropyl)-2,2′-biimidazolium | [(MIm)($CF_3(CH_2)_2$MIm] | $C_{11}H_{14}F_3N_4$ | 259.25 |
| 382 | 1-Ethyl-2,3-trimethyleneimidazolium | e-3C-im | $C_8H_{13}N_2$ | 137.20 |
| 383 | 1-Propyl-2,3-trimethyleneimidazolium | p-3C-im | $C_9H_{15}N_2$ | 151.23 |
| 384 | 1-Methyl-2,3-tetramethyleneimidazolium | m-4C-im | $C_8H_{13}N_2$ | 137.20 |
| 385 | 1-Ethyl-2,3-tetramethyleneimidazolium | e-4C-im | $C_9H_{15}N_2$ | 151.23 |
| 386 | 1-Propyl-2,3-tetramethyleneimidazolium | p-4C-im | $C_{10}H_{17}N_2$ | 165.25 |
| 387 | 1-Butyl-2,3-tetramethyleneimidazolium | b-4C-im | $C_{11}H_{19}N_2$ | 179.28 |
| 388 | 1,3-Diethyl-2-methylimidazolium | EEMIM | $C_8H_{15}N_2$ | 139.22 |
| 44 | 1,2,3-Trimethyl-5-nitroimidazolium | $NO_2Me_3Im$ | $C_6H_{10}N_3O_2$ | 156.16 |
| 45 | 1-Ethyl-2,3-dimethyl-5-nitroimidazolium | $NO_2EtMe_2Im$ | $C_7H_{12}N_3O_2$ | 170.19 |
| 46 | 1-(2,3-Dibromopropyl)-3-methyl-4,5-dibromoimidazolium | [($CH_2BrCHBrCH_2$),MIm($Br_2$)] | $C_7H_9Br_4N_2$ | 440.78 |
| 47 | 1-(2,3-Dibromopropyl)-3-methyl-4,5-diiodoimidazolium | [($CH_2BrCHBrCH_2$),MIm($I_2$)] | $C_7H_9Br_2I_2N_2$ | 534.78 |
| 48 | 1,3-Di(2,3-dibromopropyl)-4,5-diiodoimidazolium | [($CH_2BrCHBrCH_2)_2$Im($I_2$)] | $C_9H_{11}Br_4I_2N_2$ | 720.62 |
| 51 | 1,2,3,4,5-Quinary-methylimidazolium | $M_5IM$ | $C_8H_{15}N_2$ | 139.22 |
| 52 | 1,3-Dimethyl-2,4,5-trimbromimidazolium | $DMBr_3IM$ | $C_5H_6Br_3N_2$ | 333.83 |
| 68 | 1,1′-Methylene-3,3′-dimethylbis(imidazolium) | $[(MIm)_2CH_2]^{2+}$ | $C_9H_{14}N_4$ | 178.23 |
| 69 | 1,1′-Methylene-3,3′-dibutylbis(imidazolium) | $[(BIm)_2CH_2]^{2+}$ | $C_{15}H_{26}N_4$ | 262.39 |
| 610 | 1,1′-Methylene-3,3′-dihexylbis(imidazolium) | $[(HIm)_2CH_2]^{2+}$ | $C_{19}H_{34}N_4$ | 318.50 |
| 611 | 1,1′-Methylene-3,3′-di(4,4,4-trifluorobutyl)bis(imidazolium) | $[(CF_3(CH_2)_3Im)_2CH_2]^{2+}$ | $C_{15}H_{20}F_6N_4$ | 370.34 |
| 612 | 1,1′-methylene-3,3′-di(3,3,4,4,5,5,6,6,6-nonafluorohexyl)bis (imidazolium) | $[(C_4F_9(CH_2)_2Im)_2CH_2]^{2+}$ | $C_{19}H_{16}F_{18}N_4$ | 642.33 |
| 613 | 1,4-Bis(3-tetradecylimidazolium-1-yl) butane | $[(C_{14}Im)_2(CH_2)_4]^{2+}$ | $C_{38}H_{72}N_4$ | 585.00 |
| 614 | 1,1-[1,2-Ethanediylbis(oxy-1,2-ethanediyl)] bis[3-methyl-1H-imidazolium-1-yl] | $MImC_6O_2MIm$ | $C_{14}H_{24}N_4O_2$ | 280.36 |

Table 1.2
Information of cations—cont'd

| Cid | Name | Typical Abbreviation | Formula | M/g mol$^{-1}$ |
|---|---|---|---|---|
| 615 | 1,1′-(3-Oxapentane-1,5-diyl)bis(3-decyl-1H-imidazolium-1-yl) | $[C_{10}H_{21}O_1IM]$ | $C_{30}H_{56}N_4O$ | 488.79 |
| 616 | 1,1′-(3-Oxapentane-1,5-diyl)bis(3-dodecyl-1H-imidazolium-1-yl) | $[C_{12}H_{25}O_1IM]$ | $C_{34}H_{64}N_4O$ | 544.90 |
| 617 | 1,1′-(3,6-Dioxaoctane-1,8-diyl)bis(3-decyl-1H-imidazolium-1-yl) | $[C_{10}H_{21}O_2IM]$ | $C_{32}H_{60}N_4O_2$ | 532.84 |
| 618 | 1,1′-(3,6-Dioxaoctane-1,8-diyl)bis(3-tetradecyl-1H-imidazolium-1-yl) | $[C_{14}H_{29}O_2IM]$ | $C_{40}H_{76}N_4O_2$ | 645.06 |
| 619 | 1,1′-(3,6-Dioxaoctane-1,8-diyl)bis(3-perfluorodecyl-1H-imidazolium-1-yl) | $[C_{10}F_{17}O_2IM]$ | $C_{32}H_{26}F_{34}N_4O_2$ | 1144.52 |
| 620 | 1,1′-(2,2,3,3,4,4-Hexafluoropentane-1,5-diyl) bis(3-methyl-1H-imidazolium-1-yl) | $[CH_3(CF_2)_3IM]$ | $C_{13}H_{16}F_6N_4$ | 342.28 |
| 621 | 1,1′-(2,2,3,3,4,4-Hexafluoropentane-1,5-diyl) bis(3-butyl-1H-imidazolium-1-yl) | $[C_4H_9(CF_2)_3IM]$ | $C_{19}H_{28}F_6N_4$ | 426.44 |
| 622 | 1,1′-(2,2,3,3,4,4,5,5-Octafluorohexane-1,6-diyl) bis(3-butyl-1H-imidazolium-1-yl) | $[C_4H_9(CF_2)_4IM]$ | $C_{20}H_{28}F_8N_4$ | 476.45 |
| 623 | 1,1′-(2,2,4,4,5,5,7,7-Octafluoro-3,6-dioxaoctane-1,8-diyl) bis(3-butyl-1H-imidazolium-1-yl) | $[C_4H_9(CF_2)_4O_2IM]$ | $C_{20}H_{28}F_8N_4O_2$ | 508.45 |
| 624 | 1,1′-(1,4-Phenylenebismethylene)bis(3-butyl-1H-imidazolium-1-yl) | $[C_4H_9(Ph)IM]$ | $C_{22}H_{32}N_4$ | 352.52 |
| 625 | 1,1′-(1,4-Phenylenebismethylene)bis(3-decyl-1H-imidazolium-1-yl) | $[C_{10}H_{21}(Ph)IM]$ | $C_{34}H_{56}N_4$ | 520.83 |
| 626 | 1,1′-(1,4-Phenylenebismethylene)bis(3-tetradecyl-1H-imidazolium-1-yl) | $[C_{14}H_{29}(Ph)IM]$ | $C_{42}H_{72}N_4$ | 633.05 |
| 627 | 1,1′-(2,3,5,6-Tetrafluoro-1,4-phenylenebismethylene) bis(3-butyl-1H-imidazolium-1-yl) | $[C_4H_9(PhF_4)IM]$ | $C_{22}H_{28}F_4N_4$ | 424.48 |
| 628 | 1,1′-(2,3,5,6-Tetrafluoro-1,4-phenylenebismethylene) bis(3-decyl-1H-imidazolium-1-yl) | $[C_{10}H_{21}(PhF_4)IM]$ | $C_{34}H_{52}F_4N_4$ | 592.80 |
| 629 | 1,1′-(2,3,5,6-Tetrafluoro-1,4-phenylenebismethylene) bis(3-tetradecyl-1H-imidazolium-1-yl) | $[C_{14}H_{29}(PhF_4)IM]$ | $C_{42}H_{68}F_4N_4$ | 705.01 |
| 630 | 1,4-Di-(1-methylimidazolium)-2,3-di(benzoyl oxygen)-butane | $(MIm\text{-}CH_2CHBzO)_2$ | $C_{26}H_{28}N_4O_4$ | 460.52 |
| 71 | 1-Butyl-3-methylbenzotriazolium | Bt14 | $C_{11}H_{16}N_3$ | 190.27 |
| 72 | 1-Benzyl-3-methylbenzotriazolium | Bt1Bn | $C_{14}H_{14}N_3$ | 224.29 |
| 73 | 1-(2-Azidoethyl)-4-methyl-1,2,4-triazolium | $(CH_2)_2N_3C_1Taz$ | $C_5H_9N_6$ | 153.16 |
| 74 | 1-Methyl-4-(2-azidoethyl)-1,2,4-triazolium | $Me(CH_2)_2N_3Taz$ | $C_5H_9N_6$ | 153.16 |
| 75 | 1-(2-Azidoethyl)-1,2,4-triazoliun | $N_3(CH_2)_2Taz$ | $C_4H_7N_6$ | 139.14 |
| 76 | 1-(2-Azidoethyl)-3-azido-1,2,4-triazolium | $N_3(CH_2)_2N_3Taz$ | $C_4H_6N_9$ | 180.15 |
| 77 | 1-(2-Azidoethyl)-4-amino-1,2,4-triazolium | $N_3(CH_2)_2NH_2Taz$ | $C_4H_8N_7$ | 154.15 |
| 78 | 1-Methyl-4-(3,3,3-trifluoropropyl)-1,2,4-triazolium | $C_1(CH_2)_2CF_3Taz$ | $C_6H_9F_3N_3$ | 180.15 |
| 79 | 1-Butyl-4-(3,3,3-trifluoropropyl)-1,2,4-triazolium | $C_4(CH_2)_2CF_3Taz$ | $C_9H_{15}F_3N_3$ | 222.23 |
| 710 | 1-Heptyl-4-(3,3,3-trifluoropropyl)-1,2,4-triazolium | $C_7(CH_2)_2CF_3Taz$ | $C_{12}H_{21}F_3N_3$ | 264.31 |
| 711 | 1-Decyl-4-(3,3,3-trifluoropropyl)-1,2,4-triazolium | $C_{10}(CH_2)_2CF_3Taz$ | $C_{15}H_{27}F_3N_3$ | 306.39 |
| 712 | 1-Butyl-4-(1H,1H,2H,2H-perfluorohexyl)-1,2,4-triazolium | $C_4C_6F_9Taz$ | $C_{12}H_{15}F_9N_3$ | 372.25 |
| 713 | 1-Heptyl-4-(1H,1H,2H,2H-perfluorohexyl)-1,2,4-triazolium | $C_7C_6F_9Taz$ | $C_{15}H_{21}F_9N_3$ | 414.33 |
| 714 | 1-Decyl-4-(1H,1H,2H,2H-perfluorohexyl)-1,2,4-triazolium | $C_{10}C_6F_9Taz$ | $C_{18}H_{27}F_9N_3$ | 456.41 |
| 715 | 1-Methyl-4-(1H,1H,2H,2H-perfluorooctyl)-1,2,4-triazolium | $C_1C_8F_{13}Taz$ | $C_{11}H_9F_{13}N_3$ | 430.19 |
| 716 | 1-Butyl-4-(1H,1H,2H,2H-perfluorooctyl)-1,2,4-triazolium | $C_4C_8F_{13}Taz$ | $C_{14}H_{15}F_{13}N_3$ | 472.27 |
| 717 | 1-Heptyl-4-(1H,1H,2H,2H-perfluorooctyl)-1,2,4-triazolium | $C_7C_8F_{13}Taz$ | $C_{17}H_{21}F_{13}N_3$ | 514.35 |
| 718 | 1-Heptyl-4-(1-fluoroethyl)-1,2,4-triazolium | $C_7C_2FTaz$ | $C_{11}H_{21}FN_3$ | 214.30 |
| 719 | 1-Decyl-4-(1-fluoroethyl)-1,2,4-triazolium | $C_{10}C_2FTaz$ | $C_{14}H_{27}FN_3$ | 256.38 |
| 720 | 1-(Ferrocenylmethyl)-4-methyltriazolium | $FcC_1Taz$ | $C_{14}H_{16}N_3Fe$ | 282.14 |
| 721 | 1,1′-Bis((1-(4-methyl)-1,2,4-triazolium)methyl)ferrocene | $Fc(Taz)_2$ | $C_{18}H_{22}N_6Fe$ | 378.25 |
| 722 | 1-Heptyl-4-(3,3,3-trifluoro-2-propanol)triazolium | $C_7CF_3CH(OH)CH_2Taz$ | $C_{12}H_{21}F_3N_3O$ | 280.31 |
| 723 | 1-Decyl-4-(3,3,3-trifluoro-2-propanol)triazolium | $C_{10}CF_3CH(OH)CH_2Taz$ | $C_{15}H_{27}F_3N_3O$ | 322.39 |
| 724 | 1-Butyl-4-(3,4,4-trifluoro-3-butenyl)triazolium | $C_4(CH_2)_2CF{=}CF_2Taz$ | $C_{10}H_{15}F_3N_3$ | 234.24 |
| 725 | 1-Heptyl-4-(3,4,4-trifluoro-3-butenyl)triazolium | $C_7(CH_2)_2CF{=}CF_2Taz$ | $C_{13}H_{21}F_3N_3$ | 276.32 |
| 726 | 1-Decyl-4-(3,4,4-trifluoro-3-butenyl)triazolium | $C_{10}(CH_2)_2CF{=}CF_2Taz$ | $C_{16}H_{27}F_3N_3$ | 318.40 |
| 729 | 1-Butyl-4-(butyl-4-sulfonic acid)triazolium | $C_4C_4SO_3Taz$ | $C_{10}H_{20}N_3O_3S$ | 262.35 |
| 730 | 1-Heptyl-4-(butyl-4-sulfonic acid)triazolium | $C_7C_4SO_3HTaz$ | $C_{13}H_{26}N_3O_3S$ | 304.43 |
| 731 | 1-Butyl-4-(2,2,3,3,4,4-hexafluoro-5-oxo-pentanoic acid)triazolium | $C_4CO(CF_2)_3COOH$ | $C_{11}H_{12}F_6N_3O_3$ | 348.22 |
| 732 | 1-Heptyl-4-(2,2,3,3,4,4-hexafluoro-5-oxo-pentanoic acid)triazolium | $C_7CO(CF_2)_3COOH$ | $C_{14}H_{18}F_6N_3O_3$ | 390.30 |
| 733 | 1,4-Dimethyl-2-H-1,2,4-triazolium | $Me_2Taz$ | $C_4H_8N_3$ | 98.13 |

Continued

Table 1.2
Information of cations—cont'd

| Cid | Name | Typical Abbreviation | Formula | M/g $mol^{-1}$ |
|---|---|---|---|---|
| 734 | 1-Methyl-4-amino-1,2,4-triazolium | $MeNH_2Taz$ | $C_3H_7N_4$ | 99.11 |
| 735 | 1-Methyl-3-azido-1,2,4-triazolium | $MeN_3Taz$ | $C_3H_5N_6$ | 125.11 |
| 736 | 5-Methyl-3-azido-1,2,4-triazolium | $HMeN_3Taz$ | $C_3H_5N_6$ | 125.11 |
| 737 | 3-Azido-1,2,4-triazolium | $HN_3Taz$ | $C_2H_3N_6$ | 111.09 |
| 738 | 3,5-Diazido-1,2,4-triazolium | $HN_3N_3Taz$ | $C_2H_2N_9$ | 152.10 |
| 739 | 1,4-Dimethyl-3-azido-1,2,4-triazolium | $Me_2N_3Taz$ | $C_4H_7N_6$ | 139.10 |
| 740 | 1-Propyl-4-$SF_5(CF_2)_2(CH_2)_4$-1, 2, 4-triazolium | $C_3SF_5(CF_2)_2(CH_2)_4Taz$ | $C_{11}H_{17}F_9N_3S$ | 394.32 |
| 741 | 1-Amino-1,2,4-triazolium | $NH_2Taz$ | $C_2H_5N_4$ | 85.09 |
| 742 | 4-Amino-1,2,4-triazolium | $HNH_2Taz$ | $C_2H_5N_4$ | 85.09 |
| 743 | 1-Amino-4-methyl-1,2,4-triazolium | $NH_2MeTaz$ | $C_3H_7N_4$ | 99.11 |
| 744 | 1,5-Diamino-1,2,4-triazolium | $(NH_2)_2Taz$ | $C_2H_6N_5$ | 100.10 |
| 745 | 2,3-Diamino-1,2,4-triazolium | $H(NH_2)_2Taz$ | $C_2H_6N_5$ | 100.10 |
| 746 | 1,2,4-Triazolium | Taz | $C_2H_4N_3$ | 70.07 |
| 747 | 1-Methyl-1,2,4-triazolium | MeTaz | $C_3H_6N_3$ | 84.10 |
| 748 | 1-Butyl-3-ethylbenzotriazolium | Bt24 | $C_{12}H_{20}N_3$ | 206.31 |
| 749 | 1,3-Dibutylbenzotriazolium | Bt44 | $C_{14}H_{24}N_3$ | 234.36 |
| 750 | 1-(3-Fluoropropyl)-3-trifluoromethyl-4,5-dimethyl-1,2,4-triazolium | $(Me_2)(CF_3)((CH_2)_3F)Taz$ | $C_8H_{12}F_4N_3$ | 226.19 |
| 751 | 1,4,5-Trimethyl-3-perfluorooctyl-1,2,4-triazolium | $[Me_3(C_8F_{17})Taz]$ | $C_{13}H_9F_{17}N_3$ | 530.20 |
| 752 | 1,4,5-Trimethyl-3-trifluoromethyl-1,2,4-triazolium | $[Me_3(CF_3)Taz]$ | $C_6H_9F_3N_3$ | 180.15 |
| 753 | 1,1′-Methylene-3,3′-dimethylbis(1,2,4-triazolium) | $[(MTaz)_2CH_2]^{2+}$ | $C_7H_{12}N_6$ | 180.21 |
| 754 | 1,1′-Methylene-3,3′-dibutylbis(1,2,4-triazolium) | $[(BTaz)_2CH_2]^{2+}$ | $C_{13}H_{24}N_6$ | 264.37 |
| 755 | 1,1′-Methylene-3,3′-dihexylbis(1,2,4-triazolium) | $[(HTaz)_2CH_2]^{2+}$ | $C_{17}H_{32}N_6$ | 320.48 |
| 756 | 1,1′-Methylene-3,3′-di(4,4,4-trifluorobutyl)bis(1,2,4-triazolium) | $[(CF_3(CH_2)_3Taz)_2CH_2]^{2+}$ | $C_{13}H_{18}F_6N_6$ | 372.31 |
| 757 | 1,1′-Methylene-3,3′-di(3,3,4,4,5,5,6,6,6-nonafluorohexyl) bis(1,2,4-triazolium) | $[(C_4F_9(CH_2)_2Taz)_2CH_2]^{2+}$ | $C_{17}H_{14}F_{18}N_6$ | 644.30 |
| 758 | 1-Amino-3-methyl-1,2,3-triazolium | $NH_2MeTaz$ | $C_3H_7N_4$ | 99.11 |
| 759 | 1-Amino-3-ethyl-1,2,3-triazolium | $NH_2EtTaz$ | $C_4H_9N_4$ | 113.14 |
| 760 | 1-Amino-3-*n*-propyl-1,2,3-triazolium | $NH_2PrTaz$ | $C_5H_{11}N_4$ | 127.17 |
| 761 | 1-Amino-3-(2-propenyl)-1,2,3-triazolium | $NH_2PropTaz$ | $C_5H_9N_4$ | 125.15 |
| 762 | 1-Amino-3-*n*-butyl-1,2,3-triazolium | $NH_2BuTaz$ | $C_6H_{13}N_4$ | 141.19 |
| 764 | 1-(2-Hydroxyethyl)-4-amino-1,2,4-triazolium | $EtOHNH_2Taz$ | $C_4H_9N_4O$ | 129.14 |
| 765 | 1-Allyl-4-amino-1,2,4-triazolium | $AllylNH_2Taz$ | $C_5H_9N_4$ | 125.15 |
| 766 | 1-Amino-3-allyl-1,2,3-triazolium | $NH_2AllylTaz$ | $C_5H_9N_4$ | 125.15 |
| 767 | 1-(2-Bromoethyl)-4-amino-1,2,4-triazolium | $(CH_2)_2BrNH_2Taz$ | $C_4H_8BrN_4$ | 192.04 |
| 81 | *N*,*N*-dimethylpyrrolidinium | P11 | $C_6H_{14}N$ | 100.18 |
| 82 | *N*-methyl-*N*-ethyl-pyrrolidinium | P12 | $C_7H_{16}N$ | 114.21 |
| 83 | *N*-methyl-*N*-propyl-pyrrolidinium | P13 | $C_8H_{18}N$ | 128.24 |
| 84 | *N*-methyl-*N*-butyl-pyrrolidinium | P14 | $C_9H_{20}N$ | 142.26 |
| 85 | *N*-methyl-*N*-hexyl-pyrrolidinium | P16 | $C_{11}H_{24}N$ | 170.32 |
| 86 | Methyl-*N*-methylpyrrolidinium-*N*-acetate | MEMPyr | $C_8H_{16}NO_2$ | 158.22 |
| 87 | N-[(1-phenyl-Chromium tricarbonyl)-methyl]-N-methylpyrrolidinium | $Cr(CO)_3(\eta^6\text{-}C_6H_5CH_2NMePyr)$ | $C_{15}H_{18}NCrO_3$ | 312.30 |
| 88 | *N*-(hexyl acrylate)-*N*-ethylpyrrolidinium | $PY_2AcrylateC_6$ | $C_{15}H_{28}NO_2$ | 254.39 |
| 89 | *N*-pentyl-*N*-methylpyrrolidinium | P1,5 | $C_{10}H_{22}N$ | 156.29 |
| 810 | *N*-methylpyrrolidinium | Hmpy | $C_5H_{12}N$ | 86.16 |
| 811 | *N*-methoxymethyl-*N*-methylpyrrolidinium | PY1,1O1 | $C_7H_{16}NO$ | 130.21 |
| 812 | *N*-methoxyethyl-*N*-methylpyrrolidinium | PY1,1O2 | $C_8H_{18}NO$ | 144.23 |
| 813 | *N*-ethoxyethyl-*N*-methylpyrrolidinium | PY1,2O2 | $C_9H_{20}NO$ | 158.26 |
| 814 | 1-Methyl-1-octylpyrrodinium | P1,8 | $C_{13}H_{28}N$ | 198.37 |
| 815 | 1-Allyl-1-methylpyrrolidinium | [AMPyrr] | $C_8H_{16}N$ | 126.22 |
| 816 | 1,1-Diallylpyrrolidinium | [AAPyrr] | $C_{10}H_{18}N$ | 152.26 |
| 91 | N-methyl-N-propylpiperidinium | PP13 | $C_9H_{20}N$ | 142.26 |
| 92 | Methyl-*N*-ethyl-piperidinium-*N*-acetate | EMEPip | $C_{10}H_{20}NO_2$ | 186.27 |
| 93 | 3-methyl-N-acetyl piperidinium | Me(acetyl)piper | $C_8H_{16}NO$ | 142.22 |
| 94 | 2,2,6,6-Tetramethyl-4-aminopiperidinium | $(Me)_4$aminopiper | $C_9H_{21}N_2$ | 157.28 |
| 95 | 1,3-Bispiperidinepropanium | Bispiperidineprop | $C_{13}H_{28}N_2$ | 212.37 |
| 96 | Methyl-*N*-methoxypiperidinium | PP1.1O1 | $C_8H_{18}NO$ | 144.23 |
| 97 | Methyl-*N*-(2-methoxyethyl)piperidinium | PP1.1O2 | $C_9H_{20}NO$ | 158.26 |
| 98 | *N*-methyl-*N*-(2-methoxyethyl-5-oxyethyl)piperidinium | PP1.1O2O2 | $C_{11}H_{24}NO_2$ | 202.31 |
| 99 | *N*-methyl-*N*-butyl-piperidinium | PP14 | $C_{10}H_{22}N$ | 156.29 |
| 910 | *N*-(hexyl acrylate)-*N*-methylpiperidinium | $AcylateC_6MPiPer$ | $C_{15}H_{28}NO_2$ | 254.39 |

Table 1.2
Information of cations—cont'd

| Cid | Name | Typical Abbreviation | Formula | M/g mol$^{-1}$ |
|---|---|---|---|---|
| 911 | N-(hexyl acrylate)-N-ethylpiperidinium | Acylate$C_6$EPiPer | $C_{16}H_{30}NO_2$ | 268.41 |
| 912 | 1-methyl-1-octylpiperidinium | PP1,8 | $C_{14}H_{30}N$ | 212.39 |
| 913 | 1-Allyl-1-methylpiperidinium | [AMPip] | $C_9H_{18}N$ | 140.25 |
| 914 | 1,1-Diallylpiperidinium | [AAPip] | $C_{11}H_{20}N$ | 166.28 |
| 1001 | 1-ethyl-2-methylpyrrolinium | MP2 | $C_7H_{14}N$ | 112.19 |
| 1002 | 1-propyl-2-methylpyrrolinium | MP3 | $C_8H_{16}N$ | 126.22 |
| 1003 | 1-butyl-2-methylpyrrolinium | MP4 | $C_9H_{18}N$ | 140.25 |
| 1004 | 1-(hexyl acrylate)-2-methyl-pyrrolinium | Acrylate$C_6$P1 | $C_{14}H_{24}NO_2$ | 238.35 |
| 1101 | N-butyl pyridinium | $C_4$py,Bpy | $C_9H_{14}N$ | 136.22 |
| 1102 | N-hexyl pyridinium | $C_6$py,Hpy | $C_{11}H_{18}N$ | 164.27 |
| 1103 | N-octyl pyridinium | $C_8$py,Opy | $C_{13}H_{22}N$ | 192.32 |
| 1104 | N-decyl pyridinium | $C_{10}$py | $C_{15}H_{26}N$ | 220.38 |
| 1105 | N-dodecyl pyridinium | $C_{12}$py | $C_{17}H_{30}N$ | 248.43 |
| 1106 | N-tetradecyl pyridinium | $C_{14}$py | $C_{19}H_{34}N$ | 276.49 |
| 1107 | N-hexadecyl pyridinium | $C_{16}$py | $C_{21}H_{38}N$ | 304.54 |
| 1108 | N-octadecyl pyridinium | $C_{18}$py | $C_{23}H_{42}N$ | 332.59 |
| 1109 | 4-Methyl-*N*-butylpyridinium | $C_4$M′-py | $C_{10}H_{16}N$ | 150.24 |
| 1110 | 1-Dodecyl-3-methylpyridinium | $C_{12}$Mpy | $C_{18}H_{32}N$ | 262.46 |
| 1111 | 1-Dodecyl-4-methylpyridinium | $C_{12}$M′py | $C_{18}H_{32}N$ | 262.46 |
| 1112 | 1-Tetradecyl-3-methylpyridinium | $C_{14}$Mpy | $C_{20}H_{36}N$ | 290.51 |
| 1113 | 1-Tetradecyl-4-methylpyridinium | $C_{14}$M′py | $C_{20}H_{36}N$ | 290.51 |
| 1114 | 1-Hexadecyl-3-methylpyridinium | $C_{16}$Mpy | $C_{22}H_{40}N$ | 318.57 |
| 1115 | 1-Hexadecyl-4-methylpyridinium | $C_{16}$M′py | $C_{22}H_{40}N$ | 318.57 |
| 1116 | 1-Octadecyl-3-methylpyridinium | $C_{18}$Mpy | $C_{24}H_{44}N$ | 346.61 |
| 1117 | 1-Octadecyl-4-methylpyridinium | $C_{18}$M′py | $C_{24}H_{44}N$ | 346.61 |
| 1118 | *N*-butyronitrile pyridinium | $C_3$CNpy | $C_9H_{11}N_2$ | 147.20 |
| 1119 | 1-Ethyl-4-[5-(ethylsulfanyl)-1,3,4-oxadiazol-2-yl] pyridinium | $C_2C_2$SOPy | $C_{11}H_{14}N_3OS$ | 236.31 |
| 1120 | 1-Butyl-4-[5-(butylsulfanyl)-1,3,4-oxadiazol-2-yl] pyridinium | $C_4C_4$SOPy | $C_{15}H_{22}N_3OS$ | 292.42 |
| 1121 | 1-Heptyl-4-[5-(heptylsulfanyl)-1,3,4-oxadiazol-2-yl] pyridinium | $C_7C_7$SOPy | $C_{21}H_{34}N_3OS$ | 376.58 |
| 1122 | 1-Decyl-4-[5-(decylsulfanyl)-1,3,4-oxadiazol-2-yl] pyridinium | $C_{10}C_{10}$SOPy | $C_{27}H_{46}N_3OS$ | 460.74 |
| 1124 | 1-[(3*R*)-3,7-dimethyloct-6-enyl]pyridinium | CironellylPy | $C_{15}H_{24}N$ | 218.36 |
| 1125 | Ethylpyridinium | $C_2$py,Ep | $C_7H_{10}N$ | 108.16 |
| 1126 | *N*-SF5CF2CF2CH2CH2-pyridinium | $SF_5(CF_2)_2(CH_2)_2$Py | $C_9H_9F_9NS$ | 334.23 |
| 1127 | SF5CF2CF2CH2CH2CH2CH2-pyridinium | $SF_5(CF_2)_2(CH_2)_4$Py | $C_{11}H_{13}F_9NS$ | 362.28 |
| 1128 | SF5CF2CF2CF2CF2CH2CH2-pyridinium | $SF_5(CF_2)_4(CH_2)_2$Py | $C_{11}H_9F_{13}NS$ | 434.24 |
| 1129 | N-fluoro-propyl-4,4′-bipyridinium | $F(CH_2)_3$BiPy | $C_{13}H_{14}FN_2$ | 217.26 |
| 1130 | *N*-trifluoro-propyl-4,4′-bipyridinium | $CF_3(CH_2)_2$BiPy | $C_{13}H_{12}F_3N_2$ | 253.24 |
| 1131 | N-tridecylfluoro-octyl-4,4′-bipyridinium | $C_6F_{13}(CH_2)_2$BiPy | $C_{18}H_{12}F_{13}N_2$ | 503.28 |
| 1132 | N-heptadecylfluoro-decyl-4,4′-bipyridinium | $C_8F_{17}(CH)_2$BiPy | $C_{20}H_{12}F_{17}N_2$ | 603.30 |
| 1133 | *N*,*N*′-di(fluoro-propyl)-4,4′-bipyridinium | $[(CH_2F(CH_2)_2Py)_2]^{2+}$ | $C_{16}H_{20}F_2N_2$ | 278.34 |
| 1134 | *N*,*N*′-di(trifluoro-propyl)-4,4′-bipyridinium | $[(CF_3(CH_2)_2Py)_2]^{2+}$ | $C_{16}H_{16}F_6N_2$ | 350.30 |
| 1135 | N,N′-di(tridecylfluoro-octyl)-4,4′-bipyridinium | $[(C_6F_{13}(CH_2)_2Py)_2]^{2+}$ | $C_{26}H_{16}F_{26}N_2$ | 850.38 |
| 1136 | Di(*N*-fluoro-propyl bipyridinium)-butylene | $[(F(CH_2)_3BiPy)_2(CH_2)_4]^{4+}$ | $C_{30}H_{36}F_2N_4$ | 490.63 |
| 1137 | Di(*N*-trifluoropropyl bipyridinium)-butylene | $[CF_3(CH_2)_2BiPy)_2(CH_2)_4]^{4+}$ | $C_{30}H_{32}F_6N_4$ | 562.59 |
| 1138 | 1-Ethyl-3-methylpyridinium | [empy] | $C_8H_{12}N$ | 122.19 |
| 1139 | 1-Ethyl-3,5-dimethylpyridinium | [emmpy] | $C_9H_{14}N$ | 136.21 |
| 1140 | 1-Ethyl-nicotinic acid ethyl ester | [$Et_2$Nic] | $C_{10}H_{14}NO_2$ | 180.22 |
| 1141 | 1-Butyl-3-methylpyridinium | [bmpy] | $C_{10}H_{16}N$ | 150.24 |
| 1142 | 1-Butyl-3,5-dimethylpyridinium | [bmmpy] | $C_{11}H_{18}N$ | 164.27 |
| 1143 | 1-Butyl-4-(dimethylamino)pyridinium | [bDMApy] | $C_{11}H_{19}N_2$ | 179.28 |
| 1144 | 1-Butyl-3-methyl-4-(dimethylamino)pyridinium | [bmDMApy] | $C_{12}H_{21}N_2$ | 193.31 |
| 1145 | 1-Butyl-nicotinic acid butyl ester | [$b_2$Nic] | $C_{14}H_{22}NO_2$ | 236.33 |
| 1146 | 1-Hexyl-3-methylpyridinium | [hmpy] | $C_{12}H_{20}N$ | 178.29 |
| 1147 | 1-Hexyl-3,5-dimethylpyridinium | [hmmpy] | $C_{13}H_{22}N$ | 192.32 |
| 1148 | 1-Hexyl-2-ethyl-3,5-dimethylpyridinium | [hemmpy] | $C_{15}H_{26}N$ | 220.37 |
| 1149 | 1-Hexyl-2-propyl-3,5-diethylpyridinium | [hpeepy] | $C_{18}H_{32}N$ | 262.45 |
| 1150 | 1-Hexyl-4-(dimethylamino)pyridinium | [hDMApy] | $C_{13}H_{23}N_2$ | 207.34 |
| 1151 | 1-Hexyl-3-methyl-4-(dimethylamino)pyridinium | [hmDMApy] | $C_{14}H_{25}N_2$ | 221.36 |
| 1152 | 1-Hexyl-4-(4-methylpiperidino)pyridinium | [h(mPip)py] | $C_{17}H_{29}N_2$ | 261.43 |
| 1153 | 1-Octyl-3-methylpyridinium | [ompy] | $C_{14}H_{24}N$ | 206.35 |
| 1154 | 1-(4-Sulfonylbutyl)pyridinium | $HSO_3C_4$PY | $C_9H_{14}NO_3S$ | 216.28 |
| 1155 | 1-(4-Chlorosulfonylbutyl)pyridinium | $ClSO_2C_4$PY | $C_9H_{13}NO_2SCl$ | 234.72 |

*Continued*

Table 1.2
Information of cations—cont'd

| Cid | Name | Typical Abbreviation | Formula | M/g mol$^{-1}$ |
|---|---|---|---|---|
| 1156 | N,N′-bis[3-(1-nonyloxymethyl)pyridinium]methylenediamine | $(C_9H_{19}OCH_2Py)_2NHCH_2NH$ | $C_{31}H_{54}N_4O_2$ | 514.79 |
| 1157 | N,N′-bis[3-(1-decyloxymethyl)pyridinium]methylenediamine | $(C_{10}H_{21}OCH_2Py)_2NHCH_2NH$ | $C_{33}H_{58}N_4O_2$ | 542.84 |
| 1158 | N,N′-bis[3-(1-undecyloxymethyl)pyridinium]methylenediamine | $(C_{11}H_{23}OCH_2Py)_2NHCH_2NH$ | $C_{35}H_{62}N_4O_2$ | 570.89 |
| 1159 | N,N′-bis[3-(1-dodecyloxymethyl)pyridinium]methylenediamine | $(C_{12}H_{25}OCH_2Py)_2NHCH_2NH$ | $C_{37}H_{66}N_4O_2$ | 598.95 |
| 1160 | *N*-glycidylpyridinium | [GlPy] | $C_8H_{10}NO$ | 136.17 |
| 1161 | *N*-(3-amino-2-hydroxypropyl)-pyridinium | $NH_2CH_2CH(OH)CH_2Py$ | $C_8H_{13}N_2O$ | 153.20 |
| 1162 | *N*-(3-amino-ethoxyl-2-hydroxypropyl)-pyridinium | $HO(CH_2)_2NHCH_2CH(OH)CH_2Py$ | $C_{10}H_{17}N_2O_2$ | 197.25 |
| 1163 | *N*-propane sulfonic pyridinium | [PSPy] | $C_8H_{12}NO_3S$ | 202.25 |
| 1164 | 1-Ethyl-4-methylpyridinium | $C_2MPy$ | $C_8H_{12}N$ | 122.19 |
| 1165 | 1-Octyl-4-methylpyridinium | $C_8MPy$ | $C_{14}H_{24}N$ | 206.35 |
| 1166 | 1-Benzyl-4-methylpyridinium | $phCH_2MPy$ | $C_{13}H_{14}N$ | 184.26 |
| 1167 | *N*-benzylpyridinium | $phCH_2Py$ | $C_{12}H_{12}N$ | 170.23 |
| 1168 | *N*-ethyl-2-methylpyridinium | $C_2M'Py$ | $C_8H_{12}N$ | 122.19 |
| 1169 | *N*-butyl-2-methylpyridinium | $C_4M'Py$ | $C_{10}H_{16}N$ | 150.24 |
| 1170 | *N*-benzyl-2-methylpyridinium | $phCH_2M'Py$ | $C_{13}H_{14}N$ | 184.26 |
| 1171 | 1-Butyl-2,2′-bipyridinium | $[C_4(Py)Py]$ | $C_{14}H_{17}N_2$ | 213.30 |
| 1172 | 1-Methoxyethylpyridinium | MOEPY | $C_8H_{12}NO$ | 138.19 |
| 1201 | *N*-butyl-isoquinolinium | $C_4$isoq | $C_{13}H_{16}N$ | 186.28 |
| 1202 | *N*-hexyl-isoquinolinium | $C_6$isoq | $C_{15}H_{20}N$ | 214.33 |
| 1203 | *N*-octyl-isoquinolinium | $C_8$isoq | $C_{17}H_{24}N$ | 242.38 |
| 1204 | *N*-decyl-isoquinolinium | $C_{10}$isoq | $C_{19}H_{28}N$ | 270.44 |
| 1205 | *N*-dodecyl-isoquinolinium | $C_{12}$isoq | $C_{21}H_{32}N$ | 298.49 |
| 1206 | *N*-tetradecyl-isoquinolinium | $C_{14}$isoq | $C_{23}H_{36}N$ | 326.55 |
| 1207 | *N*-hexadecyl-isoquinolinium | $C_{16}$isoq | $C_{25}H_{40}N$ | 354.60 |
| 1208 | *N*-octadecyl-isoquinolinium | $C_{18}$isoq | $C_{27}H_{44}N$ | 382.65 |
| 1301 | (*R*)-3-butyl-4-ethyl-2-isopropyl-2-thiazolinium | thia(1) | $C_{12}H_{24}NS$ | 214.40 |
| 1302 | (*R*)-3-dodecyl-4-ethyl-2-isopropyl-2-thiazolinium | thia(2) | $C_{20}H_{40}NS$ | 326.61 |
| 1401 | Tri-methylsulfonium | S111 | $C_3H_9S$ | 77.17 |
| 1402 | Tri-ethylsulfonium | S222 | $C_6H_{15}S$ | 119.25 |
| 1403 | Tri-butylsulfonium | S444 | $C_{12}H_{27}S$ | 203.41 |
| 1405 | Ethyldimethylsulfonium | $EtMe_2S$ | $C_4H_{11}S$ | 91.20 |
| 1406 | Methyldiethylsulfonium | $MeEt_2S$ | $C_5H_{13}S$ | 105.22 |
| 1407 | Methyldipropylsulfonium | $MePr_2S$ | $C_7H_{17}S$ | 133.28 |
| 1408 | Methyldibutylsulfonium | $MeBu_2S$ | $C_9H_{21}S$ | 161.33 |
| 1409 | Ethyldipropylsulfonium | $EtPr_2S$ | $C_8H_{19}S$ | 147.30 |
| 1410 | Ethyldibutylsulfonium | $EtBu_2S$ | $C_{10}H_{23}S$ | 175.36 |
| 1411 | Butyldimethylsulfonium | S114 | $C_6H_{15}S$ | 119.25 |
| 1501 | Tetramethylammonium | N1111 | $C_4H_{12}N$ | 74.15 |
| 1502 | Trimethylethylammonium | N1112 | $C_5H_{14}N$ | 88.17 |
| 1503 | Trimethyl-ethynylammonium | $N111C_2H$ | $C_5H_{10}N$ | 84.14 |
| 1504 | Trimethyl-methoxymethylammonium | $N111C_2O$ | $C_5H_{14}NO$ | 104.17 |
| 1505 | Trimethylpropylammonium | N1113 | $C_6H_{16}N$ | 102.20 |
| 1506 | Trimethyl-isopropylammonium | N1113′ | $C_6H_{16}N$ | 102.20 |
| 1507 | Dimethyl-diethylammonium | N1122 | $C_6H_{16}N$ | 102.20 |
| 1508 | Trimethyl-allylammonium | N111C3 | $C_6H_{14}N$ | 100.18 |
| 1509 | Trimethyl-propargylammonium | N111C3′ | $C_6H_{12}N$ | 98.17 |
| 1511 | Methoxymethylenedimethylethylammonium | N112,1O1 | $C_6H_{16}NO$ | 118.20 |
| 1512 | Dimethyl-ethyl-propylammonium | N1123 | $C_7H_{18}N$ | 116.23 |
| 1513 | Trimethyl-butylammonium | N1114 | $C_7H_{18}N$ | 116.23 |
| 1514 | Triethyl-methylammonium | N1222 | $C_7H_{18}N$ | 116.23 |
| 1515 | Ethoxymethylene-dimethyl-ethylammonium | N112,1O2 | $C_7H_{18}NO$ | 132.23 |
| 1516 | Methoxyethyl-dimethyl-ethylammonium | N112.2O1 | $C_7H_{18}NO$ | 132.23 |
| 1517 | Ethoxyethyl-dimethyl-ethylammonium | N112.2O2 | $C_8H_{20}NO$ | 146.25 |
| 1518 | Tetraethylammonium | TEA or N2222 | $C_8H_{20}N$ | 130.25 |
| 1519 | Dimethyl-ethyl-butylammonium | N1124 | $C_8H_{20}N$ | 130.25 |
| 1520 | Dimethyl-propyl-butylammonium | N1134 | $C_9H_{22}N$ | 144.28 |
| 1521 | Trimethyl-hexylammonium | N1116 | $C_9H_{22}N$ | 144.28 |
| 1522 | Methyl-ethyl-di(i-propyl)ammonium | N123′3′ | $C_9H_{22}N$ | 144.28 |
| 1523 | Diethyl-di(iso)propylammonium | N223′3′ | $C_{10}H_{24}N$ | 158.31 |
| 1524 | Trimethyl-heptylammonium | N7111 | $C_{10}H_{24}N$ | 158.31 |
| 1525 | Trimethyl-octylammonium | N8111 | $C_{11}H_{26}N$ | 172.33 |
| 1526 | Triethyl-(2-methylbutyl)-ammonium | N2225′ | $C_{11}H_{26}N$ | 172.33 |
| 1527 | Tetrapropylammonium | N3333 | $C_{12}H_{28}N$ | 186.36 |
| 1528 | Triethyl-hexylammonium | N6222 | $C_{12}H_{28}N$ | 186.36 |

Table 1.2
Information of cations—cont'd

| Cid | Name | Typical Abbreviation | Formula | M/g mol$^{-1}$ |
|---|---|---|---|---|
| 1529 | Triethyl-heptylammonium | N7222 | $C_{13}H_{30}N$ | 200.39 |
| 1530 | Triethyl-octylammonium | N8222 | $C_{14}H_{32}N$ | 214.41 |
| 1531 | Di(iso)propylethylheptylammonium | N723′3′ | $C_{15}H_{34}N$ | 228.44 |
| 1532 | Tetrabutylammonium | N4444 or TBA | $C_{16}H_{36}N$ | 242.47 |
| 1533 | Tributyl-hexylammonium | N6444 | $C_{18}H_{40}N$ | 270.52 |
| 1534 | Tributyl-heptylammonium | N7444 | $C_{19}H_{42}N$ | 284.55 |
| 1535 | Tributyl-octylammonium | N8444 | $C_{20}H_{44}N$ | 298.58 |
| 1536 | Tetrapentylammonium | N5555 or TPA | $C_{20}H_{44}N$ | 298.58 |
| 1537 | Tetrahexylammonium | N6666 or THA | $C_{24}H_{52}N$ | 354.68 |
| 1538 | Trioctyl-propylammonium | N3888 | $C_{27}H_{58}N$ | 396.76 |
| 1539 | Tetraheptylammonium | N7777 or THpA | $C_{28}H_{60}N$ | 410.79 |
| 1540 | Tripentyl-tetradecylammonium | N555,14 | $C_{29}H_{62}N$ | 424.82 |
| 1541 | Tetraoctylammonium | N8888 or TOA | $C_{32}H_{68}N$ | 466.90 |
| 1542 | Trihexyl-tetradecylammonium | N666,14 | $C_{32}H_{68}N$ | 466.90 |
| 1543 | Ttridodecyl-methylammonium | N1,12$_3$ | $C_{37}H_{78}N$ | 537.03 |
| 1544 | Tetradecylammonium | N10,10,10,10 or TDA | $C_{40}H_{84}N$ | 579.11 |
| 1545 | Ethyldimethyl[(1*R*,2*S*,5*R*)-(-)-menthoxymethyl]ammonium | N211,mom | $C_{15}H_{32}NO$ | 242.42 |
| 1546 | Isopropyldimethyl[(1*R*,2*S*,5*R*)-(-)-menthoxymethyl] ammonium | N11,*i*-3,mom | $C_{16}H_{34}NO$ | 256.45 |
| 1547 | Butyldimethyl[(1*R*,2*S*,5*R*)-(-)-menthoxymethyl]ammonium | N411,mom | $C_{17}H_{36}NO$ | 270.47 |
| 1548 | Hexyldimethyl[(1*R*,2*S*,5*R*)-(-)-menthoxymethyl]ammonium | N611,mom | $C_{19}H_{40}NO$ | 298.53 |
| 1549 | Heptyldimethyl[(1*R*,2*S*,5*R*)-(-)-menthoxymethyl]ammonium | N711,mom | $C_{20}H_{42}NO$ | 312.55 |
| 1550 | Octyldimethyl[(1*R*,2*S*,5*R*)-(-)-menthoxymethyl]ammonium | N811,mom | $C_{21}H_{44}NO$ | 326.58 |
| 1551 | Nonyldimethyl[(1*R*,2*S*,5*R*)-(-)-menthoxymethyl]ammonium | N911,mom | $C_{22}H_{46}NO$ | 340.61 |
| 1552 | Decyldimethyl[(1*R*,2*S*,5*R*)-(-)-menthoxymethyl]ammonium | N10,1,1,mom | $C_{23}H_{48}NO$ | 354.63 |
| 1553 | Undecyldimethyl[(1*R*,2*S*,5*R*)-(-)-menthoxymethyl]ammonium | N11,1,1,mom | $C_{24}H_{50}NO$ | 368.66 |
| 1554 | Dodecyldimethyl[(1*R*,2*S*,5*R*)-(-)-menthoxymethyl]ammonium | N12,1,1,mom | $C_{25}H_{52}NO$ | 382.69 |
| 1555 | Benzyldimethyl[(1*R*,2*S*,5*R*)-(-)-menthoxymethyl] ammonium | N11,Bz,mom | $C_{20}H_{34}NO$ | 304.49 |
| 1556 | Methyldiethyl[(1*R*,2*S*,5*R*)-(-)-menthoxymethyl]ammonium | N122,mom | $C_{16}H_{34}NO$ | 256.45 |
| 1557 | Triethyl[(1*R*,2*S*,5*R*)-(-)-menthoxymethyl]ammonium | N222,mom | $C_{17}H_{36}NO$ | 270.47 |
| 1558 | Tris[2-(oxoethyl(trimethylammonium)ethoxy)triazine | [(N111,$C_2O$)$_3$triaz] | $C_{18}H_{39}O_3N_6$ | 387.54 |
| 1559 | $Cr(CO)_3(\eta^6\text{-}C_6H_5CH_2NMe_2(CH_2)_2OH)$ | $Cr(CO)_3$ ($\eta^6\text{-}C_6H_5CH_2NMe_2(CH_2)_2OH$) | $C_{14}H_{18}NCrO_4$ | 316.29 |
| 1560 | (Ferrocenylmethyl)trimethylammonium | N111,Fc | $C_{14}H_{20}NFe$ | 258.16 |
| 1561 | *N*,*N*-diethyl-*N*-methyl-*N*-(*n*-propyl)ammonium | N1223 | $C_8H_{20}N$ | 130.25 |
| 1562 | *N*,*N*-diethyl-*N*-methyl-*N*-(*n*-butyl)ammonium | N1224 | $C_9H_{22}N$ | 144.28 |
| 1563 | *N*,*N*,*N*-trimethyl-*N*-(2-methoxyethyl)ammonium | N111,1O2 | $C_6H_{16}NO$ | 118.20 |
| 1564 | *N*,*N*-methyl-*N*-methyl-*N*-(2-methoxyethyl)ammonium | N112,1O2 | $C_7H_{18}NO$ | 132.22 |
| 1565 | *N*,*N*-diethyl-*N*-methyl-*N*-(2-methoxyethyl)ammonium | N122,1O2 | $C_8H_{20}NO$ | 146.25 |
| 1566 | *N*,*N*,*N*-triethyl-*N*-(2-methoxyethyl)ammonium | N222,1O2 | $C_9H_{22}NO$ | 160.28 |
| 1567 | *N*,*N*,*N*-trioctyl-*N*-methylammonium or tricaprylmethylammonium | N1888 | $C_{25}H_{54}N$ | 368.70 |
| 1568 | 1-Octyl-4-aza-1-azonia-bicyclo[2.2.2]octane | [$C_8$dabco] | $C_{14}H_{29}N_2$ | 225.39 |
| 1569 | *N*,*N*,*N*′,*N*′-tetramethylmethanediamine | $(Me_2NH)_2CH_2$ | $C_5H_{16}N_2$ | 104.19 |
| 1570 | *N*,*N*,*N*′,*N*′-tetramethylethanediamine | $(Me_2NH)_2(CH_2)_2$ | $C_6H_{18}N_2$ | 118.22 |
| 1571 | *N*,*N*,*N*′,*N*′-tetramethyl-1,3-propanediamine | $(Me_2NH)_2(CH_2)_3$ | $C_7H_{20}N_2$ | 132.25 |
| 1572 | *N*,*N*,*N*′,*N*′-tetramethyl-1,6-hexanediamine | $(Me_2NH)_2(CH_2)_6$ | $C_{10}H_{26}N_2$ | 174.33 |
| 1573 | 1,4,7,10-Tetraazacyclododecane | $[(C_2NHC_2NH_2)]_2$ | $C_8H_{22}N_4$ | 174.29 |
| 1574 | Tri-*n*-propylammonium | N333H | $C_9H_{22}N$ | 144.28 |
| 1575 | Tri-*n*-butylammonium | N444H | $C_{12}H_{28}N$ | 186.36 |
| 1576 | Tri-*i*-octylammonium | N888H | $C_{24}H_{52}N$ | 354.68 |
| 1577 | Di-*n*-propylammonium | $H_2N(n\text{-}C_3H_7)_2$, NHH33 | $C_6H_{16}N$ | 102.20 |
| 1578 | Di-*i*-propylammonium | $H_2N(i\text{-}C_3H_7)_2$, NHH3′3′ | $C_6H_{16}N$ | 102.20 |
| 1579 | Di-*n*-butylammonium | $H_2N(n\text{-}Bu)_2$, NHH44 | $C_8H_{20}N$ | 130.25 |
| 1580 | Di-*i*-butylammonium | $H_2N(i\text{-}Bu)_2$, NHH4′4′ | $C_8H_{20}N$ | 130.25 |
| 1581 | 1-Ethyl-4-aza-1-azonia-bicyclo[2.2.2]octane | [$C_2$dabco] | $C_8H_{17}N_2$ | 141.23 |
| 1582 | Triethylammonium | NH222 | $C_6H_{16}N$ | 102.20 |
| 1583 | Trimethyl(CH2)2O(CH2)2OCH3ammonium | N111,1O2O2 | $C_8H_{20}NO_2$ | 162.25 |
| 1584 | Ethylammonium | NHHH2 | $C_2H_8N$ | 46.09 |
| 1585 | *N*,*N*,*N*,*N*-cyanomethyltrimethylammonium | CTMA or N111,$CH_2CN$ | $C_5H_{11}N_2$ | 99.15 |
| 1586 | 2-Hydroxyethylammonium | $HO(CH_2)_2NH_3$ or [NHHH,$(CH_2)_2OH$] | $C_2H_8NO$ | 62.09 |

Continued

Table 1.2
Information of cations—cont'd

| Cid | Name | Typical Abbreviation | Formula | M/g mol$^{-1}$ |
|---|---|---|---|---|
| 1587 | Cocosalky pentaethoxi methylammonium | ECONG500 | $C_{22}H_{48}NO_5$ | 406.62 |
| 1588 | Dimethyldipentylammonium | N1155 | $C_{12}H_{28}N$ | 186.36 |
| 1589 | Dihexyldimethylammonium | N1166 | $C_{14}H_{32}N$ | 214.41 |
| 1590 | Diethyldipentylammonium | N2255 | $C_{14}H_{32}N$ | 214.41 |
| 1591 | Diethyldihexylammonium | N2266 | $C_{16}H_{36}N$ | 242.46 |
| 1592 | Caprolactam | NHC | $C_6H_{12}NO$ | 114.17 |
| 1593 | $Me_3N(CH_2)_2OC(O)(CH_2)_2CH_3$ | $Me_3N(CH_2)_2OC(O)(CH_2)_2CH_3$ | $C_9H_{20}NO_2$ | 174.26 |
| 1594 | Choline or 2-hydroxyethyltrimethylammonium | N111,2OH | $C_5H_{14}NO$ | 104.17 |
| 1595 | Butyrolactam | [PY] | $C_4H_8NO$ | 86.11 |
| 1596 | Didecyldimethylammonium | [DDA] or N1,1,10,10 | $C_{22}H_{48}N$ | 326.62 |
| 1597 | Benzalkonium | [BA] | | |
| 1598 | Hamine 1622(benzethonium) | [HA1622] | $C_{27}H_{42}NO_2$ | 412.63 |
| 1599 | Hydroxyethyl-butyl-dimethylammonium | N114,EtOH | $C_8H_{20}NO$ | 146.25 |
| 15100 | Hydroxyethyl-octyl-dimethylammonium | N118,EtOH | $C_{12}H_{28}NO$ | 202.36 |
| 15101 | 2′-Hydroxybutyl-trimethylammonium | N111,BuOH | $C_7H_{18}NO$ | 132.22 |
| 15105 | *N*,*N*,*N*-trimetyl-*N*-butanesulfonic acid ammonium | TMBSA | $C_7H_{18}NO_3S$ | 196.29 |
| 15106 | *N*,*N*,*N*′,*N*′-tetramethyl-*N*,*N*′-diethyl-ethylenediammonium | $C_2(N112)_2$ | $C_{10}H_{26}N_2$ | 174.33 |
| 15107 | *N*,*N*,*N*′,*N*′-tetramethyl-*N*,*N*′-dibutyl-ethylenediammonium | $C_2(N114)_2$ | $C_{14}H_{34}N_2$ | 230.43 |
| 15108 | *N*,*N*,*N*′,*N*′-tetramethyl-*N*,*N*′-dihexyl-ethylenediammonium | $C_2(N116)_2$ | $C_{18}H_{42}N_2$ | 286.54 |
| 15109 | *N*,*N*,*N*′,*N*′-tetramethyl-*N*,*N*′-dioctyl-ethylenediammonium | $C_2(N118)_2$ | $C_{22}H_{50}N_2$ | 342.64 |
| 15110 | *N*,*N*,*N*′,*N*′-tetramethyl-*N*,*N*′-diethyl-1,3-propanediammonium | $C_3(N112)_2$ | $C_{11}H_{28}N_2$ | 188.35 |
| 15111 | *N*,*N*,*N*′,*N*′-tetramethyl-*N*,*N*′-dipropyl-1,3-propanediammonium | $C_3(N113)_2$ | $C_{13}H_{32}N_2$ | 216.41 |
| 15112 | *N*,*N*,*N*′,*N*′-tetramethyl-*N*,*N*′-dibutyl-1,3-propanediammonium | $C_3(N114)_2$ | $C_{15}H_{36}N_2$ | 244.46 |
| 15113 | *N*,*N*,*N*′,*N*′-tetramethyl-*N*,*N*′-diamyl-1,3-propanediammonium | $C_3(N115)_2$ | $C_{17}H_{40}N_2$ | 272.51 |
| 15114 | *N*,*N*,*N*′,*N*′-tetramethyl-*N*,*N*′-dihexyl-1,3-propanediammonium | $C_3(N116)_2$ | $C_{19}H_{44}N_2$ | 300.56 |
| 15115 | *N*,*N*,*N*′,*N*′-tetramethyl-*N*,*N*′-diheptyl-1,3-propanediammonium | $C_3(N117)_2$ | $C_{21}H_{48}N_2$ | 328.62 |
| 15116 | *N*,*N*,*N*′,*N*′-tetramethyl-*N*,*N*′-dioctyl-1,3-propanediammonium | $C_3(N118)_2$ | $C_{23}H_{52}N_2$ | 356.67 |
| 15117 | *N*,*N*,*N*′,*N*′-tetramethyl-*N*,*N*′-diethyl-1,6-hexanediammonium | $C_6(N112)_2$ | $C_{14}H_{34}N_2$ | 230.43 |
| 15118 | *N*,*N*,*N*′,*N*′-tetramethyl-*N*,*N*′-dibutyl-1,6-hexanediammonium | $C_6(N114)_2$ | $C_{18}H_{42}N_2$ | 286.54 |
| 15119 | *N*,*N*,*N*′,*N*′-tetramethyl-*N*,*N*′-dihexyl-1,6-hexanediammonium | $C_6(N116)_2$ | $C_{22}H_{50}N_2$ | 342.64 |
| 15120 | *N*,*N*,*N*′,*N*′-tetramethyl-*N*,*N*′-dioctyl-1,6-hexanediammonium | $C_6(N118)_2$ | $C_{26}H_{58}N_2$ | 398.75 |
| 15121 | *N*,*N*,*N*,*N*′,*N*′,*N*′-hexaethyl-1,9-nonanediammonium | $C_9(N222)_2$ | $C_{21}H_{48}N_2$ | 328.62 |
| 15122 | *N*,*N*,*N*,*N*′,*N*′,*N*′-hexaethyl-1,12-dodecanediammonium | $C_{12}(N222)_2$ | $C_{24}H_{54}N_2$ | 370.70 |
| 15123 | Methylammonium | NHHH1 | $CH_6N$ | 32.06 |
| 15124 | Propylammonium or propylamine | NHHH3 | $C_3H_{10}N$ | 60.12 |
| 15125 | Butylammonium | NHHH4 | $C_4H_{12}N$ | 74.14 |
| 15126 | Pentylammonium | NHHH5 | $C_5H_{14}N$ | 88.17 |
| 15127 | 2-Methylpropylammonium | $NHHH,CH_2CH(CH_3)_2$ | $C_4H_{12}N$ | 74.14 |
| 15128 | 2-Methylbutylammoium | $NHHH,(CH_2)_2CH(CH_3)_2$ | $C_5H_{14}N$ | 88.17 |
| 15129 | 3-Methylbutylammonium | $NHHH,CH_2CH(CH_3)CH_2CH_3$ | $C_5H_{14}N$ | 88.17 |
| 15130 | 2-Propanolammonium | $NHHH,CH_2CH(OH)CH_3$ | $C_3H_{10}NO$ | 76.12 |
| 15131 | Tetrakis(2-hydroxyethyl) ammonium | $N(CH_2CH_2OH)_4$ | $C_8H_{20}NO_4$ | 194.25 |
| 15132 | Propylcholinium | [N1132OH] | $C_7H_{18}NO$ | 132.22 |
| 15133 | 3-Trimethylammoniopropanesulfonic acid | $N111,(CH_2)_3SO_3H$ | $C_6H_{16}NO_3S$ | 182.26 |
| 15134 | 3-Triethylammoniopropanesulfonic acid | $N222,(CH_2)_3SO_3H$ | $C_9H_{22}NO_3S$ | 224.34 |
| 15135 | 3-Tri-*n*-butylammoniopropanesulfonic acid | $N444,(CH_2)_3SO_3H$ | $C_{15}H_{34}NO_3S$ | 308.50 |
| 15137 | *N*-benzyl-*N*,*N*,*N*-triethylammonium | $N222,CH_2Ph$ | $C_{13}H_{22}N$ | 192.32 |
| 15138 | *N*-phenyl-*N*,*N*,*N*-trimethylammonium | N111,Ph | $C_9H_{14}N$ | 136.21 |
| 15139 | Triethylamylammonium | N2225 | $C_{11}H_{26}N$ | 172.33 |
| 15140 | Triethyldodecylammonium | N222,12 | $C_{18}H_{40}N$ | 270.52 |
| 15141 | Triethyl(methoxymethyl)ammonium | N222,1O1 | $C_8H_{20}NO$ | 146.25 |
| 15142 | 2-Hydroxy diethylammonium | 2-HDEA | $C_4H_{12}NO_2$ | 106.14 |
| 15143 | 2-Hydroxy triethylammonium | 2-HTEA | $C_6H_{16}NO_3$ | 150.20 |
| 15146 | 1-(3-Methylimidazolium-1-yl)ethane-(trimethylammonium) | MIC2N111 | $C_6H_{13}N_3$ | 127.19 |
| 15147 | 1-(3-Methylimidazolium-1-yl)pentane-(trimethylammonium) | MIC5N111 | $C_9H_{19}N_3$ | 169.27 |
| 15148 | Dibenzyldimethylammonium | $N11(CH_2Ph)_2$ | $C_{16}H_{20}N$ | 226.34 |
| 15149 | Dimethyldi(2-methylbenzyl)ammonium | $N11(2\text{-}Me\text{-}CH_2Ph)_2$ | $C_{18}H_{24}N$ | 254.39 |
| 15150 | Dimethyldi(3-methylbenzyl)ammonium | $N11(3\text{-}Me\text{-}CH_2Ph)_2$ | $C_{18}H_{24}N$ | 254.39 |
| 15151 | Dimethyldi(4-methylbenzyl)ammonium | $N11(4\text{-}Me\text{-}CH_2Ph)_2$ | $C_{18}H_{24}N$ | 254.39 |
| 15152 | Dibutyldimethylammonium | N1144 | $C_{10}H_{24}N$ | 158.30 |
| 15153 | Tributyl-methylammonium | N1444 | $C_{13}H_{30}N$ | 200.38 |
| 15154 | Dimethyl(hexyl(*i*-propyl))ammonium | N1136 | $C_{11}H_{26}N$ | 172.33 |
| 15155 | Dimethyl(decyl(*i*-propyl))ammonium | N(10)113 | $C_{15}H_{34}N$ | 228.44 |

Table 1.2
Information of cations—cont'd

| Cid | Name | Typical Abbreviation | Formula | M/g mol$^{-1}$ |
|---|---|---|---|---|
| 15156 | Trimethyl(decyl)ammonium | N(10)111 | $C_{13}H_{30}N$ | 200.38 |
| 15157 | *N*-(4-sulfonic acid) butyl trimethylammonium | N111$(CH_2)_4SO_3H$ | $C_7H_{18}NO_3S$ | 196.29 |
| 15158 | *N*-(4-sulfonic acid) butyl triethylammonium | N222$(CH_2)_4SO_3H$ | $C_{10}H_{24}NO_3S$ | 238.37 |
| 1601 | [Bis(butyl-methyl-amino)-methylene]dimethyl-ammonium | $(MeNBu)_2C{=}NMe_2$ | $C_{13}H_{30}N_3$ | 228.40 |
| 1602 | [Bis(butyl-ethyl-amino)-methylene]dimethyl-ammonium | $(EtNBu)_2C{=}NMe_2$ | $C_{15}H_{34}N_3$ | 256.46 |
| 1603 | [Bis(bis-butyl-amino)-methylene]dimethyl-ammonium | $[(C_4H_9)_2N]_2C{=}NMe_2$ | $C_{19}H_{42}N_3$ | 312.56 |
| 1604 | [Bis(bis-hexyl-amino)-methylene]dimethyl-ammonium | $[(C_6H_{13})_2N]_2C{=}NMe_2$ | $C_{27}H_{58}N_3$ | 424.77 |
| 1605 | [Bis(bis-octyl-amino)-methylene]dimethyl-ammonium | $[(C_8H_{17})_2N]_2C{=}NMe_2$ | $C_{35}H_{74}N_3$ | 536.98 |
| 1607 | *N*,*N*,*N*′,*N*′,*N*″-pentamethyl-*N*″-butyl-guanidinium | $(Me_2N)_2C{=}NMe(n\text{-}Bu)$ | $C_{10}H_{24}N_3$ | 186.32 |
| 1608 | 1,4-Dimethyl-5-(*N*,*N*-dimethyl ammonium)-1,2,2-triazole | $(Me_2)N{=}(Me_2Taz)$ | $C_6H_{13}N_4$ | 141.19 |
| 1609 | 1,4-Dimethyl-5-(*N*-methyl-*N*-butyl ammonium)-1,2,2-triazole | $(MeBu)N{=}(Me_2Taz)$ | $C_9H_{19}N_4$ | 183.27 |
| 1610 | 1,3-Dimethyl-2-(*N*-methyl ammonium)imidazolidine | $MeN{=}(Me_2Imn)$ | $C_6H_{14}N_3$ | 128.20 |
| 1611 | 1,3-Dimethyl-2-(*N*-propyl ammonium)imidazolidine | $PrN{=}(Me_2Imn)$ | $C_8H_{18}N_3$ | 156.25 |
| 1612 | 1,3-Dimethyl-2-(*N*-methyl-*N*-propyl ammonium)imidazolidine | $(MePr)N{=}(Me_2Imn)$ | $C_9H_{20}N_3$ | 170.28 |
| 1613 | 1,3-Dimethyl-2-(*N*-methyl-*N*-butyl ammonium)imidazolidine | $(MeBu)N{=}(Me_2Imn)$ | $C_{10}H_{22}N_3$ | 184.30 |
| 1614 | 1,3-Dimethyl-3,4,5,6-tetrahydro-2-(N-propyl ammonium) pyrimidine | $PrN{=}(Me_2Pym)$ | $C_9H_{20}N_3$ | 170.28 |
| 1615 | 1,3-Dimethyl-3,4,5,6-tetrahydro-2-(N-methyl-N-propyl ammonium)pyrimidine | $(MePr)N{=}(Me_2Pym)$ | $C_{10}H_{22}N_3$ | 184.30 |
| 1616 | 1,3-Dimethyl-3,4,5,6-tetrahydro-2-(*N*-methyl-*N*-butyl ammonium)pyrimidine | $(MeBu)N{=}(Me_2Pym)$ | $C_{11}H_{24}N_3$ | 198.33 |
| 1617 | Tetrahydro-3,5-dimethyl-4-(*N*-methyl-*N*-propyl ammonium)-1,3,5-oxadiazine | $(MePr)N{=}(Me_2Oxad)$ | $C_9H_{20}N_3O$ | 186.27 |
| 1618 | Pentapentyloxytriphenylene Guanidinium | $(Me_2N)_2C{=}N[C_4O(Ph)_3(C_5O)_5]$ | $C_{52}H_{84}N_3O_6$ | 847.24 |
| 1619 | Pentahexyloxytriphenylene Guanidinium | $(Me_2N)_2C{=}N[C_4O(Ph)_3(C_6O)_5]$ | $C_{57}H_{94}N_3O_6$ | 917.37 |
| 1620 | Pentaheptyloxytriphenylene Guanidinium | $(Me_2N)_2C{=}N[C_4O(Ph)_3(C_7O)_5]$ | $C_{62}H_{104}N_3O_6$ | 987.50 |
| 1621 | Pentaoctyloxytriphenylene Guanidinium | $(Me_2N)_2C{=}N[C_4O(Ph)_3(C_8O)_5]$ | $C_{67114}N_3O_6$ | 1057.64 |
| 1622 | Pentanonyloxytriphenylene Guanidinium | $(Me_2N)_2C{=}N[C_4O(Ph)_3(C_9O)_5]$ | $C_{72}H_{124}N_3O_6$ | 1127.77 |
| 1623 | Pentadecyloxytriphenylene Guanidinium | $(Me_2N)_2C{=}N[C_4O(Ph)_3(C_{10}O)_5]$ | $C_{77}H_{134}N_3O_6$ | 1197.90 |
| 1701 | Tetramethylphosphonium | P1111 | $C_4H_{12}P$ | 91.11 |
| 1702 | Tetraethylphosphonium | P2222 | $C_8H_{20}P$ | 147.22 |
| 1703 | Tridecylmethylphosphonium | $P1,10_3$ | $C_{31}H_{66}P$ | 469.84 |
| 1704 | Trihexyl-tetradecylphosphonium | P666,14 | $C_{32}H_{68}P$ | 483.87 |
| 1705 | Tetra(*n*-butyl)phosphonium | $(C_4H_9)_4P$ or P4444 | $C_{16}H_{36}P$ | 259.43 |
| 1706 | Ethyltrihexylphosphonium | P666,2 | $C_{20}H_{44}P$ | 315.54 |
| 1707 | Propyltrihexylphosphonium | P666,3 | $C_{21}H_{46}P$ | 329.56 |
| 1708 | Butyltrihexylphosphonium | P666,4 | $C_{22}H_{48}P$ | 343.59 |
| 1709 | Tetrahexylphosphonium | P6666 | $C_{24}H_{52}P$ | 371.64 |
| 1710 | Heptyltrihexylphosphonium | P666,7 | $C_{25}H_{54}P$ | 385.67 |
| 1711 | Octyltrihexylphosphonium | P666,8 | $C_{26}H_{56}P$ | 399.70 |
| 1712 | Decyltrihexylphosphonium | P666,10 | $C_{28}H_{60}P$ | 427.75 |
| 1713 | Dodecyltrihexylphosphonium | P666,12 | $C_{30}H_{64}P$ | 455.80 |
| 1714 | Hexadecyltrihexylphosphonium | P666,16 | $C_{34}H_{72}P$ | 511.91 |
| 1715 | Butyltribenzylphosphonium | $B(ph)_3P$ | $C_{22}H_{24}P$ | 319.40 |
| 1716 | Hexyltrimethylphosphonium | P1116 | $C_9H_{22}P$ | 161.24 |
| 1717 | Tributyl-tetradecylphosphonium | P444,14 | $C_{26}H_{56}P$ | 399.70 |
| 1718 | Tetraphenylphosphonium | $P(ph)_4$ | $C_{24}H_{20}P$ | 339.39 |
| 1719 | Tetraoctylphosphonium | P8888 | $C_{32}H_{68}P$ | 483.86 |
| 1720 | Triphenyl(4-sulfonylbutyl)phosphonium | $Ph_3PC_4SO_3H$ | $C_{22}H_{24}PO_3S$ | 399.46 |
| 1721 | Triphenyl(4-chlorosulfonylbutyl)phosphonium | $Ph_3PC_4SO_2Cl$ | $C_{22}H_{23}PO_2SCl$ | 417.91 |
| 1722 | Triphenyl(3-sulfonylpropyl)phosphonium | $[Ph_3PC_3SO_3H]$ | $C_{21}H_{22}O_3PS$ | 385.44 |
| 1723 | Triethylmethylphosphonium | P2221 | $C_7H_{18}P$ | 133.19 |
| 1724 | Triethylbutylphosphonium | P2224 | $C_{10}H_{24}P$ | 175.27 |
| 1725 | Triethylamylphosphonium | P2225 | $C_{11}H_{26}P$ | 189.30 |
| 1726 | Triethyloctylphosphonium | P2228 | $C_{14}H_{32}P$ | 231.38 |
| 1727 | Triethyldodecylphosphonium | P222,12 | $C_{18}H_{40}P$ | 287.48 |
| 1728 | Triethyl(methoxymethyl)phosphonium | P222,1O1 | $C_8H_{20}OP$ | 163.22 |
| 1729 | Triethyl(2-methoxyethyl)phosphonium | P222,2O1 | $C_9H_{22}OP$ | 177.24 |
| 1730 | Hexadecyltributylphosphonium | P444,16 | $C_{28}H_{60}P$ | 427.75 |
| 1731 | *n*-Pentadecyl(tri-*n*-hexyl)phosphonium | P666,15 | $C_{33}H_{70}P$ | 497.88 |
| 1732 | Methyl(tri-*n*-butyl)phosphonium | P1444 | $C_{13}H_{30}P$ | 217.35 |
| 1733 | 2-Methoxyethyl(tri-*n*-butyl)phosphonium | $[MEBu_3P]$ or P444,2O1 | $C_{15}H_{34}OP$ | 261.40 |

*Continued*

Table 1.2
Information of cations—cont'd

| Cid | Name | Typical Abbreviation | Formula | M/g $mol^{-1}$ |
|---|---|---|---|---|
| 1734 | Tributyl(ethyl)phosphonium | P2444 | $C_{14}H_{32}P$ | 231.38 |
| 1735 | 1,10-Di(tripropylphosphonium)decane | $C_{10}(P333)_2$ | $C_{28}H_{62}P_2$ | 460.74 |
| 1736 | 1,12-Di(tripropylphosphonium)dodecane | $C_{12}(P333)_2$ | $C_{30}H_{66}P_2$ | 488.79 |
| 1737 | 1,11-Di(tripropylphosphonium)-3,6,9-trioxaundecane | $PEG_3(P333)_2$ | $C_{26}H_{58}O_3P_2$ | 480.68 |
| 1901 | (*z*)-1,1,6,6-Tetramethyl-3-en-1,6-diazecanediaminium | Com1 | $C_{12}H_{26}N_2$ | 198.35 |
| 1902 | 1,1,6,6-Tetramethyl-3-yn-1,6-diazecanediaminium | Com2 | $C_{12}H_{24}N_2$ | 196.34 |
| 1903 | 1,1,6,6-Tetramethyl-1,6-diazecanediaminium | Com3 | $C_{16}H_{32}N_2$ | 256.47 |
| 1904 | *N*-(2-(((3-hydroxypropyl)dimethylammonio)methyl)benzyl)-3-hydroxy-*N*,*N*-dimethylpropyl-1-aminium | Com4 | $C_{18}H_{34}O_2N_2$ | 310.47 |
| 1905 | (1,4),(1,4),(9,12),(9,12)-Tetradimethylene-6-en-1,4,9,12-tetrakisazacyclohexadecane tetraminium | Com5 | $C_{22}H_{42}N_4$ | 362.59 |
| 1906 | 6,8-(1′,3′-phenylene)-(1,4),(1,4),(10,13),(10,13)-tetradimethylene-1,4,10,13-tetrakisazacycloheptadecane tetraminium | Com6 | $C_{24}H_{36}N_4$ | 380.57 |
| 1907 | 6,8-(1′,3′-phenylene)-(1,4),(1,4),(10,13),(10,13)-tetradimethylene-1,4,10,13-tetrakisazacyclohenicosane tetraminium | Com7 | $C_{28}H_{48}N_4$ | 440.72 |
| 1908 | 6,8-(1′,3′-phenylene)-(1,4),(1,4),(10,13),(10,13)-tetradimethylene-1,4,10,13-tetrakisazacyclotricosane tetraminium | Com8 | $C_{30}H_{52}N_4$ | 468.76 |
| 20001 | *O*-ethyl-tetramethyluronium | $[(CH_3)_2N]_2C(OC_2H_5)$ | $C_7H_{17}N_2O$ | 145.22 |
| 20002 | *S*-ethyl-tetramethylthiouronium | $[(CH_3)_2N]_2C(SC_2H_5)$ | $C_7H_{17}N_2S$ | 161.29 |
| 21001 | Natrium | Na | Na | 22.99 |
| 22001 | *N*-(2-hydroxyethyl)-*N*-methyl morphorinium | HEMMor | $C_7H_{16}NO_2$ | 146.21 |
| 22002 | Methyl *N*-methylmorpholinium-*N*-acetate | MEMMor | $C_8H_{16}NO_3$ | 174.22 |
| 22003 | *N*-propyl-*N*-methylmorpholinium | MO1,3 | $C_8H_{18}NO$ | 144.23 |
| 22004 | *N*-(3-fluoropropyl)-*N*-methylmorpholinium | $MO1(CH_2)_3F$ | $C_8H_{17}FNO$ | 162.23 |
| 22005 | *N*-(Ethoxyethyl)-*N*-methylmorpholinium | MO1,2O2 | $C_9H_{20}NO_2$ | 174.26 |
| 22006 | *N*-((Trifluoroethoxy)ethyl)-*N*-methylmorpholinium | MO1,2O2F3 | $C_9H_{17}F_3NO_2$ | 228.23 |
| 22007 | *N*-(Pentoxyethyl)-*N*-methylmorpholinium | MO1,2O5 | $C_{12}H_{26}NO_2$ | 216.34 |
| 22008 | *N*-(2,2,3,3,4,4,5,5-Octafluoro-1-pentoxyethyl)-*N*-methylmorpholinium | $MO1,2OCH_2(CF_2)_4H$ | $C_{12}H_{18}F_8NO_2$ | 360.26 |
| 22009 | Morpholinium | MO | $C_4H_{10}NO$ | 88.13 |
| 22010 | *N*-acetylmorpholinium | AcetylMO | $C_6H_{12}NO_2$ | 130.16 |
| 22011 | *N*-methyl-*N*-ethylmorpholinium | MO1,2 | $C_7H_{16}NO$ | 130.21 |
| 22012 | *N*-methyl-*N*-butylmorpholinium | MO1,4 | $C_9H_{20}NO$ | 158.26 |
| 22013 | *N*-methoxyethyl-*N*-methylmorphonium | MO1,1O2 | $C_8H_{18}NO_2$ | 160.23 |
| 23001 | 1,5-Diamino-4-metyl-1H-tetrazolium | $(NH_2)_2$MTetaz | $C_2H_7N_6$ | 115.12 |
| 23002 | 2,4,5-Trimethyltetrazolium | MMMTetaz | $C_4H_{10}N_4$ | 114.15 |
| 23003 | 4,5-Dimethyl-1-aminotetrazolium | $1\text{-}NH_2$MMTetaz | $C_3H_8N_5$ | 114.13 |
| 23004 | 4,5-Dimethyl-2-aminotetrazolium | $2\text{-}NH_2$MMTetaz | $C_3H_9N_5$ | 115.14 |
| 24001 | *N*-Propyl-*N*-methyloxazolidinium | OX13 | $C_7H_{16}NO$ | 130.21 |
| 24002 | *N*-(3-Fluoropropyl)-*N*-methyloxazolidinium | $OX1,CH_2CH_2CH_2F$ | $C_7H_{15}FNO$ | 148.20 |
| 24003 | *N*-butyl-*N*-methyloxazolidinium | OX14 | $C_8H_{18}NO$ | 144.23 |
| 24004 | *N*-methoxyethyl-*N*-methyloxazolidinium | OX1,1O2 | $C_7H_{16}NO_2$ | 146.21 |
| 25001 | *N*,*N*-diethylpiperazinium | Pip2,2 | $C_8H_{19}N_2$ | 143.25 |
| 26001 | 1-SF5(CF2)2(CH2)2-pyridazinium | $SF_5(CF_2)_2(CH_2)_2$Pydz | $C_8H_8F_9N_2S$ | 335.21 |
| 26002 | 1-SF5(CF2)2(CH2)4-pyridazinium | $SF_5(CF_2)_2(CH_2)_4$Pydz | $C_{10}H_{12}F_9N_2S$ | 363.27 |
| 27001 | 4,4-Dimethylimidazolium | $4,4\text{-}Me_2$Im | $C_5H_{11}N_2$ | 99.15 |
| 28001 | Glycinium | Gly′ | $C_2H_6NO_2$ | 76.07 |
| 28002 | Alaninium | Ala′ | $C_3H_8NO_2$ | 90.10 |
| 28003 | Threoninium | Thr′ | $C_4H_{10}NO_3$ | 120.13 |
| 28004 | Prolinium | Pro′ | $C_5H_{10}NO_2$ | 116.14 |
| 28005 | Valinium | Val′ | $C_5H_{12}NO_2$ | 118.15 |
| 28006 | Isoleucinium | Ile′ | $C_6H_{14}NO_2$ | 132.18 |
| 28007 | Protonated methyl 1-amino-acetate | $GlyC_1$ | $C_3H_8NO_2$ | 90.10 |
| 28008 | Protonated ethyl 1-amino-acetate | $GlyC_2$ | $C_4H_{10}NO_2$ | 104.13 |
| 28009 | Protonated methyl 1-amino-propionate | $AlaC_1$ | $C_4H_{10}NO_2$ | 104.13 |
| 28010 | Protonated methyl 1-amino-2-hydroxy-propionate | $SerC_1$ | $C_4H_{10}NO_2$ | 120.13 |
| 28011 | Protonated ethyl 1-amino-propinate | $AlaC_2$ | $C_5H_{12}NO_2$ | 118.15 |
| 28012 | Protonated methyl 1-amino-2-hydroxy-butyrate | $ThrC_1$ | $C_5H_{12}NO_3$ | 134.15 |
| 28013 | Protonated methyl 2-pyrrolidine-1-acate | $ProC_1$ | $C_6H_{12}NO_2$ | 130.16 |
| 28014 | Protonated methyl 1-amino-isovalerate | $ValC_1$ | $C_6H_{14}NO_2$ | 132.18 |

Table 1.2
Information of cations—cont'd

| Cid | Name | Typical Abbreviation | Formula | M/g mol$^{-1}$ |
|---|---|---|---|---|
| 28015 | Protonated ethyl 2-pyrrolidine-1-acate | $ProC_2$ | $C_7H_{14}NO_2$ | 144.19 |
| 28016 | Protonated methyl 1-amino-4-methylvalerate | $IleC_1$ | $C_7H_{16}NO_2$ | 146.21 |
| 28017 | Leucinium | Leu | $C_7H_{16}NO_2$ | 146.21 |
| 28018 | Protonated methyl 1-amino-2-phenylpropionate | $PheC_1$ | $C_{10}H_{14}NO_2$ | 180.22 |
| 28019 | Methyl 1-(*N*-benzoyl amino)-2-(1,3-di(*n*-propyl)imidazolium)-propionate | [Bz-His(*n*-propyl)$_2$-OMe] | $C_{20}H_{28}N_3O_3$ | 358.45 |
| 28020 | Methyl 1-(*N*-benzoyl amino)-2-(1,3-di(iso-propyl)imidazolium)-propionate | [Bz-His(*i*-propyl)$_2$-OMe] | $C_{20}H_{28}N_3O_3$ | 358.45 |
| 28021 | Methyl 1-(*N*-tert-butoxycarbonylamino)-2-(1,3-di(iso-propyl)imidazolium-propinate | [Boc-His(*i*-propyl)$_2$-OMe] | $C_{18}H_{32}N_3O_4$ | 354.46 |

Table 1.3
Information of anions

| ID | Name | Typical Abbreviation | Formula | M/g mol$^{-1}$ |
|---|---|---|---|---|
| 11 | Chloride | Cl | Cl | 35.45 |
| 12 | Bromide | Br | Br | 79.90 |
| 13 | Iodine | I | I | 126.90 |
| 14 | Perchlorate | $ClO_4$ | $ClO_4$ | 99.45 |
| 15 | Dichloro-iodide | $ICl_2$ | $Cl_2I$ | 197.81 |
| 16 | Dibrobo-iodide | $IBr_2$ | $Br_2I$ | 286.71 |
| 17 | Tribromide | $Br_3$ | $Br_3$ | 239.71 |
| 21 | Tetrafluoroborate | $BF_4$ | $BF_4$ | 86.80 |
| 22 | 1-carbon icosahedral | $CB_{11}$ | $CH_{12}B_{11}$ | 143.03 |
| 23 | Hexachloride-1-carbon icosahedral | $CB_{11}Cl$ | $CH_6B_{11}Cl_6$ | 349.70 |
| 24 | Hexabromide-1-carbon icosahedral | $CB_{11}Br$ | $CH_6B_{11}Br_6$ | 616.40 |
| 25 | Methylcarbonicosahedral | $MeCB_{11}$ | $C_2H_{14}B_{11}$ | 157.05 |
| 26 | Ethylcarbonicosahedral | $EtCB_{11}$ | $C_3H_{16}B_{11}$ | 171.08 |
| 27 | Propylcarbonicosahedral | $ProCB_{11}$ | $C_4H_{18}B_{11}$ | 185.11 |
| 28 | Butylcarbonicosahedral | $ButCB_{11}$ | $C_5H_{20}B_{11}$ | 199.13 |
| 210 | Bis(oxalato)borate | BOB | $C_4BO_8$ | 186.85 |
| 211 | Bis(2-methyllactato)borate | BMLB | $C_8H_{12}BO_6$ | 214.99 |
| 212 | Bis(malonato)borate | BMB | $C_6H_4BO_8$ | 214.90 |
| 213 | Bis(salicylato)borate | BScB | $C_{14}H_8BO_6$ | 283.02 |
| 214 | Tetraphenylborate | $BPh_4$ | $C_{24}H_{20}B$ | 319.23 |
| 215 | Tetrakis((4-methyl)phenyl)borate | BPM | $C_{28}H_{28}B$ | 375.34 |
| 216 | Tetrakis((4-trifluoromethyl)phenyl)borate | BPMF | $C_{28}H_{16}BF_{12}$ | 591.23 |
| 217 | Tetrakis(3,5-bis(trifluoromethyl)phenyl)borate | TFPB | $C_{32}H_{12}BF_{24}$ | 863.22 |
| 218 | Tetrakis((4-trimethylsilyl)phenyl)borate | BPSi | $C_{36}H_{52}BSi_4$ | 607.96 |
| 219 | Tetrakis((4-dimethyl-(3,3,3-trifluoropropyl)-silyl)phenyl)borate | BPSiF | $C_{44}H_{56}BF_{12}Si_4$ | 936.06 |
| 220 | Tetrakis((4-perfluorohexyl)phenyl)borate | BPF | $C_{48}H_{16}BF_{52}$ | 1591.38 |
| 221 | Tetrakis((4-dimethyl(octyl)(silyl)phenyl)borate | BPSiM | $C_{64}H_{108}BSi_4$ | 1000.70 |
| 222 | Tetrakis((4-dimethyl-tridecylfluorooctylsilyl)phenyl)borate | BPSiMF | $C_{64}H_{56}BF_{52}Si_4$ | 1936.22 |
| 223 | Trifluoromethyltrifluoroborate | $CF_3BF_3$ | $CF_6B$ | 136.81 |
| 224 | Pentafluoroethyltrifluoroborate | $C_2F_5BF_3$ | $C_2F_8B$ | 186.82 |
| 225 | (Heptafluoro-*n*-propyl)trifluoroborate | $n$-$C_3F_7BF_3$ | $C_3F_{10}B$ | 236.83 |
| 226 | (Nonafluoro-*n*-butyl)trifluoroborate | $n$-$C_4F_9BF_3$ | $C_4F_{12}B$ | 286.83 |
| 227 | 3-(trifluoroborate)-butylnitrile | $CH_3CH(BF_3)CH_2CN$ | $C_4H_6BF_3N$ | 135.90 |
| 228 | Tetrahydrogenborate | $BH_4$ | $BH_4$ | 14.84 |
| 229 | Methyltrifluoroborate | [$CH_3BF_3$] | $CH_3BF_3$ | 82.84 |
| 230 | Ethyltrifluoroborate | [$C_2H_5BF_3$] | $C_2H_5BF_3$ | 96.87 |
| 231 | *n*-Propyltrifluoroborate | [$n$-$C_3H_7BF_3$] | $C_3H_7BF_3$ | 110.89 |
| 232 | *n*-Butyltrifluoroborate | [$n$-$C_4H_9BF_3$] | $C_4H_9BF_3$ | 124.92 |
| 233 | *n*-Pentyltrifluoroborate | [$n$-$C_5H_{11}BF_3$] | $C_5H_{11}BF_3$ | 138.95 |
| 234 | Vinyltrifluoroborate | [$CH_2CHBF_3$] | $C_2H_3BF_3$ | 94.85 |
| 235 | (T-4)-bis[(2*S*)-2-(hydroxy-κO)propanoato-κO]borate | BLLB | $C_6H_8BO_6$ | 186.94 |
| 236 | (T-4)-bis[(2*R*)-2-(hydroxy-κO)propanoato-κO]borate | BDLB | $C_6H_8BO_6$ | 186.94 |

*Continued*

Table 1.3
Information of anions—cont'd

| ID | Name | Typical Abbreviation | Formula | M/g $mol^{-1}$ |
|---|---|---|---|---|
| 237 | (T-4)-bis[(α*R*)-α-(hydroxy-κO)benzeneacetato-κO]borate | BRMB | $C_{16}H_{12}BO_6$ | 311.07 |
| 238 | (T-4)-bis[(α*S*)-α-(hydroxy-κO)benzeneacetato-κO]borate | BSMB | $C_{16}H_{12}BO_6$ | 311.07 |
| 239 | (T-4)-bis[(2*S*)-2-(hydroxy-κO)-4-methyl-pentanoato-κO]borate | BLHcB | $C_{12}H_{20}BO_6$ | 271.10 |
| 240 | (T-4)-bis[(2*S*)-2-(hydroxy-κO)-3-methyl-butanoato-κO]borate | BLHvB | $C_{10}H_{16}BO_6$ | 243.04 |
| 241 | (T-4)-bis[(α*S*)-α-(hydroxy-κO)benzeneepropanoato-κO]borate | BLPLB | $C_{18}H_{16}BO_6$ | 339.13 |
| 242 | (T-4)-bis[(α*S*)-α-(hydroxy-κO)cyclohexaneacetato-κO]borate | BRHMB | $C_{16}H_{24}BO_6$ | 323.17 |
| 31 | Bis((trifluoromethyl)sulfonyl)imide or Bis((trifluoromethane)sulfonyl)amide | TFSI or $NTf_2$ | $C_2F_6NO_4S_2$ | 280.15 |
| 32 | Bis((trifluoromethyl)sulfonyloxyl)imide | TFS′I | $C_2F_6NO_6S_2$ | 312.15 |
| 33 | Bis((perfluoroethane)sulfonyl)imide | BETI | $C_4F_{10}NO_4S_2$ | 380.16 |
| 34 | Dicyanamide or dicyanoamide | dca | $C_2N_3$ | 66.04 |
| 35 | 2,2,2-Trifluoro-*n*-(trifluoromethylsulfonyl)acetamide | TSAC | $C_3F_6NO_3S$ | 244.09 |
| 36 | Perfluoroethylimide | PFI | $C_4F_{10}N$ | 252.03 |
| 37 | Bis(methylsulfonyl)imide | MSI | $C_2H_6NO_4S_2$ | 172.21 |
| 38 | Nitrite | $NO_2$ | $NO_2$ | 46.01 |
| 39 | Nitrate | $NO_3$ | $NO_3$ | 62.00 |
| 310 | Bis(nonafluorobutane-1-sulfonyl)imide | $NNf_2$ | $C_8F_{18}NO_4S_2$ | 580.19 |
| 311 | Dinitramide | $N(NO_2)_2$ | $N_3O_4$ | 106.02 |
| 312 | Saccharinate | Sac | $C_7H_4NO_3S$ | 182.18 |
| 313 | Silver dicyanide | $Ag(CN)_2$ | $Ag(CN)_2$ | 159.90 |
| 314 | *N*-(trifluoromethylsulfonyl)-nonafluoroethylsulfonamide | NNfTf | $C_5F_{12}NO_4S_2$ | 430.17 |
| 315 | Acesulfamate | Ace | $C_4H_4NO_4S$ | 162.14 |
| 316 | *N*-(trifluoromethylsulfonyl)pentafluoroethylsulfonamide | C1C2 | $C_3F_8NO_4S_2$ | 330.16 |
| 317 | Bis(fluorosulfonyl)imide | FSI | $F_2NO_4S_2$ | 180.13 |
| 318 | Azide | $N_3$ | $N_3$ | 42.02 |
| 41 | Sulfate | $SO_4$ | $O_4S$ | 96.06 |
| 42 | Mesylate | mesy | $CH_3O_3S$ | 95.10 |
| 43 | Trifluoromethanesulfonate | TfO | $CF_3O_3S$ | 149.07 |
| 44 | Trifluoromethanesulfinate | TfO′ | $CF_3O_2S$ | 133.07 |
| 45 | Perfluorobutylsulfonate | NfO | $C_4F_9O_3S$ | 299.09 |
| 46 | Perfluorobutylsulfinate | NfO′ | $C_4F_9O_2S$ | 283.09 |
| 47 | Tosylate | Tos | $C_7H_7O_3S$ | 171.20 |
| 48 | Octylsulfate | $C_8SO_4$ | $C_8H_{17}O_4S$ | 209.29 |
| 49 | 3″-Mercapto-1″-propanesulfonic acid | $[SO_3(CH_2)_3SH]$ | $C_3H_7O_3S_2$ | 155.22 |
| 410 | 2,2,2-Trifluoroethyl sulfate | $C_2F_3$ | $C_2H_2F_3SO_4$ | 179.10 |
| 411 | 2,2,3,3-Tetrafluoropropyl sulfate | $C_3F_4$ | $C_3H_3F_4SO_4$ | 211.11 |
| 412 | Pentyl sulfate | $C_5F_0$ | $C_5H_{11}SO_4$ | 167.20 |
| 413 | 4,4,5,5,5-Pentafluoropentyl sulfate | $C_5F_5$ | $C_5H_6F_5SO_4$ | 257.16 |
| 414 | 2,2,3,3,4,4,5,5-Octafluoropentyl sulfate | $C_5F_8$ | $C_5H_3F_8SO_4$ | 311.13 |
| 415 | Thiazolium yellow G | $[ThY]^{2-}$ | $C_{28}H_{19}N_5O_6S_4$ | 649.74 |
| 416 | Copper phthalocyaninetetrasulfonate | $[CuPc]^{4-}$ | $C_{32}H_{12}N_8O_{12}S_4Cu$ | 892.29 |
| 417 | Methylsulfate | $[MeSO_4]$ | $CH_3O_4S$ | 111.10 |
| 418 | Ethylsulfate | $[EtSO_4]$ | $C_2H_5O_4S$ | 125.12 |
| 419 | diethyleneglycolmonomethylethersulphate | $[C_5H_{11}O_2SO_4]$ | $C_5H_{11}O_6S$ | 199.20 |
| 420 | Docustate or bis(2-ethylhexyl)sulfosuccinates | [doc] or [BEHSS] | $C_{20}H_{37}O_7S$ | 421.57 |
| 421 | Hydrogen sulfate or Hydrosulfate | $HSO_4$ | $HSO_4$ | 97.07 |
| 422 | (Monobenzo-15-crown-5)-4′-sulphonate | Crs | $C_{14}H_{19}O_8S$ | 347.36 |
| 423 | Dodecylbenzene-sulfonate | DBS | $C_{18}H_{29}O_3S$ | 325.49 |
| 424 | Polyethylenoxy(10)cetyl ether sulfate | [cetyl-PEG10-sulfate] | $C_{26}H_{53}O_{14}S$ | 621.75 |
| 425 | Perfluoroethylsulfate | $C_2F_5SO_4$ | $C_2F_5SO_4$ | 215.08 |
| 426 | Hexylsulfate | $HexSO_4$ | $C_6H_{13}SO_4$ | 181.23 |
| 427 | Toluenesulfonate | $CH_3PhSO_3$ | $C_7H_7O_3S$ | 171.19 |
| 51 | Hexafluorophosphate | $PF_6$ | $F_6P$ | 144.96 |
| 52 | Phosphate | $PO_4$ | $O_4P$ | 94.97 |
| 53 | Bis(nonafluorobutyl)tetrafluorophosphate | $[(C_4F_9)_2PF_4]$ | $C_8F_{22}P$ | 545.02 |
| 54 | Tris(pentafluoroethyl)trifluorophosphate | $[(C_2F_5)_3PF_3]$ | $C_6F_{18}P$ | 445.01 |
| 55 | Tris(heptafluoropropyl)trifluorophosphate | $[(C_3F_7)_3PF_3]$ | $C_9F_{24}P$ | 595.03 |
| 56 | Tris(nonafluorobutyl)trifluorophosphate | $[(C_4F_9)_3PF_3]$ | $C_{12}F_{30}P$ | 745.05 |
| 57 | Diisobutyldithiophosphinate | $(i\text{-}Bu)_2PS_2$ | $C_8H_{18}PS_2$ | 209.33 |
| 58 | Dicyclohexylphosphinate | $(Cyc\text{-}C_6)_2PO_2$ | $C_{12}H_{22}PO_2$ | 229.28 |
| 59 | Bis(2,4,4-trimethylpentyl)phosphinate | $(i\text{-}C_8)_2PO_2$ | $C_{16}H_{34}PO_2$ | 289.41 |
| 510 | Dihydrogen phosphate | dhp | $H_2PO_4$ | 96.99 |
| 511 | Dimethylphosphate | $Me_2PO_4$ | $C_2H_6O_4P$ | 125.04 |

Table 1.3
Information of anions—cont'd

| ID | Name | Typical Abbreviation | Formula | M/g mol$^{-1}$ |
|---|---|---|---|---|
| 512 | Diethylphosphate | DEP | $C_4H_{10}PO_4$ | 153.09 |
| 61 | Trifluoroacetate | TA or $CF_3COO$ | $C_2F_3O_2$ | 113.02 |
| 62 | Heptafluorobutanoate | HB or $C_3F_7CO_2$ | $C_4F_7O_2$ | 213.03 |
| 63 | Acetate | OAc or $CH_3COO$ | $C_2H_3O_2$ | 59.04 |
| 64 | Benzoate | ba | $C_7H_5O_2$ | 121.11 |
| 65 | Formate | $HCO_2$ | $CHO_2$ | 45.02 |
| 66 | Decanoate | $C_8CO_2$ | $C_{10}H_{19}O_2$ | 171.26 |
| 67 | DL-lactate | [DL-lactate] | $C_3H_5O_3$ | 89.07 |
| 68 | L-lactate | [L-lactate] | $C_3H_5O_3$ | 89.07 |
| 69 | Glycine | Gly | $C_2H_4NO_2$ | 74.06 |
| 610 | Alanine | Ala | $C_3H_6NO_2$ | 88.09 |
| 611 | Valine | Val | $C_5H_{10}NO_2$ | 116.14 |
| 612 | Leucine | Leu | $C_6H_{12}NO_2$ | 130.17 |
| 613 | Isoleucine | Ile | $C_6H_{12}NO_2$ | 130.17 |
| 614 | Serine | Ser | $C_3H_6NO_3$ | 104.08 |
| 615 | Threonine | Thr | $C_4H_8NO_3$ | 118.11 |
| 616 | Cysteine | Cys | $C_3H_6NO_2S$ | 120.15 |
| 617 | Methionine | Met | $C_5H_{10}NO_2S$ | 148.20 |
| 618 | Asparatic acid | Asp | $C_4H_6NO_4$ | 132.09 |
| 619 | Glutamic acid | Glu | $C_5H_8NO_4$ | 146.12 |
| 620 | Asparagine | Asn | $C_4H_7N_2O_3$ | 131.11 |
| 621 | Glutamine | Gln | $C_5H_9N_2O_3$ | 145.14 |
| 622 | Lysine | Lys | $C_6H_{13}N_2O_2$ | 145.18 |
| 623 | Arginine | Arg | $C_6H_{13}N_4O_2$ | 173.19 |
| 624 | Histidine | His | $C_6H_8N_3O_2$ | 154.15 |
| 625 | Proline or (S)-2-pyrrolidinecarboxylic acid | Pro | $C_5H_8NO_2$ | 114.12 |
| 626 | Phenylananine | Phe | $C_9H_{10}NO_2$ | 164.18 |
| 627 | Tryptophane | Trp | $C_{11}H_{11}N_2O_2$ | 203.22 |
| 628 | Tyrosine | Tyr | $C_9H_{10}NO_3$ | 180.18 |
| 629 | Bicarbonate | $HCO_3$ | $HCO_3$ | 61.02 |
| 630 | Crotonic acid | Crot | $C_4H_5O_2$ | 85.08 |
| 631 | α-Chloride-acetate | $ClCH_2CO_2$ | $C_2H_2O_2Cl$ | 93.49 |
| 632 | Propionate | $CH_3CH_2CO_2$ | $C_3H_5O_2$ | 73.07 |
| 633 | Butyrate | $CH_3(CH_2)_2CO_2$ | $C_4H_7O_2$ | 87.10 |
| 634 | Glycolate | $CH_2(OH)CO_2$ | $C_2H_3O_3$ | 115.06 |
| 635 | Hydrogen maleate | M | $C_4H_3O_4$ | 116.07 |
| 636 | Hydrogen phthalate | P | $C_8H_5O_4$ | 165.15 |
| 71 | Tri(trifluoromethylsulfonyl)methide | Me or $Tf_3C$ | $C_4F_9O_6S_3$ | 411.22 |
| 72 | Tricyanomethanide | $C(CN)_3$ | $C_4N_3$ | 90.06 |
| 73 | Methylxanthate | [Xan] | $C_2H_3OS_2$ | 107.18 |
| 74 | Diethyldithiocarbamate | [dtc] | $C_5H_{10}NS_2$ | 148.27 |
| 81 | Tetrachloroaluminate | $AlCl_4$ | $Cl_4Al$ | 168.79 |
| 82 | Hydrofluororide anions($H_2F_3^-$:$H_3F_4^-$=7:3) | $F(HF)_{2\cdot3}$ | $H_{2\cdot3}F_{3\cdot3}$ | 65.01 |
| 83 | Hexafluoroniobate | $NbF_6$ | $F_6Nb$ | 206.90 |
| 84 | Hexafluorotantalate | $TaF_6$ | $F_6Ta$ | 294.94 |
| 85 | Hexafluoroarsenate | $AsF_6$ | $F_6As$ | 188.91 |
| 86 | Hexafluoroantimonate | $SbF_6$ | $SbF_6$ | 235.75 |
| 88 | Oxypentafluorotungstate | $WOF_5$ | $WOF_5$ | 294.83 |
| 89 | Tetrachlorogalldate | $[GaCl_4]$ | $Cl_4Ga$ | 211.54 |
| 810 | Tetrachloroindate | $[InCl_4]$ | $Cl_4In$ | 256.63 |
| 811 | Tetrachloroferrate | $[FeCl_4]$ | $Cl_4Fe$ | 197.66 |
| 91 | $[La(TiW_{11}O_{39})_2]$ | $[La(TiW_{11}O_{39})_2]^{13-}$ | $LaTi_2W_{22}O_{78}$ | 5527.07 |
| 92 | $[Ce(TiW_{11}O_{39})_2]$ | $[Ce(TiW_{11}O_{39})_2]^{13-}$ | $CeTi_2W_{22}O_{78}$ | 5528.28 |
| 93 | $[Pr(TiW_{11}O_{39})_2]$ | $[Pr(TiW_{11}O_{39})_2]^{13-}$ | $PrTi_2W_{22}O_{78}$ | 5529.07 |
| 94 | $[Sm(TiW_{11}O_{39})_2]$ | $[Sm(TiW_{11}O_{39})_2]^{13-}$ | $SmTi_2W_{22}O_{78}$ | 5538.53 |
| 95 | $[Gd(TiW_{11}O_{39})_2]$ | $[Gd(TiW_{11}O_{39})_2]^{13-}$ | $GdTi_2W_{22}O_{78}$ | 5545.42 |
| 96 | $[Dy(TiW_{11}O_{39})_2]$ | $[Dy(TiW_{11}O_{39})_2]^{13-}$ | $DyTi_2W_{22}O_{78}$ | 5550.67 |
| 97 | $[Er(TiW_{11}O_{39})_2]$ | $[Er(TiW_{11}O_{39})_2]^{13-}$ | $ErTi_2W_{22}O_{78}$ | 5555.43 |
| 98 | $[Tm(TiW_{11}O_{39})_2]$ | $[Tm(TiW_{11}O_{39})_2]^{13-}$ | $TmTi_2W_{22}O_{78}$ | 5557.10 |
| 99 | $[Yb(TiW_{11}O_{39})_2]$ | $[Yb(TiW_{11}O_{39})_2]^{13-}$ | $YbTi_2W_{22}O_{78}$ | 5561.21 |
| 1001 | $[CrTiW_{11}O_{39}]$ | $[CrTiW_{11}O_{39}]^{5-}$ | $CrTiW_{11}O_{39}$ | 2746.08 |
| 1002 | $[MnTiW_{11}O_{39}]$ | $[MnTiW_{11}O_{39}]^{5-}$ | $MnTiW_{11}O_{39}$ | 2749.02 |

Continued

Table 1.3
Information of anions—cont'd

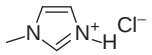
| ID | Name | Typical Abbreviation | Formula | M/g $mol^{-1}$ |
|---|---|---|---|---|
| 1003 | $[FeTiW_{11}O_{39}]$ | $[FeTiW_{11}O_{39}]^{5-}$ | $FeTiW_{11}O_{39}$ | 2749.93 |
| 1004 | $[ZnTiW_{11}O_{39}]$ | $[ZnTiW_{11}O_{39}]^{6-}$ | $ZnTiW_{11}O_{39}$ | 2759.49 |
| 1101 | 5-Nitrotetrazolate | Ntet | $CN_5O_2$ | 114.04 |
| 1201 | 4,5-Dinitroimidazolate | Nlmi | $C_3HN_4O_4$ | 157.06 |
| 1301 | 3-Nitro-1,2,4-triazolate | Ntri | $C_2HN_4O_2$ | 113.05 |
| 1401 | 1,1,1-Trifluoro-2,4-pentanedionate | $(CF_3CO)$-CH-$(COCH_3)$ | $C_5H_4F_3O_2$ | 153.08 |
| 1402 | 1,1,1,5,5,5-Hexafluoro-2,4-pentanedionate | $(CF_3CO)_2CH$ | $C_5HF_6O_2$ | 207.05 |
| 1403 | 2,2-Dimethyl-6,6,7,7,8,8,8-heptafluoro-3,5-octanedionate | $(Me_3CCO)$-CH-$(CO(CF_2)_2CF_3)$ | $C_{10}H_{10}F_7O_2$ | 295.17 |
| 1404 | 4,4,4-Trifluoro-1-(2-furyl)-1,3-butanedionate | $(CF_3CO)$-CH-(COfuran) | $C_8H_4F_3O_3$ | 205.11 |
| 1405 | 4,4,4-trifluoro-1-(2-thenoyl)-1,3-butanedionate | $(CF_3CO)$-CH-(COthiophene) | $C_8H_4F_3O_2S$ | 221.18 |
| 1501 | Nitrodithioacetate | $[K\text{-salt}]^{2-}$ | $C_2HNO_2S_2$ | 135.17 |
| 1502 | Dithiomaleonitrile | $[dtmn]^{2-}$ | $C_4N_2S_2$ | 140.19 |
| 1503 | Thiocyanate | [SCN] | SCN | 58.08 |
| 1504 | Thiosalicylate | TS | $C_7H_5O_2S$ | 153.18 |
| 1505 | Hexanoate | Hex | $C_6H_{11}O_2$ | 115.15 |
| 1601 | Bis-dithiomaleonitrile cobalt(II) | $[Co(dtmn)_2]^{2-}$ | $C_8N_4S_4Co$ | 339.31 |
| 1602 | Bis-dithiomaleonitrile nickel(II) | $[Ni(dtmn)_2]^{2-}$ | $C_8N_4S_4Ni$ | 339.07 |
| 1603 | Tetra-dicyanoamides cobalt(II) | $[Co(N(CN)_2)_4]^{2-}$ | $C_8N_{12}Co$ | 323.10 |
| 1604 | Tetra-thiocynate cobalt(II) | $[Co(NCS)_4]^{2-}$ | $C_4N_4S_4Co$ | 291.27 |
| 1605 | Tetra-selenocyno cobalt(II) | $[Co(NCSe)_4]^{2-}$ | $C_4N_4Se_4Co$ | 478.84 |
| 1606 | Hexa-thiocynate nickel(IV) | $[Ni(NCS)_6]^{2-}$ | $C_6N_6S_6Ni$ | 407.19 |
| 1607 | Hexa-cyanide iron(IV) | $[Fe(CN)_6]^{4-}$ | $C_6N_6Fe$ | 211.95 |
| 1608 | Bis-dicarbollyl cobalt(III) | $[CoCB]^-$ | $B_{18}C_4H_{22}Co$ | 323.75 |

# 2 Imidazolium

## 2.1. 1-Alkyl imidazolium

### 11-11: 1-Methylimidazolium chloride

**Abbreviation**: $[C_1Im]Cl$
**Molecular Formula**: $C_4H_7ClN_2$
**Molar Mass**: 118.56
**Structure**:

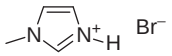


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 345.15 [1] |

### 11-12: 1-Methylimidazolium bromide

**Abbreviation**: $[C_1Im]Br$
**Molecular Formula**: $C_4H_7BrN_2$
**Molar Mass**: 163.02
**Structure**:

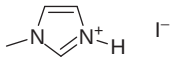


**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 314.15 [1] | 213.15 [1] |

### 11-13: 1-Methylimidazolium iodine

**Abbreviation**: $[C_1Im]I$
**Molecular Formula**: $C_4H_7IN_2$
**Molar Mass**: 210.02
**Structure**:

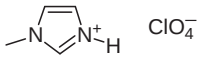


**Character**:
**Application**:

| $\eta_D$ (cp) |
|---|
| 1800 [2] |

### 11-14: 1-Methylimidazolium perchlorate

**Abbreviation**: $[C_1Im][ClO_4]$
**Molecular Formula**: $C_4H_7ClN_2O_4$
**Molar Mass**: 182.56
**Structure**:

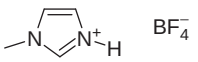


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 430.15 [1] |

### 11-21: 1-Methylimidazolium tetrafluoroborate

**Abbreviation**: $[C_1Im][BF_4]$
**Molecular Formula**: $C_4H_7BF_4N_2$
**Molar Mass**: 169.92
**Structure**:

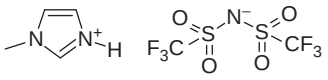


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 310.15 [1]<br>325.55 [3] |

### 11-31: 1-Methylimidazolium bis((trifluoromethyl) sulfonyl)imide

**Abbreviation**: $[C_1Im][TFSI]$, $[C_1Im][NTf_2]$, $[C_1Im][Tf_2N]$
**Molecular Formula**: $C_6H_7F_6N_3O_4S_2$
**Molar Mass**: 363.26
**Structure**:



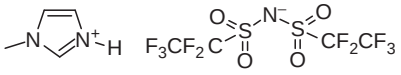
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 282.15 [1] | 189.15 [1] |

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 81 [1] | 298.15 |

### 11-33: 1-Methylimidazolium bis((perfluoroethane) sulfonyl)imide

**Abbreviation**: $[C_1Im][BETI]$
**Molecular Formula**: $C_8H_7F_{10}N_3O_4S_2$
**Molar Mass**: 463.27
**Structure**:



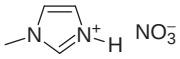
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 284.15 [1] | 200.15 [1] |

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 218 [1] | 298.15 |

### 11-39: 1-Methylimidazolium nitrate

**Abbreviation**: $[C_1Im][NO_3]$
**Molecular Formula**: $C_4H_7N_3O_3$
**Molar Mass**: 145.12
**Structure**:

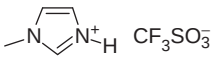


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 343.15 [1] |

### 11-43: 1-Methylimidazolium trifluoromethanesulfonate

**Abbreviation**: $[C_1Im][TfO]$
**Molecular Formula**: $C_5H_7F_3N_2O_3S$
**Molar Mass**: 232.18
**Structure**:

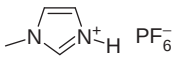


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 357.15 [1] |

### 11-51: 1-Methylimidazolium hexafluorophosphate

**Abbreviation**: $[C_1Im][PF_6]$
**Molecular Formula**: $C_4H_7F_6N_2P$
**Molar Mass**: 228.08
**Structure**:



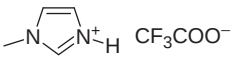
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 389.15 [1] | 269.15 [1] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.0316 ± 0.0061 [4] | 298.15 |

### 11-61: 1-Methylimidazolium trifluoroacetate

**Abbreviation**: $[C_1Im][CF_3COO]$
**Molecular Formula**: $C_6H_7F_3N_2O_2$
**Molar Mass**: 196.13
**Structure**:



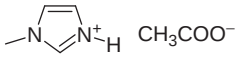
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 324.15 [5] |

| $K$ (S/m) |
|---|
| 0.1 [5] |

### 11-63: 1-Methylimidazolium acetate

**Abbreviation**: $[C_1Im][OAc]$
**Molecular Formula**: $C_6H_{10}N_2O_2$
**Molar Mass**: 142.16
**Structure**:



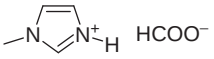
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 250.15 [5] | 175.15 [5] |

| $K$ (S/m) | $\eta_D$ (cp) |
|---|---|
| 0.4 [5] | 5.6 [5] |

### 11-65: 1-Methylimidazolium formate

**Abbreviation**: $[C_1Im][HCO_2]$
**Molecular Formula**: $C_5H_8N_2O_2$
**Molar Mass**: 128.13
**Structure**:



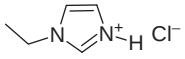
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 174.15 [5] |

| $K$ (S/m) | $\eta_D$ (cp) |
|---|---|
| 2 [5] | 6.7 [5] |

### 12-11: 1-Ethylimidazolium chloride

**Abbreviation**: $[C_2Im]Cl$
**Molecular Formula**: $C_5H_9ClN_2$
**Molar Mass**: 132.59
**Structure**:

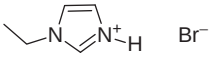


**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 331.15 [1] | 216.15 [1] |

### 12-12: 1-Ethylimidazolium bromide

**Abbreviation**: $[C_2Im]Br$
**Molecular Formula**: $C_5H_9BrN_2$
**Molar Mass**: 177.04
**Structure**:

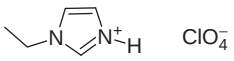


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 333.15 [1] |

### 12-14: 1-Ethylimidazolium perchlorate

**Abbreviation**: $[C_2Im][ClO_4]$
**Molecular Formula**: $C_5H_9ClN_2O_4$
**Molar Mass**: 196.59
**Structure**:



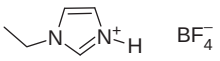
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 294.15 [1] | 192.15 [1] |

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 112 [1] | 298.15 |

### 12-21: 1-Ethylimidazolium tetrafluoroborate

**Abbreviation**: $[C_2Im][BF_4]$
**Molecular Formula**: $C_5H_9BF_4N_2$
**Molar Mass**: 183.94
**Structure**:



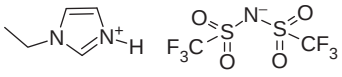
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 186.15 [1] | 582.15 [1] |

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 41 [1] | 298.15 |

### 12-31: 1-Ethylimidazolium bis((trifluoromethyl)sulfonyl) imide

**Abbreviation**: $[C_2Im][TFSI]$, $[C_2Im][NTf_2]$, $[C_2Im][Tf_2N]$
**Molecular Formula**: $C_7H_9F_6N_3O_4S_2$
**Molar Mass**: 377.28
**Structure**:



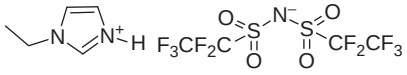
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 184.15 [1] | 686.15 [1] |

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 54 [1] | 298.15 |

### 12-33: 1-Ethylimidazolium bis((perfluoroethane)sulfonyl) imide

**Abbreviation**: $[C_2Im][BETI]$
**Molecular Formula**: $C_9H_9F_{10}N_3O_4S_2$
**Molar Mass**: 477.3
**Structure**:



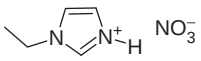
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 187.15 [1] | 675.15 [1] |

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 133 [1] | 298.15 |

### 12-39: 1-Ethylimidazolium nitrate

**Abbreviation**: $[C_2Im][NO_3]$
**Molecular Formula**: $C_5H_9N_3O_3$
**Molar Mass**: 159.14
**Structure**:

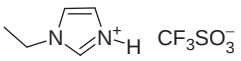


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 304.15 [1] |

### 12-43: 1-Ethylimidazolium trifluoromethanesulfonate

**Abbreviation**: $[C_2Im][TfO]$
**Molecular Formula**: $C_6H_9F_3N_2O_3S$
**Molar Mass**: 246.21
**Structure**:



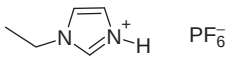
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 281.15 [1] | 643.15 [1] |

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 58 [1] | 298.15 |

### 12-51: 1-Ethylimidazolium hexafluorophosphate

**Abbreviation**: $[C_2Im][PF_6]$
**Molecular Formula**: $C_5H_9F_6N_2P$
**Molar Mass**: 242.1
**Structure**:



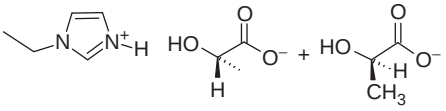
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 211.15 [1] |

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 550 [1] | 298.15 |

### 12-67: 1-Ethylimidazolium DL-lactate

**Abbreviation**: $[C_2Im][DL\text{-lactate}]$
**Molecular Formula**: $C_8H_{14}N_2O_3$
**Molar Mass**: 186.21
**Structure**:



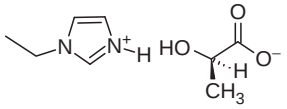
**Character**: Liquid, protic ionic liquids
**Application**:

| $T_d$ (K) |
|---|
| 480.65 [6] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 1.1081 [6] | 293.15 | 0.0795 [6] | 293.15 |

### 12-68: 1-Ethylimidazolium L-lactate

**Abbreviation**: $[C_2Im][L\text{-lactate}]$
**Molecular Formula**: $C_8H_{14}N_2O_3$
**Molar Mass**: 186.21
**Structure**:



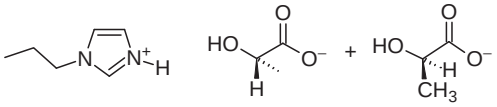
**Character**: Liquid, protic ionic liquids
**Application**:

| $T_d$ (K) |
|---|
| 471.65 [6] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 1.1098 [6] | 293.15 | 0.0744 [6] | 293.15 |

### 14-67: 1-Propylimidazolium DL-lactate

**Abbreviation**: $[C_3Im][DL\text{-lactate}]$
**Molecular Formula**: $C_9H_{16}N_2O_3$
**Molar Mass**: 200.24
**Structure**:



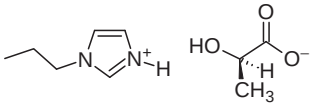
**Character**: Liquid, protic ionic liquids
**Application**:

| $T_d$ (K) |
|---|
| 484.15 [6] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 1.0825 [6] | 293.15 | 0.062 [6] | 293.15 |

### 14-68: 1-Propylimidazolium L-lactate

**Abbreviation**: [$C_3$Im][L-lactate]
**Molecular Formula**: $C_9H_{16}N_2O_3$
**Molar Mass**: 200.24
**Structure**:



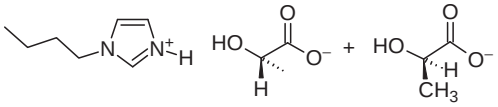
**Character**: Liquid, protic ionic liquids
**Application**:

| $T_d$ (K) |
|---|
| 481.95 [6] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 1.09 [6] | 293.15 | 0.0545 [6] | 293.15 |

### 15-67: 1-Butylimidazolium DL-lactate

**Abbreviation**: [$C_4$Im][DL-lactate]
**Molecular Formula**: $C_{10}H_{18}N_2O_3$
**Molar Mass**: 214.26
**Structure**:



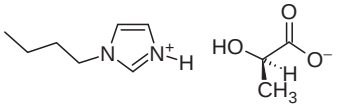
**Character**: Liquid, protic ionic liquids
**Application**:

| $T_d$ (K) |
|---|
| 517.65 [6] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 1.0595 [6] | 293.15 | 0.0398 [6] | 293.15 |

### 15-68: 1-Butylimidazolium L-lactate

**Abbreviation**: [$C_4$Im][L-lactate]
**Molecular Formula**: $C_{10}H_{18}N_2O_3$
**Molar Mass**: 214.26
**Structure**:



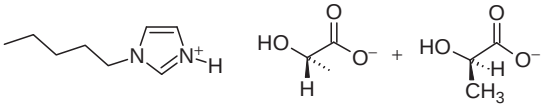
**Character**: Liquid, protic ionic liquids
**Application**:

| $T_d$ (K) |
|---|
| 511.65 [6] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 1.0625 [6] | 293.15 | 0.0362 [6] | 293.15 |

### 16-67: 1-Pentylimidazolium DL-lactate

**Abbreviation**: [$C_5$Im][DL-lactate]
**Molecular Formula**: $C_{11}H_{20}N_2O_3$
**Molar Mass**: 228.29
**Structure**:



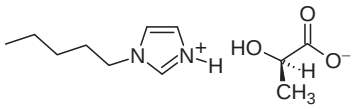
**Character**: Liquid, protic ionic liquids
**Application**:

| $T_d$ (K) |
|---|
| 501.65 [6] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 1.0413 [6] | 293.15 | 0.0285 [6] | 293.15 |

### 16-68: 1-Pentylimidazolium L-lactate

**Abbreviation**: [$C_5$Im][L-lactate]
**Molecular Formula**: $C_{11}H_{20}N_2O_3$
**Molar Mass**: 228.29
**Structure**:



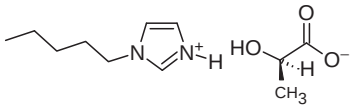
**Character**: Liquid, protic ionic liquids
**Application**:

| $T_d$ (K) |
|---|
| 499.95 [6] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 1.0451 [6] | 293.15 | 0.0232 [6] | 293.15 |

### 17-68: 1-Hexylimidazolium L-lactate

**Abbreviation**: [$C_6$Im][L-lactate]
**Molecular Formula**: $C_{12}H_{22}N_2O_3$
**Molar Mass**: 242.31
**Structure**:



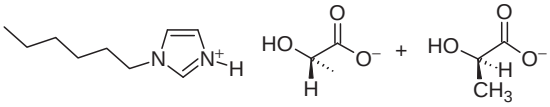
**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 495.65 [6] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 1.0383 [6] | 293.15 | 0.0206 [6] | 293.15 |

### 17-67: 1-Hexylimidazolium DL-lactate

**Abbreviation**: [$C_6$Im][DL-lactate]
**Molecular Formula**: $C_{12}H_{22}N_2O_3$
**Molar Mass**: 242.31
**Structure**:



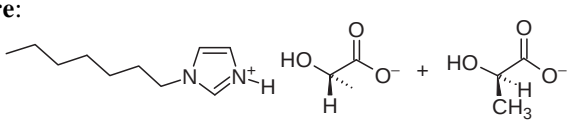
**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 499.15 [6] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 1.0374 [6] | 293.15 | 0.0246 [6] | 293.15 |

### 18-67: 1-Heptylimidazolium DL-lactate

**Abbreviation**: [$C_7$Im][DL-lactate]
**Molecular Formula**: $C_{13}H_{24}N_2O_3$
**Molar Mass**: 256.34
**Structure**:



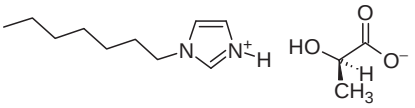
**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 497.65 [6] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 1.0273 [6] | 293.15 | 0.0227 [6] | 293.15 |

### 18-68: 1-Heptylimidazolium L-lactate

**Abbreviation**: [$C_7$Im][L-lactate]
**Molecular Formula**: $C_{13}H_{24}N_2O_3$
**Molar Mass**: 256.34
**Structure**:



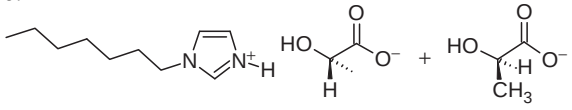
**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 494.95 [6] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 1.0313 [6] | 293.15 | 0.0192 [6] | 293.15 |

### 19-67: 1-Octylimidazolium DL-lactate

**Abbreviation**: [$C_8$Im][DL-lactate]
**Molecular Formula**: $C_{14}H_{26}N_2O_3$
**Molar Mass**: 270.37
**Structure**:



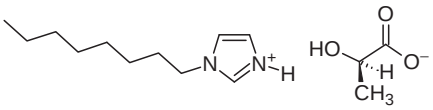
**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 496.15 [6] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 1.0026 [6] | 293.15 | 0.0195 [6] | 293.15 |

### 19-68: 1-Octylimidazolium L-lactate

**Abbreviation**: [$C_8$Im][L-lactate]
**Molecular Formula**: $C_{14}H_{26}N_2O_3$
**Molar Mass**: 270.37
**Structure**:



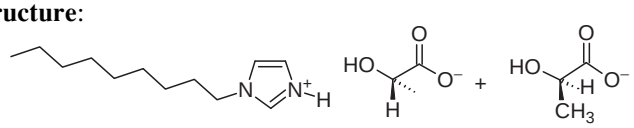
**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 493.65 [6] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 1.0055 [6] | 293.15 | 0.0178 [6] | 293.15 |

### 110-67: 1-Nonylimidazolium DL-lactate

**Abbreviation**: [$C_9$Im][DL-lactate]
**Molecular Formula**: $C_{15}H_{28}N_2O_3$
**Molar Mass**: 284.39
**Structure**:



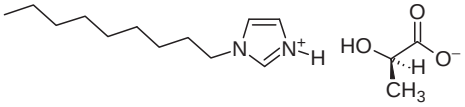
**Character**:
**Application**: Anti-microbial

| $T_d$ (K) |
|---|
| 482.15 [6] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 0.9908 [6] | 293.15 | 0.0174 [6] | 293.15 |

### 110-68: 1-Nonylimidazolium L-lactate

**Abbreviation**: [$C_9$Im][L-lactate]
**Molecular Formula**: $C_{15}H_{28}N_2O_3$
**Molar Mass**: 284.39
**Structure**:



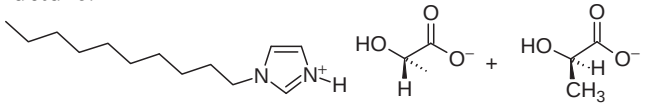
**Character**:
**Application**: Anti-microbial

| $T_d$ (K) |
|---|
| 477.35 [6] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 0.9996 [6] | 293.15 | 0.0155 [6] | 293.15 |

### 111-67: 1-Decylimidazolium DL-lactate

**Abbreviation**: [$C_{10}$Im][DL-lactate]
**Molecular Formula**: $C_{16}H_{30}N_2O_3$
**Molar Mass**: 298.42
**Structure**:



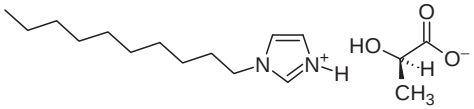
**Character**:
**Application**: Anti-microbial

| $T_d$ (K) |
|---|
| 479.65 [6] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|---|---|
| 0.9793 [6] | 293.15 | 0.0138 [6] | 293.15 | 218 [6] | 293.15 |

### 111-68: 1-Decylimidazolium L-lactate

**Abbreviation**: [$C_{10}$Im][L-lactate]
**Molecular Formula**: $C_{16}H_{30}N_2O_3$
**Molar Mass**: 298.42
**Structure**:



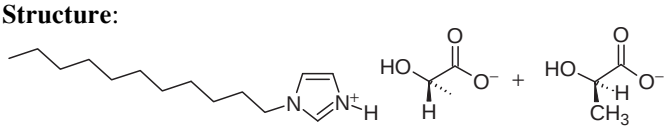
**Character**:
**Application**: Anti-microbial

| $T_d$ (K) |
|---|
| 471.95 [6] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|---|---|
| 0.9879 [6] | 293.15 | 0.0121 [6] | 293.15 | 142 [6] | 293.15 |

### 112-67: 1-Undecylimidazolium DL-lactate

**Abbreviation**: [$C_{11}$Im][DL-lactate]
**Molecular Formula**: $C_{17}H_{32}N_2O_3$
**Molar Mass**: 312.45
**Structure**:

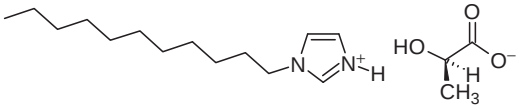


**Character**:
**Application**: Anti-microbial

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 0.9685 [6] | 293.15 | 0.0094 [6] | 293.15 |

### 112-68: 1-Undecylimidazolium L-lactate

**Abbreviation**: $[C_{11}Im][L\text{-lactate}]$
**Molecular Formula**: $C_{17}H_{32}N_2O_3$
**Molar Mass**: 312.45
**Structure**:



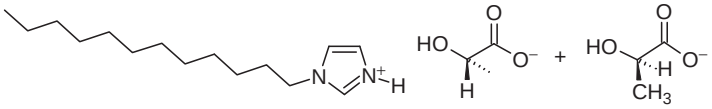
**Character**:
**Application**: Anti-microbial

| $T_d$ (K) |
|---|
| 467.55 [6] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 0.9714 [6] | 293.15 | 0.0071 [6] | 293.15 |

### 113-67: 1-Dodecylimidazolium DL-lactate

**Abbreviation**: $[C_{12}Im][DL\text{-lactate}]$
**Molecular Formula**: $C_{18}H_{34}N_2O_3$
**Molar Mass**: 326.47
**Structure**:



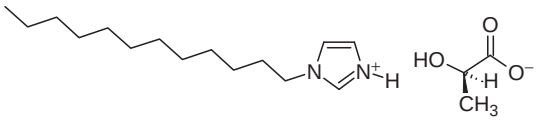
**Character**:
**Application**: Anti-microbial

| $T_d$ (K) |
|---|
| 467.15 [6] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 0.9591 [6] | 293.15 | 0.0089 [6] | 293.15 |

### 113-68: 1-Dodecylimidazolium L-lactate

**Abbreviation**: $[C_{12}Im][L\text{-lactate}]$
**Molecular Formula**: $C_{18}H_{34}N_2O_3$
**Molar Mass**: 326.47
**Structure**:



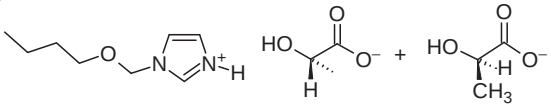
**Character**:
**Application**: Anti-microbial

| $T_d$ (K) |
|---|
| 464.45 [6] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 0.9626 [6] | 293.15 | 0.0066 [6] | 293.15 |

### 114-67: 1-Butyloxymethylimidazolium DL-lactate

**Abbreviation**: $[C_4OCIm][DL\text{-Lactate}]$
**Molecular Formula**: $C_{11}H_{20}N_2O_4$
**Molar Mass**: 244.29
**Structure**:



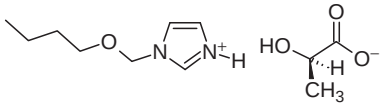
**Character**:
**Application**: Anti-microbial

| $T_d$ (K) |
|---|
| 461.15 [6] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 1.064 [6] | 293.15 | 0.0281 [6] | 293.15 |

### 114-68: 1-Butyloxymethylimidazolium L-lactate

**Abbreviation**: [$C_4$OCIm][L-Lactate]
**Molecular Formula**: $C_{11}H_{20}N_2O_4$
**Molar Mass**: 244.29
**Structure**:



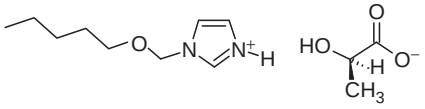
**Character**:
**Application**: Anti-microbial

| $T_d$ (K) |
|---|
| 489.75 [6] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 1.0695 [6] | 293.15 | 0.026 [6] | 293.15 |

### 115-68: 1-Pentyloxymethylimidazolium L-lactate

**Abbreviation**: [$C_5$OCIm][L-Lactate]
**Molecular Formula**: $C_{12}H_{22}N_2O_4$
**Molar Mass**: 258.31
**Structure**:



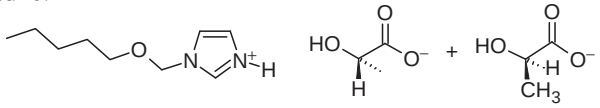
**Character**:
**Application**: Anti-microbial

| $T_d$ (K) |
|---|
| 466.35 [6] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 1.053 [6] | 293.15 | 0.0212 [6] | 293.15 |

### 115-67: 1-Pentyloxymethylimidazolium DL-lactate

**Abbreviation**: [$C_5$OCIm][DL-Lactate]
**Molecular Formula**: $C_{12}H_{22}N_2O_4$
**Molar Mass**: 258.31
**Structure**:



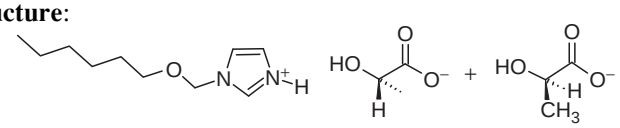
**Character**:
**Application**: Anti-microbial

| $T_d$ (K) |
|---|
| 470.15 [6] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 1.049 [6] | 293.15 | 0.0235 [6] | 293.15 |

### 116-67: 1-Hexyloxymethylimidazolium DL-lactate

**Abbreviation**: [$C_6$OCIm][DL-Lactate]
**Molecular Formula**: $C_{13}H_{24}N_2O_4$
**Molar Mass**: 272.34
**Structure**:



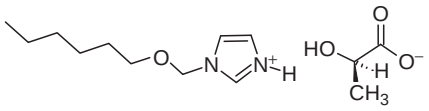
**Character**:
**Application**: Anti-microbial

| $T_d$ (K) |
|---|
| 484.15 [6] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 1.0252 [6] | 293.15 | 0.0215 [6] | 293.15 |

### 116-68: 1-Hexyloxymethylimidazolium L-lactate

**Abbreviation**: [$C_6$OCIm][L-Lactate]
**Molecular Formula**: $C_{13}H_{24}N_2O_4$
**Molar Mass**: 272.34
**Structure**:



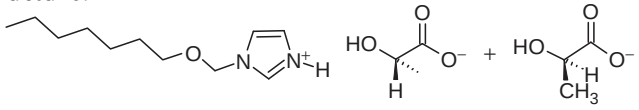
**Character**:
**Application**: Anti-microbial

| $T_d$ (K) |
|---|
| 480.95 [6] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 1.035 [6] | 293.15 | 0.0186 [6] | 293.15 |

### 117-67: 1-Heptyloxymethylimidazolium DL-lactate

**Abbreviation**: [$C_7$OCIm][DL-Lactate]
**Molecular Formula**: $C_{14}H_{26}N_2O_4$
**Molar Mass**: 286.37
**Structure**:



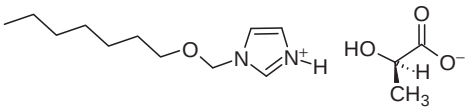
**Character**:
**Application**: Anti-microbial

| $T_d$ (K) |
|---|
| 497.65 [6] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 1.0207 [6] | 293.15 | 0.0184 [6] | 293.15 |

### 117-68: 1-Heptyloxymethylimidazolium L-lactate

**Abbreviation**: [$C_7$OCIm][L-Lactate]
**Molecular Formula**: $C_{14}H_{26}N_2O_4$
**Molar Mass**: 286.37
**Structure**:



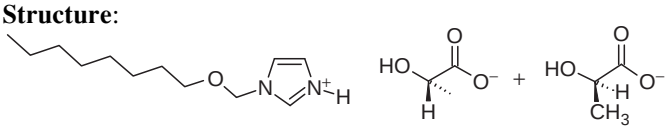
**Character**:
**Application**: Anti-microbial

| $T_d$ (K) |
|---|
| 491.25 [6] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 1.0254 [6] | 293.15 | 0.0162 [6] | 293.15 |

### 118-67: 1-Octyloxymethylimidazolium DL-lactate

**Abbreviation**: [$C_8$OCIm][DL-Lactate]
**Molecular Formula**: $C_{15}H_{28}N_2O_4$
**Molar Mass**: 300.39
**Structure**:



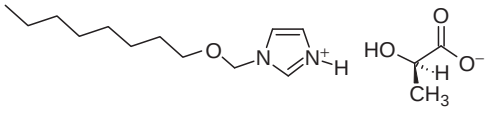
**Character**:
**Application**: Anti-microbial

| $T_d$ (K) |
|---|
| 501.15 [6] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 1.0105 [6] | 293.15 | 0.0148 [6] | 293.15 |

### 118-68: 1-Octyloxymethylimidazolium L-lactate

**Abbreviation**: [$C_8$OCIm][L-Lactate]
**Molecular Formula**: $C_{15}H_{28}N_2O_4$
**Molar Mass**: 300.39
**Structure**:



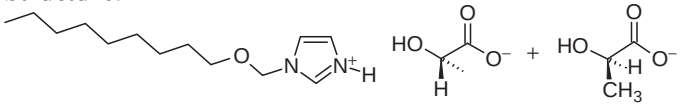
**Character**:
**Application**: Anti-microbial

| $T_d$ (K) |
|---|
| 496.45 [6] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 1.0147 [6] | 293.15 | 0.014 [6] | 293.15 |

### 119-67: 1-Nonyloxymethylimidazolium DL-lactate

**Abbreviation**: [$C_9$OCIm][DL-Lactate]
**Molecular Formula**: $C_{16}H_{30}N_2O_4$
**Molar Mass**: 314.42
**Structure**:



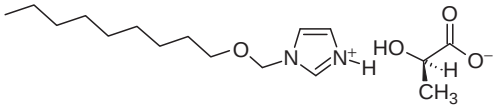
**Character**:
**Application**: Anti-microbial

| $T_d$ (K) |
|---|
| 511.15 [6] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 0.9906 [6] | 293.15 | 0.0137 [6] | 293.15 |

### 119-68: 1-Nonyloxymethylimidazolium L-lactate

**Abbreviation**: [$C_9$OCIm][L-Lactate]
**Molecular Formula**: $C_{16}H_{30}N_2O_4$
**Molar Mass**: 314.42
**Structure**:



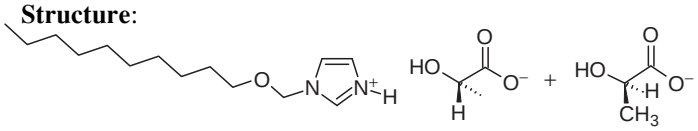
**Character**:
**Application**: Anti-microbial

| $T_d$ (K) |
|---|
| 503.95 [6] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 0.9992 [6] | 293.15 | 0.0128 [6] | 293.15 |

### 120-67: 1-Decyloxymethylimidazolium DL-lactate

**Abbreviation**: [$C_{10}$OCIm][DL-Lactate]
**Molecular Formula**: $C_{17}H_{32}N_2O_4$
**Molar Mass**: 328.45
**Structure**:



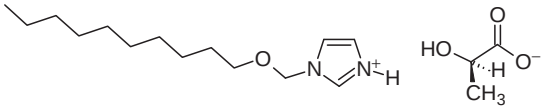
**Character**:
**Application**: Anti-microbial

| $T_d$ (K) |
|---|
| 480.65 [6] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 0.9861 [6] | 293.15 | 161 [6] | 293.15 | 0.0105 [6] | 293.15 |

### 120-68: 1-Decyloxymethylimidazolium L-lactate

**Abbreviation**: [$C_{10}$OCIm][L-Lactate]
**Molecular Formula**: $C_{17}H_{32}N_2O_4$
**Molar Mass**: 328.45
**Structure**:



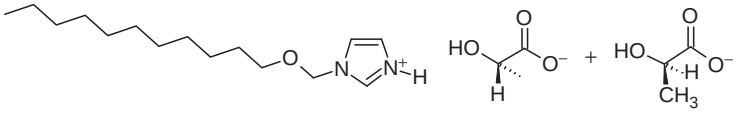
**Character**:
**Application**: Anti-microbial

| $T_d$ (K) |
|---|
| 474.95 [6] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 0.991 [6] | 293.15 | 120 [6] | 293.15 | 0.01 [6] | 293.15 |

### 121-67: 1-Undecyloxymethylimidazolium DL-lactate

**Abbreviation**: [$C_{11}$OCIm][DL-Lactate]
**Molecular Formula**: $C_{18}H_{34}N_2O_4$
**Molar Mass**: 342.47
**Structure**:



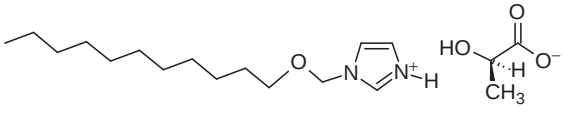
**Character**:
**Application**: Anti-microbial

| $T_d$ (K) |
|---|
| 495.15 [6] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 0.9854 [6] | 293.15 | 0.0099 [6] | 293.15 |

### 121-68: 1-Undecyloxymethylimidazolium L-lactate

**Abbreviation**: [$C_{11}$OCIm][L-Lactate]
**Molecular Formula**: $C_{18}H_{34}N_2O_4$
**Molar Mass**: 342.47
**Structure**:



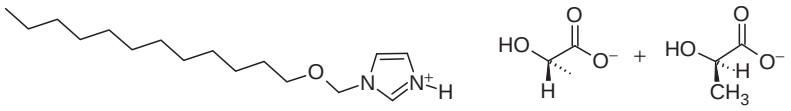
**Character**:
**Application**: Anti-microbial

| $T_d$ (K) |
|---|
| 489.25 [6] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 0.9875 [6] | 293.15 | 0.0095 [6] | 293.15 |

### 122-67: 1-Dodecyloxymethylimidazolium DL-lactate

**Abbreviation**: $[C_{12}OCIm][DL\text{-}Lactate]$
**Molecular Formula**: $C_{19}H_{36}N_2O_4$
**Molar Mass**: 356.5
**Structure**:



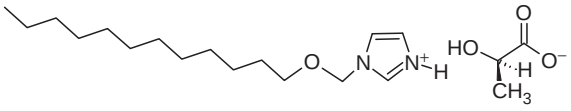
**Character**:
**Application**: Anti-microbial

| $T_d$ (K) |
|---|
| 518.65 [6] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 0.9804 [6] | 293.15 | 0.0091 [6] | 293.15 |

### 122-68: 1-Dodecyloxymethylimidazolium L-lactate

**Abbreviation**: $[C_{12}OCIm][L\text{-}Lactate]$
**Molecular Formula**: $C_{19}H_{36}N_2O_4$
**Molar Mass**: 356.5
**Structure**:



**Character**:
**Application**: Anti-microbial

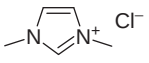
| $T_d$ (K) |
|---|
| 512.05 [6] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 0.9826 [6] | 293.15 | 0.0088 [6] | 293.15 |

## 2.2. 1,3-Dialkyl imidazolium

### 21-11: 1,3-Dimethylimidazolium chloride

**Abbreviation**: $[C_1MIm]Cl$, [mmim]Cl, [MeMeIm]Cl
**Molecular Formula**: $C_5H_9ClN_2$
**Molar Mass**: 132.59
**Structure**:



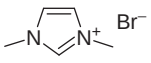

**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 398.15 [7, 8] |

| $\rho$ (g/cm$^3$) | $K$ (S/m) | $T$ (K) |
|---|---|---|
| 1.1225-1.1372 [8] | 11.874 ± 1.017 [8] | 298.15 |

### 21-12: 1,3-Dimethylimidazolium bromide

**Abbreviation**: $[C_1MIm]Br$, [mmim]Br, [MeMeIm][Br]
**Molecular Formula**: $C_5H_9BrN_2$
**Molar Mass**: 177.04
**Structure**:

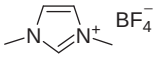



**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 382.65 [9] |

### 21-21: 1,3-Dimethylimidazolium tetrafluoroborate

**Abbreviation**: $[C_1Mim][BF_4]$
**Molecular Formula**: $C_5H_9BF_4N_2$
**Molar Mass**: 183.94
**Structure**:



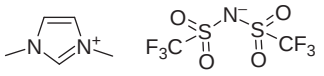

**Character**:
**Application**:

| $T_m$ (K) | $T_f$ (K) |
|---|---|
| 376.55 [3] | 346.75 [3] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.373 [10] | 295 |

### 21-31: 1,3-Dimethylimidazolium bis((trifluoromethyl) sulfonyl)imide

**Abbreviation**: $[C_1MIm][NTf_2]$, $[C_1MIm][TFSI]$, $[C_1MIm][Tf_2N]$
**Molecular Formula**: $C_7H_9F_6N_3O_4S_2$
**Molar Mass**: 377.28
**Structure**:



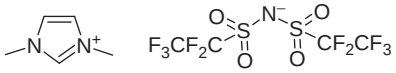
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 295.15 [11, 12] |

| $K$ (S/m) | $T$ (K) | $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $n$ | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 0.84 [11] | 293.15 | 1.559 [11, 12] | 295.15 | 44 [11, 12] | 293.15 | 1.422 [11, 12] | 293.15 |
| | | 1.580 [10] | 295 | | | | |

### 21-33: 1,3-Dimethylimidazolium bis((perfluoroethane) sulfonyl)imide

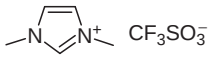
**Abbreviation**: $[C_1MIm][BETI]$
**Molecular Formula**: $C_9H_9F_{10}N_3O_4S_2$
**Molar Mass**: 477.3
**Structure**:



**Character**:
**Application**:

### 21-43: 1,3-Dimethylimidazolium trifluoromethanesulfonate

**Abbreviation**: $[C_1MIm][TfO]$
**Molecular Formula**: $C_6H_9F_3N_2O_3S$
**Molar Mass**: 246.21
**Structure**:

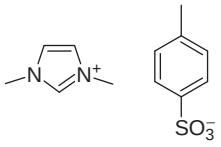


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 312.15 [11] |

### 21-47: 1,3-Dimethylimidazolium tosylate

**Abbreviation**: $[C_1MIm][Tos]$
**Molecular Formula**: $C_{12}H_{16}N_2O_3S$
**Molar Mass**: 268.33
**Structure**:

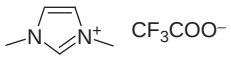


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 372.6 [13] |

### 21-61: 1,3-Dimethylimidazolium trifluoroacetate

**Abbreviation**: $[C_1MIm][TA]$, $[C_1MIm][CF_3CO_2]$
**Molecular Formula**: $C_7H_9F_3N_2O_2$
**Molar Mass**: 210.15
**Structure**:

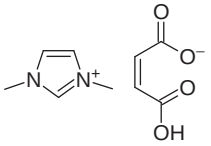


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 325.15 [11] |

### 21-635: 1,3-Dimethylimidazolium hydrogen maleate

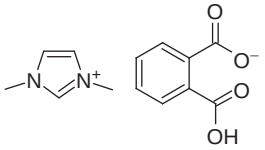
**Abbreviation**: $[C_1MIm]M$
**Molecular Formula**: $C_9H_{12}N_2O_4$
**Molar Mass**: 212.20
**Structure**:



**Character**:
**Application**: Electrolytes [14]

### 21-636: 1,3-Dimethylimidazolium hydrogen phthalate

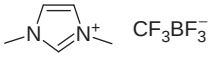
**Abbreviation**: $[C_1MIm]P$
**Molecular Formula**: $C_{13}H_{14}N_2O_4$
**Molar Mass**: 262.26
**Structure**:



**Character**:
**Application**: Electrolytes [14]

### 21-223: 1,3-Dimethylimidazolium trifluoromethyltrifluoroborate

**Abbreviation**: $[C_1MIm][CF_3BF_3]$
**Molecular Formula**: $C_6F_6H_9BN_2$
**Molar Mass**: 233.95
**Structure**:



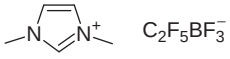
**Character**: Hydrophobic
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 288.15 [15] | 475.15 [15] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.40 [15] | 298.15 | 27 [15] | 298.15 | 1.55 [15] | 298.15 |

### 21-224: 1,3-Dimethylimidazolium pentafluoroethyltrifluoroborate

**Abbreviation**: $[C_1MIm][C_2F_5BF_3]$
**Molecular Formula**: $C_7F_8H_9BN_2$
**Molar Mass**: 283.96
**Structure**:



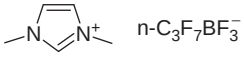
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 300.15 [15] | 563.15 [15] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.47 [15] | 298.15 | 33 [15] | 298.15 | 1.17 [15] | 298.15 |

### 21-225: 1,3-Dimethylimidazolium (heptafluoro-*n*-propyl) trifluoroborate

**Abbreviation**: $[C_1MIm][n\text{-}C_3F_7BF_3]$
**Molecular Formula**: $C_8F_{10}H_9BN_2$
**Molar Mass**: 333.97
**Structure**:



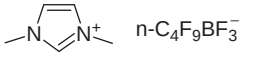
**Character**:
**Application**:

| $T_m$ (K) | $T_{s\text{-}s}$ (K) | $T_d$ (K) |
|---|---|---|
| 284.15 [15] | 265.15 [15] | 552.15 [15] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.55 [15] | 298.15 | 47 [15] | 298.15 | 0.73 [15] | 298.15 |

### 21-226: 1,3-Dimethylimidazolium (nonafluoro-*n*-butyl) trifluoroborate

**Abbreviation**: $[C_1MIm][n\text{-}C_4F_9BF_3]$
**Molecular Formula**: $C_9F_{12}H_9BN_2$
**Molar Mass**: 383.97
**Structure**:

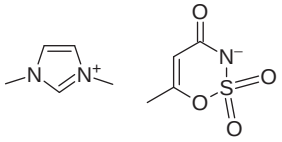


**Character**:
**Application**:

| $T_m$ (K) | $T_{s\text{-}s}$ (K) | $T_d$ (K) |
|---|---|---|
| 289.15 [15] | 209.15 [15] | 548.15 [15] |

### 21-315: 1,3-Dimethylimidazolium acesulfamate

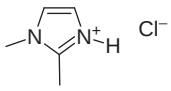
**Abbreviation**: [$C_1$MIm][Ace]
**Molecular Formula**: $C_9H_{13}N_3O_4S$
**Molar Mass**: 259.28
**Structure**:



**Character**:
**Application**: [16]

### 22-11: 1,2-Dimethylimidazolium chloride

**Abbreviation**: [DMIm]Cl
**Molecular Formula**: $C_5H_9ClN_2$
**Molar Mass**: 132.59
**Structure**:

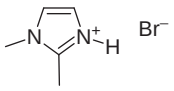


**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 454.15 [1] | 187.15 [1] |

### 22-12: 1,2-Dimethylimidazolium bromide

**Abbreviation**: [DMIm]Br
**Molecular Formula**: $C_5H_9BrN_2$
**Molar Mass**: 177.04
**Structure**:

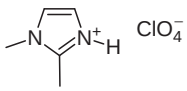


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 449.15 [1] |

### 22-14: 1,2-Dimethylimidazolium perchlorate

**Abbreviation**: [DMIm][$ClO_4$]
**Molecular Formula**: $C_5H_9ClN_2O_4$
**Molar Mass**: 196.59
**Structure**:

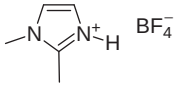


**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 337.15 [1] | 270.15 [1] |

### 22-21: 1,2-Dimethylimidazolium tetrafluoroborate

**Abbreviation**: [DMIm][$BF_4$]
**Molecular Formula**: $C_5H_9BF_4N_2$
**Molar Mass**: 183.94
**Structure**:



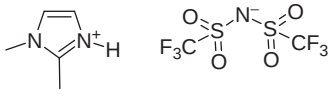
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 176.15 [1] |

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 100 [1] | 298.15 |

### 22-31: 1,2-Dimethylimidazolium bis((trifluoromethyl) sulfonyl)imide

**Abbreviation**: [DMIm][$NTf_2$], [DMIm][TFSI], [DMIm][$Tf_2N$]
**Molecular Formula**: $C_7H_9F_6N_3O_4S_2$
**Molar Mass**: 377.28
**Structure**:



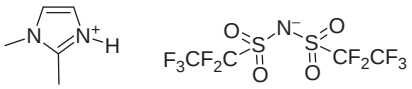
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 295.15 [1] | 194.15 [1] |

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 100 [1] | 298.15 |

### 22-33: 1,2-Dimethylimidazolium bis((perfluoroethane) sulfonyl)imide

**Abbreviation**: [DMIm][BETI]
**Molecular Formula**: $C_9H_9F_{10}N_3O_4S_2$
**Molar Mass**: 477.3
**Structure**:

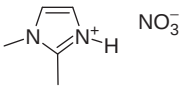


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 288.15 [1] |

### 22-39: 1,2-Dimethylimidazolium nitrate

**Abbreviation**: [DMIm][$NO_3$]
**Molecular Formula**: $C_5H_9N_3O_3$
**Molar Mass**: 159.14
**Structure**:

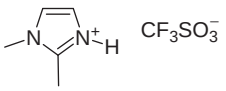


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 357.15 [1] |

### 22-43: 1,2-Dimethylimidazolium trifluoromethanesulfonate

**Abbreviation**: [DMIm][TfO]
**Molecular Formula**: $C_6H_9F_3N_2O_3S$
**Molar Mass**: 246.21
**Structure**:

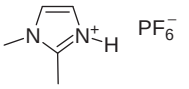


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 392.15 [1] |

### 22-51: 1,2-Dimethylimidazolium hexafluorophosphate

**Abbreviation**: [DMIm][$PF_6$]
**Molecular Formula**: $C_5H_9F_6N_2P$
**Molar Mass**: 242.1
**Structure**:

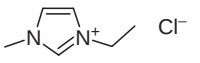


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 388.15 [1] |

### 23-11: 1-Ethyl-3-methylimidazolium chloride

**Abbreviation**: [$C_2$MIm]Cl, [emim]Cl, [EMIM]Cl
**Molecular Formula**: $C_6H_{11}ClN_2$
**Molar Mass**: 146.62
**Structure**:



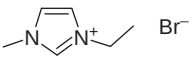
**Character**:
**Application**:

| $T_m$ (K) | $T_f$ (K) | $T_d$ (K) |
|---|---|---|
| 357.15 [8] | 306.15 [17] | 554.15 [17] |
| 360.15 [7] | | 558.15 [17] |
| 362.15 [17] | | |
| 353.15 [18] | | |

| $\rho$ (g/cm$^3$) | Log $P$ |
|---|---|
| 1.1120-1.1605 [8] | −1.82 |

### 23-12: 1-Ethyl-3-methylimidazolium bromide

**Abbreviation**: [$C_2$MIm]Br, [emim]Br, [EMIM]Br
**Molecular Formula**: $C_6H_{11}BrN_2$
**Molar Mass**: 191.07
**Structure**:

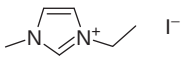


**Character**:
**Application**:

| $T_m$ (K) | $T_f$ (K) | $T_d$ (K) |
|---|---|---|
| 338.05 [9] | 303.15 [17] | 584.15 [17] |
| 352.15 [17] | | |

### 23-13: 1-Ethyl-3-methylimidazolium iodine

**Abbreviation**: $[C_2MIm]I$, [emim]I, [EMIM]I
**Molecular Formula**: $C_6H_{11}IN_2$
**Molar Mass**: 238.07
**Structure**:

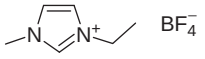


**Character**:
**Application**:

| $T_m$ (K) | $T_f$ (K) | $T_d$ (K) |
|---|---|---|
| 352.15 [17] | 312.15 [17] | 583.15 [17] |
| | | 576.15 [17] |

### 23-21: 1-Ethyl-3-methylimidazolium tetrafluoroborate

**Abbreviation**: $[C_2MIm][BF_4]$, [emim][$BF_4$], [EMIM][$BF_4$]
**Molecular Formula**: $C_6H_{11}BF_4N_2$
**Molar Mass**: 197.97
**Structure**:



**Synthesize Route**:
**Character**:
**Application**: Water content <50 ppm [15]

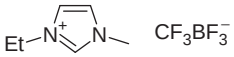
| $T_m$ (K) | $T_f$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|---|
| 287.57 ± 0.33 [19] | 222.65 [27] | 186.15 [20] | 718.64 [19] |
| 288.15 [15, 20, 21, 22, 23, 24] | 210.15 [17] | 180.15 [21] | 664.15 [20] |
| 288 [25] | 222 [24] | 184 [25] | 693.15 [21] |
| 284.15 [26, 17] | 215.15 [29] | 183.75 [27] | 723.15 [17] |
| 279.15 [7, 12] | | 181.15 [29] | 720.15 [29] |
| 287.15 [27] | | 178 [26] | 664 [25] |
| 285.3 [28] | | | 685.15 [30] |
| 286.15 [29] | | | |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) | $C_p$ (J·mol$^{-1}$·K$^{-1}$) | $T$ (K) | $C_p$ (J·mol$^{-1}$·K$^{-1}$) | $T$ (K) |
|---|---|---|---|---|---|---|---|---|---|
| 1.24 [20] | 293.12 | 41 [20] | RT | 1.3 [33] | 295.15 | 303.4 [35] | 283.15 | 316.8 [35] | 323.15 |
| 1.283 [25] | 293.15 | 66.5 [32] | 293.15 | 1.58 [34] | 298.15 | 304.9 [35] | 288.15 | 318.7 [35] | 328.15 |
| 1.24 [28] | 295.15 | 37.7 [31] | 295.15 | 1.4 [29] | 298.15 | 306.5 [35] | 293.15 | 320.6 [35] | 333.15 |
| 1.240 [31] | 295.15 | 42 [15] | 298.15 | 1.36 [15, 21] | 298.15 | 308.1 [35] | 298.15 | 322.5 [35] | 338.15 |
| 1.28 [15, 29] | 298.15 | 38 [21] | 298.15 | 1.3 [26] | 299.15 | 309.8 [35] | 303.15 | 324.5 [35] | 343.15 |
| 1.248 [12] | 298.15 | 37 [29] | 298.15 | | | 311.5 [35] | 308.15 | 326.5 [35] | 348.15 |
| 1.279 [25] | 298.15 | 36.07 ± 0.17 [19] | 298.15 | | | 313.2 [35] | 313.15 | 328.6 [35] | 353.15 |
| 1.418 [10] | 298.15 | 66 [12] | 298.15 | | | 315.0 [35] | 318.15 | 330.7 [35] | 358.15 |
| 1.2853 [21] | 298.15 | 43 [7] | 299.15 | | | | | | |
| 1.2526 ± 0.0001 [19] | 333.15 | | | | | | | | |

| Electrochemical window (V) | Cathode limit (V) | Anodic limit (V) | $\sigma$ (N/m) | $T$ (K) |
|---|---|---|---|---|
| 5.2 [36] | −2.6 | 2.6 | 0.0544 [21] | 298.15 |
| 4.55 [15] | −2.45 | 2.10 | | |

### 23-223: 1-Ethyl-3-methylimidazolium trifluoromethyltrifluoroborate

**Abbreviation**: $[C_2MIm][CF_3BF_3]$, [emim]$[CF_3BF_3]$, [EMIM]$[CF_3BF_3]$
**Molecular Formula**: $C_7F_6H_{11}BN_2$
**Molar Mass**: 247.98
**Structure**:




**Character**:
**Application**: Water content <50 ppm[15]

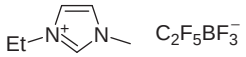
| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 253.15 [15] | 156.15 [15] | 519.15 [15] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.35 [15] | 298.15 | 26 [15] | 298.15 |

| Electrochemical window (V) | Cathode limit (V) | Anodic limit (V) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|
| 4.63 [15] | −2.49 | 2.14 | 1.48 [15] | 298.15 |

### 23-224: 1-Ethyl-3-methylimidazolium pentafluoroethyltrifluoroborate

**Abbreviation**: $[C_2MIm][C_2F_5BF_3]$, [emim]$[C_2F_5BF_3]$, [EMIM]$[C_2F_5BF_3]$
**Molecular Formula**: $C_8F_8H_{11}BN_2$
**Molar Mass**: 297.98
**Structure**:




**Character**: Hydrophobic
**Application**:

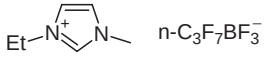
| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 274.15 [15] | 578.15 [15] |
| 272.15 [37] | 571.15 [37] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.42 [15] | 298.15 | 27 [15] | 298.15 |

| Electrochemical window (V) | Cathode limit (V) | Anodic limit (V) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 4.65 [15, 38] | −2.5 | 2.15 | 298 | 1.2 [15] | 298.15 |

### 23-225: 1-Ethyl-3-methylimidazolium (heptafluoro-*n*-propyl)trifluoroborate

**Abbreviation**: $[C_2Mim][n\text{-}C_3F_7BF_3]$, [emim] $[n\text{-}C_3F_7BF_3]$, [EMIM]$[n\text{-}C_3F_7BF_3]$
**Molecular Formula**: $C_9F_{10}H_{11}BN_2$
**Molar Mass**: 347.99
**Structure**:




**Character**: Hydrophobic
**Application**: Water content <50 ppm [15]

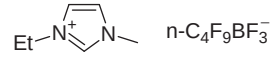
| $T_m$ (K) | $T_{s\text{-}s}$(K) | $T_d$ (K) |
|---|---|---|
| 281.15 [15, 37] | 260.15 [15] | 577.15 [15] |
| | | 565.15 [37] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.49 [15] | 298.15 | 32 [15] | 298.15 |

| Electrochemical window (V) | Cathode limit (V) | Anodic limit (V) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|
| 4.71 [15] | −2.53 | 2.18 | 0.86 [15] | 298.15 |

### 23-226: 1-Ethyl-3-methylimidazolium (nonafluoro-*n*-butyl)trifluoroborate

**Abbreviation**: $[C_2MIm][n\text{-}C_4F_9BF_3]$, [emim] $[n\text{-}C_4F_9BF_3]$, [EMIM]$[n\text{-}C_4F_9BF_3]$
**Molecular Formula**: $C_{10}F_{12}H_{11}BN_2$
**Molar Mass**: 398
**Structure**:




**Synthesize Route**:
**Character**: Hydrophobic
**Application**: Water content <50 ppm [15]

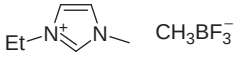
| $T_m$ (K) | $T_f$ (K) | $T_d$ (K) |
|---|---|---|
| 269.15 [15] | 234.15 [15] | 550.15 [15] |
| 253.15 [37] | | 553.15 [37] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.55 [15] | 298.15 | 38 [15] | 298.15 |

| Electrochemical window (V) | Cathode limit (V) | Anodic limit (V) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|
| 4.67 [15] | −2.51 | 2.16 | 0.52 [15] | 298.15 |

### 23-229: 1-Ethyl-3-methylimidazolium methyltrifluoroborate

**Abbreviation**: $[C_2MIm][CF_3BF_3]$, [emim] $[CF_3BF_3]$, [EMIM]$[CF_3BF_3]$
**Molecular Formula**: $C_7H_{14}BF_3N_2$
**Molar Mass**: 194
**Structure**:



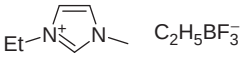
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 180.15 [21] | 545.15 [21] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) | $\sigma$ (N/m) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1.1536 [21] | 298.15 | 47 [21] | 298.15 | 0.9 [21] | 298.15 | 0.0452 [21] | 298.15 |

### 23-230: 1-Ethyl-3-methylimidazolium ethyltrifluoroborate

**Abbreviation**: $[C_2MIm][C_2F_5BF_3]$, [emim]$[C_2F_5BF_3]$, [EMIM]$[C_2F_5BF_3]$
**Molecular Formula**: $C_8H_{16}BF_3N_2$
**Molar Mass**: 208.03
**Structure**:



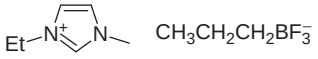
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 184.15 [21] | 531.15 [21] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) | $\sigma$ (N/m) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1.1329 [21] | 298.15 | 72 [21] | 298.15 | 0.63 [21] | 298.15 | 0.0425 [21] | 298.15 |

### 23-231: 1-Ethyl-3-methylimidazolium *n*-propyltrifluoroborate

**Abbreviation**: $[C_2MIm][n\text{-}C_3F_7BF_3]$, [emim] $[n\text{-}C_3F_7BF_3]$, [EMIM]$[n\text{-}C_3F_7BF_3]$
**Molecular Formula**: $C_9H_{18}BF_3N_2$
**Molar Mass**: 222.06
**Structure**:



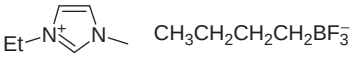
**Character**:
**Application**: [21]

| $T_g$ (K) | $T_m$ (K) | $T_d$ (K) |
|---|---|---|
| 186.15 | 259.15 | 554.15 |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) | $\sigma$ (N/m) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1.1068 | 298.15 | 54 | 298.15 | 0.57 | 298.15 | 0.038 | 298.15 |

### 23-232: 1-Ethyl-3-methylimidazolium *n*-butyltrifluoroborate

**Abbreviation**: $[C_2MIm][n\text{-}C_4F_9BF_3]$, [emim] $[n\text{-}C_4F_9BF_3]$, [EMIM]$[n\text{-}C_4F_9BF_3]$
**Molecular Formula**: $C_{10}H_{20}BF_3N_2$
**Molar Mass**: 236.08
**Structure**:



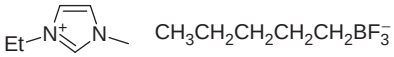
**Character**:
**Application**: [21]

| $T_g$ (K) | $T_m$ (K) | $T_d$ (K) |
|---|---|---|
| 188.15 | 264.15 | 522.15 |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) | $\sigma$ (N/m) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1.0818 | 298.15 | 83 | 298.15 | 0.32 | 298.15 | 0.0342 | 298.15 |

### 23-233: 1-Ethyl-3-methylimidazolium *n*-pentyltrifluoroborate

**Abbreviation**: [$C_2$MIm][*n*-$C_5F_{11}BF_3$], [emim][*n*-$C_5F_{11}BF_3$], [EMIM][*n*-$C_5F_{11}BF_3$]
**Molecular Formula**: $C_{11}H_{22}BF_3N_2$
**Molar Mass**: 250.11
**Structure**:



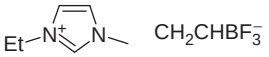
**Character**:
**Application**: [21]

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 289.15 | 565.15 |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) | $\sigma$ (N/m) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1.0645 | 298.15 | 88 | 298.15 | 0.27 | 298.15 | 0.0338 | 298.15 |

### 23-234: 1-Ethyl-3-methylimidazolium vinyltrifluoroborate

**Abbreviation**: [$C_2$MIm][$CH_2CHBF_3$], [emim][$CH_2CHBF_3$], [EMIM][$CH_2CHBF_3$]
**Molecular Formula**: $C_8H_{14}BF_3N_2$
**Molar Mass**: 206.01
**Structure**:



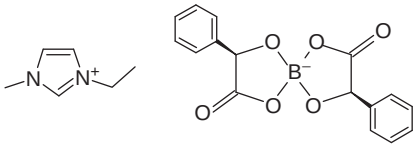
**Character**:
**Application**: [21]

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 167.15 | 500.15 |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) | $\sigma$ (N/m) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1.1614 | 298.15 | 41 | 298.15 | 1.05 | 298.15 | 0.0443 | 298.15 |

### 23-237: 1-Ethyl-3-methylimidazolium (T-4)-bis[(*αR*)-*α*-(hydroxy-κO)benzeneacetato-κO]borate

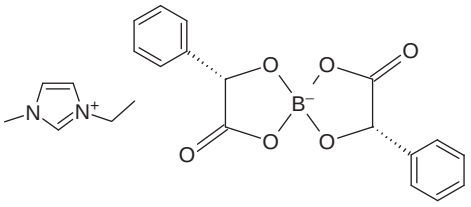
**Abbreviation**: [EMIm][BRMB]
**Molecular Formula**: $C_{22}H_{23}BN_2O_6$
**Molar Mass**: 422.24
**Structure**:



**Character**:
**Application**: [39]

### 23-238: 1-Ethyl-3-methylimidazolium (T-4)-bis[(*αS*)-*α*-(hydroxy-κO)benzeneacetato-κO]borate

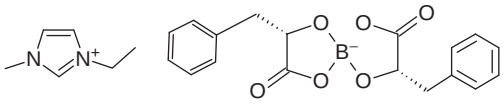
**Abbreviation**: [EMIm][BSMB]
**Molecular Formula**: $C_{22}H_{23}BN_2O_6$
**Molar Mass**: 422.24
**Structure**:



**Character**:
**Application**: [39]

### 23-241: 1-Ethyl-3-methylimidazolium (T-4)-bis[(*αS*)-*α*-(hydroxy-κO)benzeneepropanoato-κO]borate

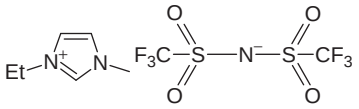
**Abbreviation**: [EMIm][BLPLB]
**Molecular Formula**: $C_{24}H_{27}BN_2O_6$
**Molar Mass**: 450.29
**Structure**:



**Character**:
**Application**: [39]

**23-31: 1-Ethyl-3-methylimidazolium bis((trifluoromethyl) sulfonyl)imide**

**Abbreviation**: $[C_2MIm][NTf_2]$, $[emim][NTf_2]$, $[EMIM][NTf_2]$
**Molecular Formula**: $C_8H_{11}F_6N_3O_4S_2$
**Molar Mass**: 391.32
**Structure**:



**Synthesize Route**:
**Character**:
**Application**:

| $T_m$ (K) | $T_f$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|---|
| 256.15 [40] | 223.15 [26, 17] | 181.15 [40] | 690 [25] |
| 256.8 [41] | 181 [25] | 175.15 [26] | 713.15 [11] |
| 269.15 [42] | | 186 [25] | 726.15 [17] |
| 270.15 [43] | | 195.15 [44] | 728.15 [17] |
| 257 [25] | | 175.15 [46] | |
| 252.15 [44] | | | |
| 261.15 [43, 45] | | | |
| 258.15 [26, 17, 28] | | | |
| 270 [11] | | | |
| 256.15 [12] | | | |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.523 [25] | 293.15 | 32.1 [49] | 293.15 | 0.86 [51] | RT |
| 1.52 [11, 43] | 295.15 | 34 [11] | 293.15 | 0.644 [52] | 288.15 |
| 1.520 [31] | 295.15 | 34.0 [31] | 295.15 | 0.88 [11] | 293.15 |
| 1.518 [25] | 298.15 | 18 [12] | 298.15 | 0.763 [36] | 293.15 |
| 1.51 [45] | 298.15 | 33 [50] | 298.15 | 0.773 [52] | 293.15 |
| 1.52 [12] | 298.15 | 45.9 [41] | 298 | 0.86 [33] | 295.15 |
| 1.519 [44, 47] | 298.15 | 28 [26] | 299.15 | 0.921 [43] | 298.15 |
| 1.542 [10] | 298.15 | | | 0.92 [45] | 298.15 |
| 1.5483 [48] | 303.15 | | | 0.912 [52] | 298.15 |
| 1.5213 $\pm$ 0.0023 [40] | 296.15 $\pm$ 0.1 | | | 0.83 [50] | 298.15 |
| 1.5159 $\pm$ 0.0018 [40] | 303.95 $\pm$ 0.1 | | | 0.84 [41] | 298 |
| 1.5065 $\pm$ 0.0018 [40] | 313.85 $\pm$ 0.3 | | | 0.84 [26] | 299.15 |
| 1.4967 $\pm$ 0.0015 [40] | 323.45 $\pm$ 0.1 | | | 1.229 [52] | 308.15 |
| 1.4858 $\pm$ 0.0021 [40] | 333.65 $\pm$ 0.4 | | | 1.789 [52] | 323.15 |
| | | | | 1.425 [36] | 333.15 |

| Electrochemical window (V) | Cathode limit (V) | Anodic limit (V) | $T$ (K) | $n$ | $T$ (K) |
|---|---|---|---|---|---|
| 4.59 [15] | −2.48 | 2.11 | | 1.4231 [12] | 298.15 |
| 4 [51] | −2 | 2 | 298 | | |
| 4.6 [50] | −2.5 | 2.1 | 298 | | |

| $C_p$ (J·mol$^{-1}$·K$^{-1}$) | $T$ (K) | $C_p$ (J·mol$^{-1}$·K$^{-1}$) | $T$ (K) | $C_p$ (J·mol$^{-1}$·K$^{-1}$) | $T$ (K) |
|---|---|---|---|---|---|
| 524.3 ± 3.9% [40] | 298.15 | 511.5 [35] | 303.15 | 525.7 [35] | 333.15 |
| 532.2 ± 3.9% [40] | 323.15 | 513.8 [35] | 308.15 | 528.1 [35] | 338.15 |
| 502.3 [35] | 283.15 | 516.1 [35] | 313.15 | 530.5 [35] | 343.15 |
| 504.6 [35] | 288.15 | 518.5 [35] | 318.15 | 533.0 [35] | 348.15 |
| 506.9 [35] | 293.15 | 520.9 [35] | 323.15 | 535.5 [35] | 353.15 |
| 509.2 [35] | 298.15 | 523.3 [35] | 328.15 | 538.0 [35] | 358.15 |

| VP (Pa) | $T$ (K) | VP (Pa) | $T$ (K) | VP (Pa) | $T$ (K) |
|---|---|---|---|---|---|
| 0.223 [53] | 506.2 | 0.396 [53] | 516.2 | 0.787 [53] | 529.2 |
| 0.282 [53] | 509.2 | 0.498 [53] | 519.2 | 1.119 [53] | 538.2 |

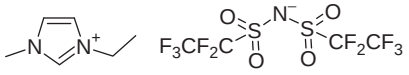
### 23-33: 1-Ethyl-3-methylimidazolium bis((perfluoroethane)sulfonyl)imide

**Abbreviation**: [$C_2$MIm][BETI], [emim][BETI], [EMIM][BETI]

**Molecular Formula**: $C_{10}H_{11}F_{10}N_3O_4S_2$

**Molar Mass**: 491.33

**Structure**:



**Character**:

**Application**:

| $T_m$ (K) | $T_f$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|---|
| 272.15 [26, 17] | 261.15 [26, 17] | 188 [26] | 735.15 [17] |
| | | | 696.15 [17] |

| $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 61 [26] | 299.15 ± 1 | 0.34 [26] | 299.15 ± 1 |

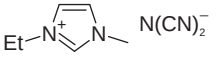
### 23-34: 1-Ethyl-3-methylimidazolium dicyanoamide

**Abbreviation**: [$C_2$MIm][dca], [emim][dca], [EMIM][dca]

**Molecular Formula**: $C_8H_{11}N_5$

**Molar Mass**: 177.21

**Structure**:



**Character**:

**Application**:

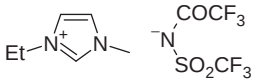
| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 261.15 [54] | 183.15 [54] | 513.15 [54] |
| 252.15 [12, 15] | 169.15 ± 2 [55] | |
| | 169.15 [56] | |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.08 [54] | 293.15 | 17 [54] | 295.15 | 1.8 [51] | RT |
| 1.06 ± 5% [55, 12] | 298.15 | 21 ± 5% [55, 12] | 298.15 | 2.7 [54] | 293.15 |
| 1.057 [31] | 301 | 19.8 [31] | 301 | 2.2 [56] | 298.15 |

| Electrochemical window (V) | Cathode limit (V) | Anodic limit (V) | $T$ (K) |
|---|---|---|---|
| 3 [51] | −1.6 | 1.4 | 298 |

### 23-35:1-Ethyl-3-methylimidazolium 2,2,2-trifluoro-*N*-(trifluoromethylsulfonyl)acetamide

**Abbreviation**: [$C_2$MIm][TSAC], [emim][TSAC], [EMIM][TSAC]
**Molecular Formula**: $C_9H_{11}F_6N_3O_3S$
**Molar Mass**: 355.26
**Structure**:



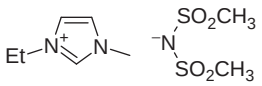
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 275.75 [43] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.46 [43] | 298.15 | 24 [43] | 298.15 | 0.978 [43] | 298.15 |

### 23-37: 1-Ethyl-3-methylimidazolium bis(methylsulfonyl)imide

**Abbreviation**: [$C_2$MIm][$(CH_3SO_2)_2N$], [emim][$(CH_3SO_2)_2N$], [EMIM][$(CH_3SO_2)_2N$]
**Molecular Formula**: $C_8H_{17}N_3O_4S_2$
**Molar Mass**: 283.37
**Structure**:



**Character**:
**Application**:

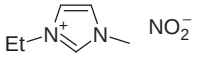
| $T_g$ (K) |
|---|
| 223.15 [57] |

| $\rho$ (g/cm$^3$) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|
| 1.343 [57] | 787 [57] | 293.15 | 0.017 [57] | 298.15 |

| Electrochemical window (V) | Cathode limit (V) | Anodic limit (V) | $T$ (K) |
|---|---|---|---|
| 2.5 [57] | −1.5 | 1.0 | 298 |

### 23-38: 1-Ethyl-3-methylimidazolium nitrite

**Abbreviation**: [$C_2$MIm][$NO_2$], [emim][$NO_2$], [EMIM][$NO_2$]
**Molecular Formula**: $C_6H_{11}N_3O_2$
**Molar Mass**: 157.17
**Structure**:

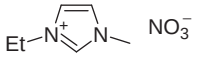


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 328.15 [24, 42] |

### 23-39: 1-Ethyl-3-methylimidazolium nitrate

**Abbreviation**: [$C_2$MIm][$NO_3$], [emim][$NO_3$], [EMIM][$NO_3$]
**Molecular Formula**: $C_6H_{11}N_3O_3$
**Molar Mass**: 173.17
**Structure**:

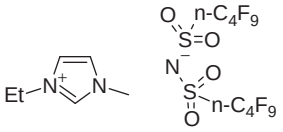


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 311.15 [7, 24, 42] |

### 23-310: 1-Ethyl-3-methylimidazolium bis(nonafluorobutane-1-sulfonyl)imide

**Abbreviation**: [$C_2$MIm][$NNf_2$], [emim][$NNf_2$], [EMIM][$NNf_2$]
**Molecular Formula**: $C_{14}H_{11}F_{18}N_3O_4S_2$
**Molar Mass**: 691.36
**Structure**:

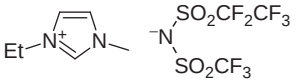


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| <298.15 [58] | 563.15 [58] |

### 23-316: 1-Ethyl-3-methylimidazolium *N*-(trifluoromethylsulfonyl)-pentafluoroethylsulfonamide

**Abbreviation**: [$C_2$MIm][C1C2], [emim][C1C2], [EMIM][C1C2]
**Molecular Formula**: $C_9H_{11}F_8N_3O_4S_2$
**Molar Mass**: 441.32
**Structure**:



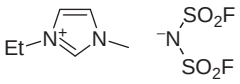
**Character**:
**Application**: [59]

| $T_g$ (K) |
|---|
| 180.15 |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.56 | 298.15 | 48 | 298.15 | 0.44 | 298.15 |

### 23-317: 1-Ethyl-3-methylimidazolium bis(fluorosulfonyl) imide

**Abbreviation**: [$C_2$MIm][FSI], [emim][FSI], [EMIM][FSI]
**Molecular Formula**: $C_6H_{11}F_2N_3O_4S_2$
**Molar Mass**: 291.29
**Structure**:



**Character**:
**Application**:

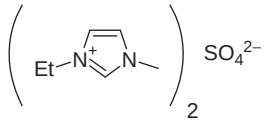
| $T_m$ (K) |
|---|
| 260.1 [41] |

| $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 24.5 [41] | 298 | 1.65 [41] | 298 |
| 18 [50] | 298.15 | 1.54 [50] | 298.15 |

| Electrochemical window (V) | Cathode limit (V) | Anodic limit (V) | $T$ (K) |
|---|---|---|---|
| 4.5 [50] | −2.5 | 2 | 298 |

### 23-41: 1-Ethyl-3-methylimidazolium sulfate

**Abbreviation**: [$(C_2MIm)_2$][$SO_4$], [$(C_2MIm)_2$][$SO_4$], [$(C_2MIm)_2$][$SO_4$]
**Molecular Formula**: $C_{12}H_{22}N_4O_4S$
**Molar Mass**: 318.39
**Structure**:

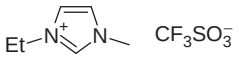


**Synthesize Route**:
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 343.15 [42] |

### 23-43: 1-Ethyl-3-methylimidazolium trifluoromethanesulfonate

**Abbreviation**: $[C_2MIm][TfO]$, [emim][TfO], [EMIM][TfO]
**Molecular Formula**: $C_7H_{11}F_3N_2O_3S$
**Molar Mass**: 260.24
**Structure**:



**Character**:
**Application**:

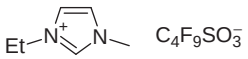
| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 263 [60] | 713.15 [11] |
| 264 [11] | |
| 264.15 [7, 42, 12] | |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) | $n$ | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1.38 [60] | 298.15 | 42.7 [60] | 298.15 | 0.774 [36] | 293.15 | 1.4332 [12] | 298.15 |
| 1.39 [12] | 298.15 | 45 [12] | 298.15 | 0.86 [11] | 293.15 | | |
| 1.3572 [48] | 303.15 | | | 0.930 [60] | 298.15 | | |

| $C_p$ (J·mol$^{-1}$·K$^{-1}$) | $T$ (K) | $C_p$ (J·mol$^{-1}$·K$^{-1}$) | $T$ (K) | $C_p$ (J·mol$^{-1}$·K$^{-1}$) | $T$ (K) |
|---|---|---|---|---|---|
| 386 [61] | 323.12 | 395 [61] | 358.12 | 410 [61] | 393.14 |
| 384 [61] | 328.16 | 398 [61] | 363.14 | 411 [61] | 398.17 |
| 383 [61] | 333.14 | 400 [61] | 368.14 | 414 [61] | 403.15 |
| 387 [61] | 338.17 | 401 [61] | 373.14 | 416 [61] | 408.12 |
| 391 [61] | 343.17 | 402 [61] | 378.13 | 419 [61] | 413.15 |
| 392 [61] | 348.13 | 405 [61] | 383.17 | 421 [61] | 418.17 |
| 393 [61] | 353.16 | 407 [61] | 388.15 | 422 [61] | 423.14 |

### 23-45: 1-Ethyl-3-methylimidazolium perfluorobutylsulfonate

**Abbreviation**: $[C_2MIm][NfO]$, [emim][NfO], [EMIM][NfO]
**Molecular Formula**: $C_{10}H_{11}F_9N_2O_3S$
**Molar Mass**: 410.26
**Structure**:

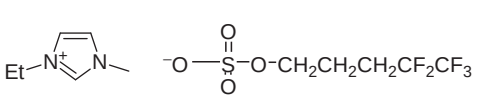


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 301.15 [11, 42] |

### 23-413: 1-Ethyl-3-methylimidazolium 4,4,5,5,5-pentafluoropentyl sulfate

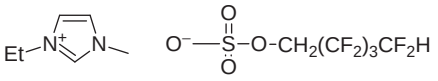
**Abbreviation**: $[C_2MIm][C_5F_5]$, [emim][$C_5F_5$], [EMIM][$C_5F_5$]
**Molecular Formula**: $C_{11}H_{17}F_5N_2SO_4$
**Molar Mass**: 368.32
**Structure**:



**Character**: Half hydrophobic
**Application**: [62]

### 23-414: 1-Ethyl-3-methylimidazolium 2,2,3,3,4,4,5,5-octafluoropentyl sulfate

**Abbreviation**: [$C_2$MIm][$C_5F_8$], [emim][$C_5F_8$], [EMIM][$C_5F_8$]
**Molecular Formula**: $C_{11}H_{14}F_8N_2SO_4$
**Molar Mass**: 422.29
**Structure**:



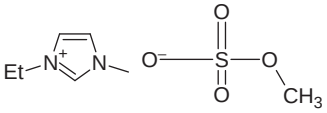

**Character**: Hydrophobic
**Application**: [62]

| $T_m$ (K) |
|---|
| 257.05 |

| $K$ (S/m) | $\eta_D$ (cp) |
|---|---|
| 0.24 | 54 |

### 23-417: 1-Ethyl-3-methylimidazolium methylsulfate

**Abbreviation**: [EMIM][MS]
**Molecular Formula**: $C_7H_{14}N_2O_4S$
**Molar Mass**: 222.26
**Structure**:



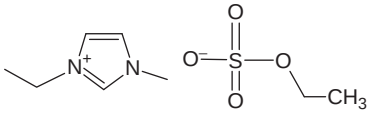

**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 278.15 [12] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.24 [12] | 298.15 | 80 [12] | 298.15 |

### 23-418: 1-Ethyl-3-methylimidazolium ethylsulfate

**Abbreviation**: [Emim][$EtSO_4$]
**Molecular Formula**: $C_8H_{16}N_2O_4S$
**Molar Mass**: 236.29
**Structure**:




**Character**:
**Application**: [59]

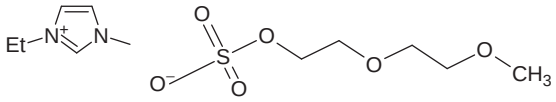
| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.239 [63] | 298.15 | 97.58 [64] | 298.15 |
| 1.2376 [64] | | | |

| $T$ (K) | $P$ (MPa) | $\rho$ (kg/m$^3$) [65] | $T$ (K) | $P$ (MPa) | $\rho$ (kg/m$^3$) [65] | $T$ (K) | $P$ (MPa) | $\rho$ (kg/m$^3$) [65] |
|---|---|---|---|---|---|---|---|---|
| 283.15 | 0.1 | 1246.94 | 298.15 | 0.1 | 1236.35 | 313.15 | 0.1 | 1226.06 |
| 283.15 | 2.5 | 1247.9 | 298.15 | 2.5 | 1237.35 | 313.15 | 2.5 | 1227.11 |
| 283.15 | 5 | 1248.89 | 298.15 | 5 | 1238.4 | 313.15 | 5 | 1228.18 |
| 283.15 | 10 | 1250.85 | 298.15 | 10 | 1240.44 | 313.15 | 10 | 1230.3 |
| 283.15 | 15 | 1252.79 | 298.15 | 15 | 1242.46 | 313.15 | 15 | 1232.38 |
| 283.15 | 20 | 1254.73 | 298.15 | 20 | 1244.44 | 313.15 | 20 | 1234.45 |
| 283.15 | 25 | 1256.61 | 298.15 | 25 | 1246.41 | 313.15 | 25 | 1236.48 |
| 283.15 | 30 | 1258.47 | 298.15 | 30 | 1248.35 | 313.15 | 30 | 1238.47 |
| 283.15 | 35 | 1260.31 | 298.15 | 35 | 1250.23 | 313.15 | 35 | 1240.91 |
| 293.15 | 0.1 | 1239.88 | 303.15 | 0.1 | 1232.72 | 323.15 | 0.1 | 1219.19 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 293.15 | 2.5 | 1240.89 | 303.15 | 2.5 | 1233.78 | 323.15 | 2.5 | 1220.23 |
| 293.15 | 5 | 1241.91 | 303.15 | 5 | 1234.83 | 323.15 | 5 | 1221.36 |
| 293.15 | 10 | 1243.9 | 303.15 | 10 | 1237 | 323.15 | 10 | 1223.53 |
| 293.15 | 15 | 1245.88 | 303.15 | 15 | 1239.02 | 323.15 | 15 | 1225.69 |
| 293.15 | 20 | 1247.83 | 303.15 | 20 | 1241.03 | 323.15 | 20 | 1227.8 |
| 293.15 | 25 | 1249.76 | 303.15 | 25 | 1243.02 | 323.15 | 25 | 1229.93 |
| 293.15 | 30 | 1251.66 | 303.15 | 30 | 1244.98 | 323.15 | 30 | 1231.96 |
| 293.15 | 35 | 1253.57 | 303.15 | 35 | 1246.84 | 323.15 | 35 | 1233.91 |
| 333.15 | 0.1 | 1212.42 | 333.15 | 10 | 1216.87 | 333.15 | 25 | 1223.33 |
| 333.15 | 2.5 | 1213.53 | 333.15 | 15 | 1219.08 | 333.15 | 30 | 1225.42 |
| 333.15 | 5 | 1214.66 | 333.15 | 20 | 1221.24 | 333.15 | 35 | 1227.46 |

### 23-419: 1-Ethyl-3-methylimidazolium diethyleneglycolmonomethylethersulphate

**Abbreviation**: $[C_2MIm][CH_3(OCH_2CH_2)_2OSO_3]$, $[emim][CH_3(OCH_2CH_2)_2OSO_3]$, $[EMIM][CH_3(OCH_2CH_2)_2OSO_3]$
**Molecular Formula**: $C_{11}H_{22}N_2O_6S$
**Molar Mass**: 310.37
**Structure**:

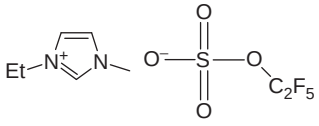


**Character**:
**Application**: [66]

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.2365 | 298.15 |
| 1.2326 | 303.15 |
| 1.2256 | 313.15 |

### 23-425: 1-Ethyl-3-methylimidazolium perfluoroethylsulfate

**Abbreviation**: $[Emim][C_2F_5SO_4]$
**Molecular Formula**: $C_8H_{11}F_5N_2SO_4$
**Molar Mass**: 326.24
**Structure**:



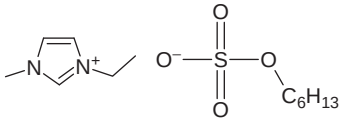
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 208.15 [12] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.24 [12] | 298.15 | 99 [12] | 298.15 |

### 23-426: 1-Ethyl-3-methylimidazolium hexylsulfate

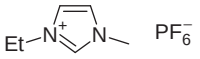
**Abbreviation**: $[emim][HexSO_4]$
**Molecular Formula**: $C_{12}H_{24}N_2O_4S$
**Molar Mass**: 292.39
**Structure**:



**Character**:
**Application**: [67]

### 23-51: 1-Ethyl-3-methylimidazolium hexafluorophosphate

**Abbreviation**: $[C_2MIm][PF_6]$, [emim][$PF_6$], [EMIM][$PF_6$]
**Molecular Formula**: $C_6H_{11}F_6N_2P$
**Molar Mass**: 256.13
**Structure**:



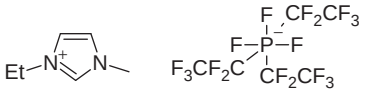
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 331.15 [22, 44] | 193 [26] | 754.15 [17] |
| 332.8 [68] | | 648.15 [17] |
| 331.15-333.15 [24, 42] | | |
| 335.15 [26, 17] | | |

| $K$ (S/m) | $T$ (K) |
|---|---|
| 0.52 [26] | 299.15 ± 1 |

### 23-54: 1-Ethyl-3-methylimidazolium tris (pentafluoroethyl)trifluorophosphate

**Abbreviation**: $[C_2MIm][TPTP]$, [emim][TPTP], [EMIM][TPTP], $[C_2MIm][(C_2F_5)_3PF_3]$
**Molecular Formula**: $C_{12}H_{11}F_{18}PN_2$
**Molar Mass**: 556.17
**Structure**:



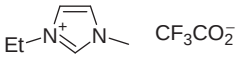
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 236.15 [36] | 573.15 [36] |

| $K$ (S/m ) | $T$ (K ) | $K$ (S/m ) | $T$ (K ) |
|---|---|---|---|
| 0.44 [36] | 298.15 | 1.425 [36] | 333.15 |

### 23-61: 1-Ethyl-3-methylimidazolium trifluoroacetate

**Abbreviation**: $[C_2MIm][CF_3CO_2]$, [emim] $[CF_3CO_2]$, [EMIM][$CF_3CO_2$]
**Molecular Formula**: $C_8H_{11}F_3N_2O_2$
**Molar Mass**: 224.18
**Structure**:



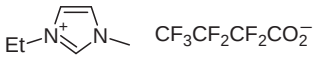
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 259.15 [42, 12] | 423.15 [11] |
| 259 [11] | |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) | $n$ | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1.285 [11] | 295.15 | 35 [11] | 293.15 | 0.853 [36] | 293.15 | 1.4405 [12] | 298.15 |
| 1.285 [12] | 298.15 | 35 [12] | 298.15 | 0.96 [11] | 293.15 | | |

### 23-62: 1-Ethyl-3-methylimidazolium heptafluorobutanoate

**Abbreviation**: $[C_2MIm][C_3F_7CO_2]$, [emim] $[C_3F_7CO_2]$, $[EMIM][C_3F_7CO_2]$
**Molecular Formula**: $C_{10}H_{11}F_7N_2O_2$
**Molar Mass**: 324.2
**Structure**:

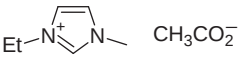


**Character**:
**Application**:

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.45 [11] | 295.15 | 105 [11] | 293.15 | 0.27 [11] | 293.15 |

### 23-63: 1-Ethyl-3-methylimidazolium acetate

**Abbreviation**: $[C_2MIm][OAc]$, [emim][OAc], [EMIM][OAc]
**Molecular Formula**: $C_8H_{14}N_2O_2$
**Molar Mass**: 170.21
**Structure**:



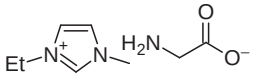
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 228.15 [24, 42] |
| 259.15 [7] |
| 253.15 [12] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.03 [12] | 298.15 | 162 [11] | 293.15 | 0.28 [11] | 293.15 |
| | | 91 [12] | 298.15 | | |

### 23-69: 1-Ethyl-3-methylimidazolium glycine

**Abbreviation**: $[C_2MIm][Gly]$, [emim][Gly], [EMIM][Gly]
**Molecular Formula**: $C_8H_{15}N_3O_2$
**Molar Mass**: 185.22
**Structure**:



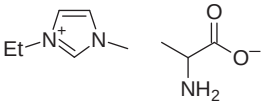
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 208.15 [69] |

| $K$ (S/m) | $T$ (K) |
|---|---|
| 0.057 [69] | 298.15 |

### 23-610: 1-Ethyl-3-methylimidazolium alanine

**Abbreviation**: $[C_2MIm][Ala]$, [emim][Ala], [EMIM][Ala]
**Molecular Formula**: $C_9H_{17}N_3O_2$
**Molar Mass**: 199.25
**Structure**:



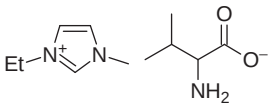
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 216.15 [69] |

| $K$ (S/m) | $T$ (K) |
|---|---|
| 0.064 [69] | 298.15 |

### 23-611: 1-Ethyl-3-methylimidazolium valine

**Abbreviation**: [$C_2$MIm][Val], [emim][Val], [EMIM][Val]
**Molecular Formula**: $C_{11}H_{21}N_3O_2$
**Molar Mass**: 227.3
**Structure**:



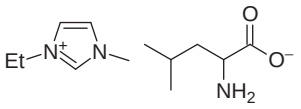
**Character**:
**Application**: [69]

| $T_g$ (K) |
|---|
| 221.15 |

| $K$ (S/m) | $T$ (K) |
|---|---|
| 0.0088 | 298.15 |

### 23-612: 1-Ethyl-3-methylimidazolium leucine

**Abbreviation**: [$C_2$MIm][Leu], [emim][Leu], [EMIM][Leu]
**Molecular Formula**: $C_{12}H_{23}N_3O_2$
**Molar Mass**: 241.33
**Structure**:



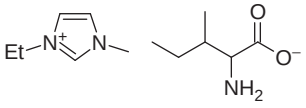
**Character**:
**Application**: [69]

| $T_g$ (K) |
|---|
| 222.15 |

| $K$ (S/m) | $T$ (K) |
|---|---|
| 0.0081 | 298.15 |

### 23-613: 1-Ethyl-3-methylimidazolium isoleucine

**Abbreviation**: [$C_2$MIm][Ile], [emim][Ile], [EMIM][Ile]
**Molecular Formula**: $C_{12}H_{23}N_3O_2$
**Molar Mass**: 241.33
**Structure**:



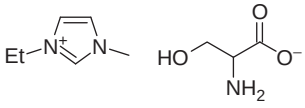
**Character**:
**Application**: [69]

| $T_g$ (K) |
|---|
| 221.15 |

| $K$ (S/m) | $T$ (K) |
|---|---|
| 0.0069 | 298.15 |

### 23-614: 1-Ethyl-3-methylimidazolium serine

**Abbreviation**: [$C_2$MIm][Ser], [emim][Ser], [EMIM][Ser]
**Molecular Formula**: $C_9H_{17}N_3O_3$
**Molar Mass**: 215.25
**Structure**:



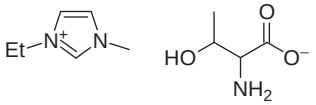
**Character**:
**Application**: [69]

| $T_g$ (K) |
|---|
| 224.15 |

| $K$ (S/m) | $T$ (K) |
|---|---|
| 0.065 | 298.15 |

### 23-615: 1-Ethyl-3-methylimidazolium threonine

**Abbreviation**: [$C_2$MIm][Thr], [emim][Thr], [EMIM][Thr]
**Molecular Formula**: $C_{10}H_{19}N_3O_3$
**Molar Mass**: 229.28
**Structure**:



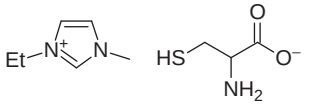
**Character**:
**Application**: [69]

| $T_g$ (K) |
|---|
| 233.15 |

| $K$ (S/m) | $T$ (K) |
|---|---|
| 0.01 | 298.15 |

### 23-616: 1-Ethyl-3-methylimidazolium cysteine

**Abbreviation**: [$C_2$MIm][Cys], [emim][Cys], [EMIM][Cys]
**Molecular Formula**: $C_9H_{17}N_3O_2S$
**Molar Mass**: 231.32
**Structure**:



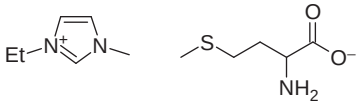
**Character**:
**Application**: [69]

| $T_g$ (K) |
|---|
| 254.15 |

| $K$ (S/m) | $T$ (K) |
|---|---|
| 0.0035 | 298.15 |

### 23-617: 1-Ethyl-3-methylimidazolium methionine

**Abbreviation**: [$C_2$MIm][Met], [emim][Met], [EMIM][Met]
**Molecular Formula**: $C_{11}H_{21}N_3O_2S$
**Molar Mass**: 259.37
**Structure**:



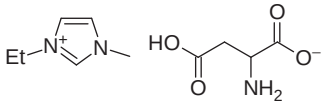
**Character**:
**Application**: [69]

| $T_g$ (K) |
|---|
| 216.15 |

| $K$ (S/m) | $T$ (K) |
|---|---|
| 0.024 | 298.15 |

### 23-618: 1-Ethyl-3-methylimidazolium asparatic acid

**Abbreviation**: [$C_2$MIm][Asp], [emim][Asp], [EMIM][Asp]
**Molecular Formula**: $C_{10}H_{17}N_3O_4$
**Molar Mass**: 243.2
**Structure**:



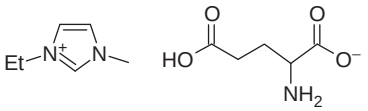
**Character**:
**Application**: [69]

| $T_g$ (K) |
|---|
| 278.15 |

| $K$ (S/m) | $T$ (K) |
|---|---|
| 0.00000017 | 298.15 |

### 23-619: 1-Ethyl-3-methylimidazolium glutamic acid

**Abbreviation**: [$C_2$MIm][Glu], [emim][Glu], [EMIM][Glu]
**Molecular Formula**: $C_{11}H_{19}N_3O_4$
**Molar Mass**: 257.29
**Structure**:



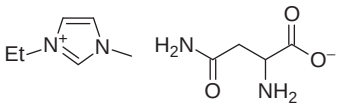
**Character**:
**Application**: [69]

| $T_g$ (K) |
|---|
| 279.15 |

| $K$ (S/m) | $T$ (K) |
|---|---|
| 0.00005 | 298.15 |

### 23-620: 1-Ethyl-3-methylimidazolium asparagine

**Abbreviation**: [$C_2$MIm][Asn], [emim][Asn], [EMIM][Asn]
**Molecular Formula**: $C_{10}H_{18}N_4O_3$
**Molar Mass**: 242.28
**Structure**:



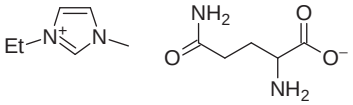
**Character**:
**Application**: [69]

| $T_g$ (K) |
|---|
| 257.15 |

| $K$ (S/m) | $T$ (K) |
|---|---|
| 0.00011 | 298.15 |

### 23-621: 1-Ethyl-3-methylimidazolium glutamine

**Abbreviation**: [$C_2$MIm][Gln], [emim][Gln], [EMIM][Gln]
**Molecular Formula**: $C_{11}H_{20}N_4O_3$
**Molar Mass**: 256.3
**Structure**:



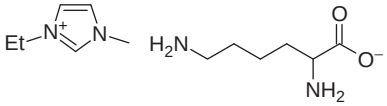
**Character**:
**Application**: [69]

| $T_g$ (K) |
|---|
| 261.15 |

| $K$ (S/m) | $T$ (K) |
|---|---|
| 0.000017 | 298.15 |

### 23-622: 1-Ethyl-3-methylimidazolium lysine

**Abbreviation**: [$C_2$MIm][Lys], [emim][Lys], [EMIM][Lys]
**Molecular Formula**: $C_{12}H_{24}N_4O_2$
**Molar Mass**: 256.34
**Structure**:



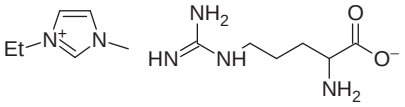
**Character**:
**Application**: [69]

| $T_g$ (K) |
|---|
| 226.15 |

| $K$ (S/m) | $T$ (K) |
|---|---|
| 0.0078 | 298.15 |

### 23-623: 1-Ethyl-3-methylimidazolium arginine

**Abbreviation**: [$C_2$MIm][Arg], [emim][Arg], [EMIM][Arg]
**Molecular Formula**: $C_{12}H_{24}N_6O_2$
**Molar Mass**: 284.36
**Structure**:



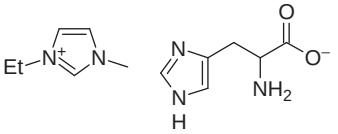
**Character**:
**Application**: [69]

| $T_g$ (K) |
|---|
| 255.15 |

| $K$ (S/m) | $T$ (K) |
|---|---|
| 0.00009 | 298.15 |

### 23-624: 1-Ethyl-3-methylimidazolium histidine

**Abbreviation**: [$C_2$MIm][His], [emim][His], [EMIM][His]
**Molecular Formula**: $C_{12}H_{19}N_5O_2$
**Molar Mass**: 265.31
**Structure**:



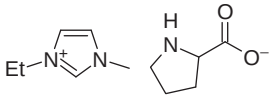
**Character**:
**Application**: [69]

| $T_g$ (K) |
|---|
| 249.15 |

| $K$ (S/m) | $T$ (K) |
|---|---|
| 0.00001 | 298.15 |

### 23-625: 1-Ethyl-3-methylimidazolium proline

**Abbreviation**: [$C_2$MIm][Pro], [emim][Pro], [EMIM][Pro]
**Molecular Formula**: $C_{11}H_{19}N_3O_2$
**Molar Mass**: 225.29
**Structure**:



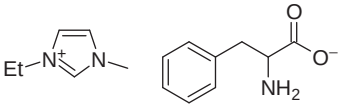
**Character**:
**Application**: [69]

| $T_g$ (K) |
|---|
| 225.15 |

| $K$ (S/m) | $T$ (K) |
|---|---|
| 0.016 | 298.15 |

### 23-626: 1-Ethyl-3-methylimidazolium phenylananine

**Abbreviation**: [$C_2$MIm][Phe], [emim][Phe], [EMIM][Phe]
**Molecular Formula**: $C_{15}H_{21}N_3O_2$
**Molar Mass**: 275.35
**Structure**:



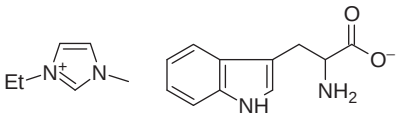
**Character**:
**Application**: [69]

| $T_g$ (K) |
|---|
| 237.15 |

| $K$ (S/m) | $T$ (K) |
|---|---|
| 0.006 | 298.15 |

### 23-627: 1-Ethyl-3-methylimidazolium tryptophane

**Abbreviation**: [$C_2$MIm][Trp], [emim][Trp], [EMIM][Trp]
**Molecular Formula**: $C_{17}H_{22}N_4O_2$
**Molar Mass**: 314.38
**Structure**:



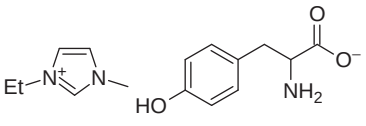
**Character**:
**Application**: [69]

| $T_g$ (K) |
|---|
| 242.15 |

| $K$ (S/m) | $T$ (K) |
|---|---|
| 0.00000091 | 298.15 |

### 23-628: 1-Ethyl-3-methylimidazolium tyrosine

**Abbreviation**: [$C_2$MIm][Tyr], [emim][Tyr], [EMIM][Tyr]
**Molecular Formula**: $C_{15}H_{21}N_3O_3$
**Molar Mass**: 291.35
**Structure**:



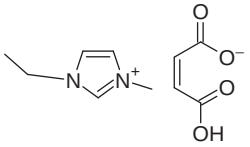
**Character**:
**Application**: [69]

| $T_g$ (K) |
|---|
| 250.15 |

| $K$ (S/m) | $T$ (K) |
|---|---|
| 0.000004 | 298.15 |

### 23-635: 1-Methyl-3-ethylimidazolium hydrogen maleate

**Abbreviation**: [$C_2$MIm]M, [emim]M, [EMIM]M
**Molecular Formula**: $C_{10}H_{14}N_2O_4$
**Molar Mass**: 226.23
**Structure**:



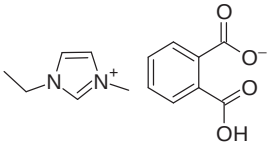
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 226.05 [70] |

| $K$ (S/m) | $T$ (K) |
|---|---|
| 0.375 [70] | 303.15 |

### 23-636: 1-Methyl-3-ethylimidazolium hydrogen phthalate

**Abbreviation**: [$C_2$MIm]P, [emim]P, [EMIM]P
**Molecular Formula**: $C_{14}H_{16}N_2O_4$
**Molar Mass**: 276.29
**Structure**:



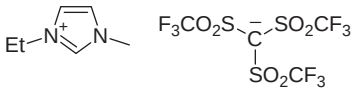
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 295.75 [70] |

| $K$ (S/m) | $T$ (K) |
|---|---|
| 0.087 [70] | 303.15 |

### 23-71: 1-Ethyl-3-methylimidazolium tris (trifluoromethylsulfonyl)methide

**Abbreviation**: [$C_2$MIm][$Tf_3$C], [emim][$Tf_3$C], [EMIM][$Tf_3$C], [$C_2$MIm][Me]
**Molecular Formula**: $C_{10}H_{11}F_9N_2O_6S_3$
**Molar Mass**: 522.39
**Structure**:



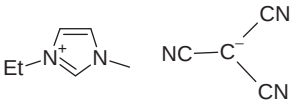

**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 312.15 [17] | 703.15 [17] |
| | 723.15 [17] |

| $K$ (S/m) | $T$ (K) |
|---|---|
| 0.13 [33] | 295.15 |

### 23-72: 1-Ethyl-3-methylimidazolium tricyanomethanide

**Abbreviation**: [Emim][TCM], [Emim][$C(CN)_3$]
**Molecular Formula**: $C_{10}H_{11}N_5$
**Molar Mass**: 201.23
**Structure**:



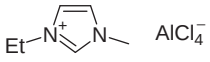

**Character**:
**Application**: [56]

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 263.15 | 188.06 |

| $\eta_D$ (cp) | $K$ (S/m) | $T$ (K) |
|---|---|---|
| 19.56 | 2 | 298.15 |

### 23-81: 1-Ethyl-3-methylimidazolium tetrachloroaluminate

**Abbreviation**: [$C_2$MIm][$AlCl_4$], [emim][$AlCl_4$], [EMIM][$AlCl_4$]
**Molecular Formula**: $C_6H_{11}C_{l4}N_2Al$
**Molar Mass**: 279.96
**Structure**:



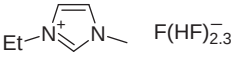

**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 280.15 [7] |
| 282.15 [12] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.2941 [71] | 298.15 | 20 [12] | 298.15 |
| 1.3 [12] | 298.15 | | |

### 23-82: 1-Ethyl-3-methylimidazolium hydrofluororide anions ($H_2F_3^-$:$H_3F_4^-$ = 7:3)

**Abbreviation**: [$C_2$MIm][$F(HF)_{2.3}$], [emim][$F(HF)_{2.3}$], [EMIM][$F(HF)_{2.3}$]
**Molecular Formula**: $C_6H_{13.3}F_{3.3}N2$
**Molar Mass**: 176.18
**Structure**:



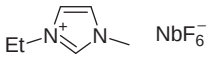

**Character**:
**Application**:

| $T_f$ (K) |
|---|
| 183 [72] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.13 [73] | 298.15 | 4.9 [72] | 298.15 | 12 [72] | 298 |
| | | 4.8 [74] | 298.15 | | |

### 23-83: 1-Ethyl-3-methylimidazolium hexafluoroniobate

**Abbreviation**: $[C_2MIm][NbF_6]$, [emim][$NbF_6$], [EMIM][$NbF_6$]
**Molecular Formula**: $C_6H_{11}F_6N_2Nb$
**Molar Mass**: 318.16
**Structure**:



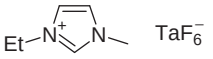
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 272 [75] | 181 [75] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.67 [75] | 298 | 49 [75] | 298 | 0.85 [75] | 298 |

### 23-84: 1-Ethyl-3-methylimidazolium hexafluorotantalate

**Abbreviation**: $[C_2MIm][TaF_6]$, [emim][$TaF_6$], [EMIM][$TaF_6$]
**Molecular Formula**: $C_6H_{11}F_6N_2Ta$
**Molar Mass**: 406.11
**Structure**:



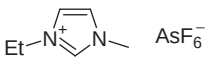
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 275 [75] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 2.17 [75] | 298 | 51 [75] | 298 | 0.71 [75] | 298 |

### 23-85: 1-Ethyl-3-methylimidazolium hexafluoroarsenate

**Abbreviation**: $[C_2MIm][AsF_6]$, [emim][$AsF_6$], [EMIM][$AsF_6$]
**Molecular Formula**: $C_6H_{11}F_6N_2As$
**Molar Mass**: 300.08
**Structure**:

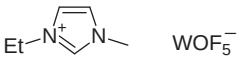


**Character**:
**Application**:

| $T_m$ (K) | $T_f$ (K) | $T_d$ (K) |
|---|---|---|
| 326 [76] | 240.15 [17] | 703.15 [17] |
| 326.15 [26, 17] | 258.15 [26] | 689.15 [17] |

### 23-88: 1-Ethyl-3-methylimidazolium oxypentafluorotungstate

**Abbreviation**: $[C_2MIm][WOF_5]$, [emim][$WOF_5$], [EMIM][$WOF_5$]
**Molecular Formula**: $C_6H_{11}N_2WOF_5$
**Molar Mass**: 406
**Structure**:



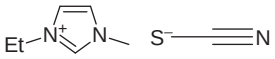
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 253 [77] | 182 [77] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 2.25 [77] | 298 | 105.1 [77] | 298 | 0.3 [77] | 298 |

### 23-1503: 1-Ethyl-3-methylimidazolium thiocyanate

**Abbreviation**: [EMIM][SCN], [emim][SCN]
**Molecular Formula**: $C_7H_{11}N_3S$
**Molar Mass**: 169.25
**Structure**:

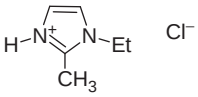


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 267.15 [12] |

### 24-11: 1-Ethyl-2-methylimidazolium chloride

**Abbreviation**: [E′MIM]Cl
**Molecular Formula**: $C_6H_{11}ClN_2$
**Molar Mass**: 146.62
**Structure**:

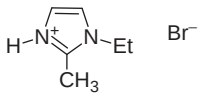


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 451.15 [1] |

### 24-12: 1-Ethyl-2-methylimidazolium bromide

**Abbreviation**: [E′MIM]Br
**Molecular Formula**: $C_6H_{11}BrN_2$
**Molar Mass**: 191.07
**Structure**:

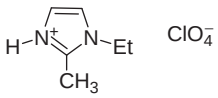


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 417.15 [1] |

### 24-14: 1-Ethyl-2-methylimidazolium perchlorate

**Abbreviation**: [E′MIM][$ClO_4$]
**Molecular Formula**: $C_6H_{11}ClN_2O_4$
**Molar Mass**: 210.62
**Structure**:

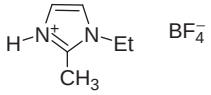


**Character**:
**Application**: [1]

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 280.15 | 197.15 |

### 24-21: 1-Ethyl-2-methylimidazolium tetrafluoroborate

**Abbreviation**: [E′MIM][$BF_4$]
**Molecular Formula**: $C_6H_{11}BF_4N_2$
**Molar Mass**: 197.97
**Structure**:

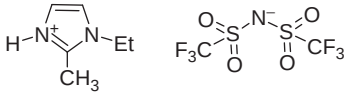


**Character**:
**Application**:

| Crystallization entropy ($J \cdot mol^{-1} \cdot K^{-1}$) |
|---|
| 47.51 [27] |

### 24-31: 1-Ethyl-2-methylimidazolium bis((trifluoromethyl) sulfonyl)imide

**Abbreviation**: [E′MIM][$NTf_2$], [E′MIM][$Tf_2N$], [E′MIM][TFSI]
**Molecular Formula**: $C_8H_{11}F_6N_3O_4S_2$
**Molar Mass**: 391.31
**Structure**:



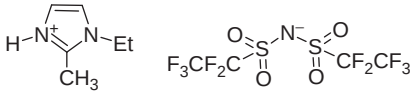
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 189.15 [1] |

| $K$ (S/m) | $T$ (K) |
|---|---|
| 0.86 [33] | 295.15 |

### 24-33: 1-Ethyl-2-methylimidazolium bis((perfluoroethane)sulfonyl)imide

**Abbreviation**: [E′MIM][BETI]
**Molecular Formula**: $C_{10}H_{11}F_{10}N_3O_4S_2$
**Molar Mass**: 491.33
**Structure**:

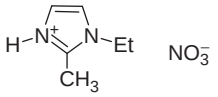


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 254.15 [1] |

### 24-39: 1-Ethyl-2-methylimidazolium nitrate

**Abbreviation**: [E′MIM][$NO_3$]
**Molecular Formula**: $C_6H_{11}N_3O_3$
**Molar Mass**: 173.17
**Structure**:

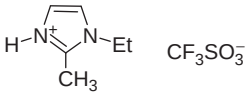


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 348.15 [1] |

### 24-43: 1-Ethyl-2-methylimidazolium trifluoromethanesulfonate

**Abbreviation**: [E′MIM][TfO]
**Molecular Formula**: $C_7H_{11}F_3N_2O_3S$
**Molar Mass**: 260.23
**Structure**:



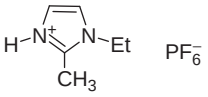
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 306.15 [1] |

| $K$ (S/m) | $T$ (K) |
|---|---|
| 1.1 [33] | 295.15 |

### 24-51: 1-Ethyl-2-methylimidazolium hexafluorophosphate

**Abbreviation**: [E′MIM][$PF_6$]
**Molecular Formula**: $C_6H_{11}F_6N_2P$
**Molar Mass**: 256.13
**Structure**:



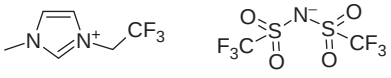
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 231.15 [1] |

| $K$ (S/m) | $T$ (K) |
|---|---|
| 0.13 [33] | 295.15 |

### 26-31: 1-Trifluoroethyl-3-methylimidazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [$CF_3CH_2MIm$][$NTf_2$], [$CF_3CH_2MIm$][$Tf_2N$], [$CF_3CH_2MIm$][TFSI]
**Molecular Formula**: $C_8H_8F_9N_3O_4S_2$
**Molar Mass**: 445.28
**Structure**:



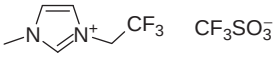
**Character**:
**Application**: [11]

| $T_m$ (K) |
|---|
| 223-243 |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) | $n$ | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1.656 | 293.15 | 248 | 293.15 | 0.098 | 293.15 | 1.4090 | 293.15 |

### 26-43: 1-Trifluoroethyl-3-methylimidazolium trifluoromethanesulfonate

**Abbreviation**: [$CF_3CH_2MIm$][TfO]
**Molecular Formula**: $C_7H_8F_6N_2O_3S$
**Molar Mass**: 314.21
**Structure**:

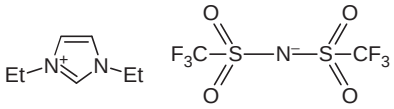


**Character**:
**Application**: [11]

| $T_m$ (K) |
|---|
| 318.15 |

### 27-31: 1,3-Diethylimidazolium bis((trifluoromethyl) sulfonyl)imide

**Abbreviation**: [DEIm][$NTf_2$], [DEIm][$Tf_2N$], [DEIm][TFSI]
**Molecular Formula**: $C_9H_{13}F_6N_3O_4S_2$
**Molar Mass**: 405.34
**Structure**:



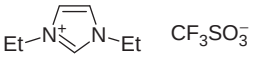
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 287 [11] |
| 287.15 [12] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) | $n$ | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1.452 [78] | 294.15 | 35 [11] | 293.15 | 0.85 [11] | 293.15 | 1.426 [12] | 298.15 |
| 1.452 [12] | 298.15 | 35 [12] | 298.15 | | | | |

### 27-43: 1,3-Diethylimidazolium trifluoromethanesulfonate

**Abbreviation**: [DEIm][TfO]
**Molecular Formula**: $C_8H_{13}F_3N_2O_3S$
**Molar Mass**: 274.26
**Structure**:



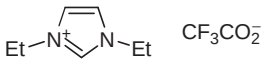
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 296.15 [11] |
| 296.15 [12] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) | $n$ | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1.33 [11] | 295.15 | 53 [11] | 293.15 | 0.75 [11] | 293.15 | 1.4367 [12] | 298.15 |
| 1.33 [12] | 298.15 | 53 [12] | 298.15 | | | | |

### 27-61: 1,3-Diethylimidazolium trifluoroacetate

**Abbreviation**: [DEIm][$CF_3CO_2$]
**Molecular Formula**: $C_9H_{13}F_3N_2O_2$
**Molar Mass**: 238.21
**Structure**:



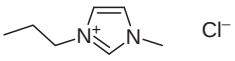
**Character**:
**Application**: [11]

| $T_g$ (K) |
|---|
| 233.15 ± 10 |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.25 | 295.15 | 43 | 293.15 | 0.74 | 293.15 |

### 28-11: 1-Propyl-3-methylimidazolium chloride

**Abbreviation**: [$C_3$MIm]Cl
**Molecular Formula**: $C_7H_{13}ClN_2$
**Molar Mass**: 160.65
**Structure**:



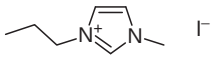
**Character**:
**Application**:

| $T_m$ (K) | $T_f$ (K) | $T_d$ (K) |
|---|---|---|
| 333.15 [8, 17] | 133.15 [17] | 554.15 [17] |
| | | 555.15 [17] |

| $\rho$ (g/cm$^3$) |
|---|
| 1.0749-1.1278 [8] |

### 28-13: 1-Propyl-3-methylimidazolium iodine

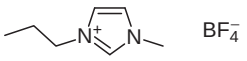
**Abbreviation**: [$C_3$MIm]I
**Molecular Formula**: $C_7H_{13}IN_2$
**Molar Mass**: 252.1
**Structure**:



**Character**:
**Application**:

### 28-21: 1-Propyl-3-methylimidazolium tetrafluoroborate

**Abbreviation**: $[C_3MIm][BF_4]$
**Molecular Formula**: $C_7H_{13}BF_4N_2$
**Molar Mass**: 212
**Structure**:



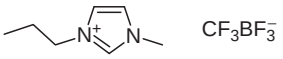
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 256.15 [29] | 185.15 [29]<br>259.25 [3] | 708.15 [29, 15] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.24<br>[29, 15] | 298.15 | 103<br>[29, 15] | 298.15 | 0.59<br>[29, 15] | 298.15 |

### 28-223: 1-Propyl-3-methylimidazolium trifluoromethyltrifluoroborate

**Abbreviation**: $[C_3MIm][CF_3BF_3]$
**Molecular Formula**: $C_8F_6H_{13}BN_2$
**Molar Mass**: 262
**Structure**:



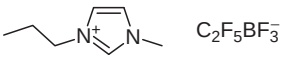
**Character**: Hydrophobic
**Application**: [15] Water content <50 ppm. Solvents for organic and biocatalytic reactions, electrolytes for electrochemical devices.

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 252.15 | 160.15 | 545.15 |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.31 | 298.15 | 43 | 298.15 | 0.85 | 298.15 |

### 28-224: 1-propyl-3-methylimidazolium pentafluoroethyltrifluoroborate

**Abbreviation**: $[C_3MIm][C_2F_5BF_3]$
**Molecular Formula**: $C_9F_8H_{13}BN_2$
**Molar Mass**: 312.01
**Structure**:



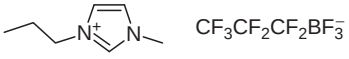
**Character**: Hydrophobic
**Application**: [15] Water content <50 ppm. Solvents for organic and biocatalytic reactions, electrolytes for electrochemical devices.

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 231.15 | 162.15 | 585.15 |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.38 | 298.15 | 35 | 298.15 | 0.75 | 298.15 |

### 28-225: 1-Propyl-3-methylimidazolium (heptafluoro-n-propyl)trifluoroborate

**Abbreviation**: $[C_3MIm][n\text{-}C_3F_7BF_3]$
**Molecular Formula**: $C_{10}F_{10}H_{13}BN_2$
**Molar Mass**: 362.02
**Structure**:



**Character**: Hydrophobic
**Application**: [15] Water content <50 ppm

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 268.15 | 571.15 |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.44 | 298.15 | 44 | 298.15 | 0.53 | 298.15 |

### 28-226: 1-Propyl-3-methylimidazolium (nonafluoro-n-butyl)trifluoroborate

**Abbreviation**: $[C_3MIm][n\text{-}C_4F_9BF_3]$
**Molecular Formula**: $C_{11}F_{12}H_{13}BN_2$
**Molar Mass**: 412.03
**Structure**:

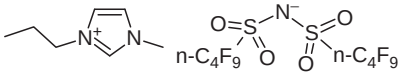
**Character**: Hydrophobic
**Application**: [15] Water content <50 ppm

| $T_m$ (K) | $T_{s\text{-}s}$ (K) | $T_d$ (K) |
|---|---|---|
| 261.15 | 154.15 | 578.15 |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.48 | 298.15 | 59 | 298.15 | 0.35 | 298.15 |

### 28-310: 1-Propyl-3-methylimidazolium bis (nonafluorobutane-1-sulfonyl)imide

**Abbreviation**: $[C_3MIm][NNf_2]$
**Molecular Formula**: $C_{15}H_{13}F_{18}N_3O_4S_2$
**Molar Mass**: 705.38
**Structure**:

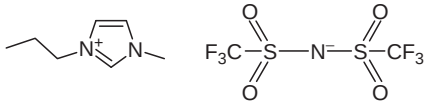


**Character**:
**Application**: [58]

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| <277.15 | 573.15 |

### 28-31: 1-Propyl-3-methylimidazolium bis ((trifluoromethyl)sulfonyl)imide

**Abbreviation**: $[C_3MIm][NTf_2]$, $[C_3MIm][Tf_2N]$, $[C_3MIm][TFSI]$
**Molecular Formula**: $C_9H_{13}F_6N_3O_4S_2$
**Molar Mass**: 405.34
**Structure**:



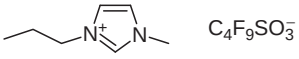
**Character**:
**Application**: Water cotent 3180 ppm [46]

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 186.15 [29, 46, 44] | 726.15 [79] |
| 183.15 [17] | 725.15 [17] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.475 [44] | 298.15 |

### 28-45: 1-Propyl-3-methylimidazolium perfluorobutylsulfonate

**Abbreviation**: $[C_3MIm][NfO]$
**Molecular Formula**: $C_{11}H_{13}F_9N_2SO_3$
**Molar Mass**: 424.28
**Structure**:

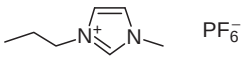


**Character**:
**Application**: [58]

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 306.15-307.15 | 558.15 |

### 28-51: 1-Propyl-3-methylimidazolium hexafluorophosphate

**Abbreviation**: [$C_3$MIm][$PF_6$]
**Molecular Formula**: $C_7H_{13}F_6N_2P$
**Molar Mass**: 270.16
**Structure**:



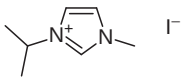
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 294.15 [44]<br>313.15 [24, 17] | 199.15 [44] | 713.15 [17]<br>708.15 [17] |

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 371 [26] | 298.15 |
| 312 [79] | 298.15 |
| 450 [80] | 298.15 |

### 29-13: 1-Isopropyl-3-methylimidazolium iodine

**Abbreviation**: [*i*-$C_3$MIm]I
**Molecular Formula**: $C_7H_{13}IN_2$
**Molar Mass**: 252.1
**Structure**:

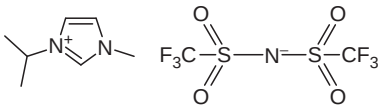


**Character**:
**Application**: [17]

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 387.15 | 569.15 |

### 29-31: 1-Isopropyl-3-methylimidazolium bis ((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [*i*-$C_3$MIm][$NTf_2$], [*i*-$C_3$MIm][$Tf_2N$], [*i*-$C_3$MIm][TFSI]
**Molecular Formula**: $C_9H_{13}F_6N_3O_4S_2$
**Molar Mass**: 405.34
**Structure**:

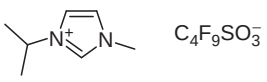


**Character**:
**Application**: [17]

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 289.15 | 682.15<br>705.15 |

### 29-45: 1-Isopropyl-3-methylimidazolium perfluorobutylsulfonate

**Abbreviation**: [*i*-$C_3$MIm][NfO]
**Molecular Formula**: $C_{11}H_{13}F_9N_2SO_3$
**Molar Mass**: 424.28
**Structure**:

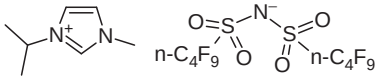


**Character**:
**Application**: [58]

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| <298.15 | 583.15 |

### 29-310: 1-Isopropyl-3-methylimidazolium bis(nonafluorobutane-1-sulfonyl)imide

**Abbreviation**: [*i*-$C_3$MIm][$NNf_2$]
**Molecular Formula**: $C_{15}H_{13}F_{18}N_3O_4S_2$
**Molar Mass**: 705.38
**Structure**:

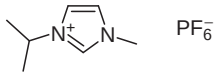


**Character**:
**Application**: [58]

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 301.15-302.15 | 583.15 |

### 29-51: 1-Isopropyl-3-methylimidazolium hexafluorophosphate

**Abbreviation**: [*i*-$C_3$MIm][$PF_6$]
**Molecular Formula**: $C_7H_{13}F_6N_2P$
**Molar Mass**: 270.16
**Structure**:

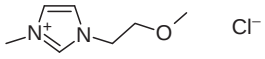


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 375.15 [24, 17] | 656.15 [17] |
| | 605.15 [17] |

### 210-11: 1-(2-Methoxyethyl)-3-methylimidazolium chloride

**Abbreviation**: [$COC_2$MIm]Cl
**Molecular Formula**: $C_7H_{13}ClN_2O$
**Molar Mass**: 176.65
**Structure**:

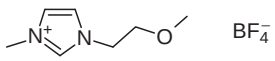


**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 338.15-341.15 [81] | 213.15 [82] |

### 210-21: 1-(2-Methoxyethyl)-3-methylimidazolium tetrafluoroborate

**Abbreviation**: [$C_2$OCMIm][$BF_4$]
**Molecular Formula**: $C_7H_{13}BF_4N_2O$
**Molar Mass**: 228
**Structure**:



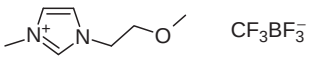
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 185.15 [82] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.26 [82] | 298.15 | 262.8 [82] | 293.15 |

### 210-223: 1-(2-Methoxyethyl)-3-methylimidazolium trifluoromethyltrifluoroborate

**Abbreviation**: [$C_2$OCMIm][$CF_3BF_3$]
**Molecular Formula**: $C_8F_6H_{13}BN_2O$
**Molar Mass**: 278
**Structure**:



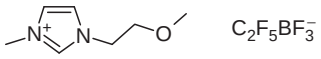
**Character**: Hydrophobic
**Application**: [15] Water content <50 ppm. Solvents for organic and biocatalytic reactions, electrolytes for electrochemical devices.

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 275.15 | 174.15 | 498.15 |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.36 | 298.15 | 43 | 298.15 | 0.69 | 298.15 |

### 210-224: 1-(2-Methoxyethyl)-3-methylimidazolium pentafluoroethyltrifluoroborate

**Abbreviation**: $[C_2OCMIm][C_2F_5BF_3]$
**Molecular Formula**: $C_9F_8H_{13}BN_2O$
**Molar Mass**: 328.01
**Structure**:



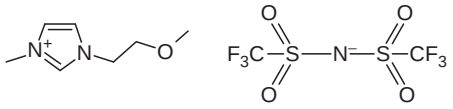
**Character**: Hydrophobic
**Application**: [15] Water content <50 ppm. Solvents for organic and biocatalytic reactions, electrolytes for electrochemical devices.

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 264.15 | 175.15 | 561.15 |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.42 | 298.15 | 38 | 298.15 | 0.61 | 298.15 |

### 210-31: 1-(2-Methoxyethyl)-3-methylimidazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: $[C_2OCMIm][NTf_2]$, $[C_2OCMIm][Tf_2N]$, [C2OCMIm][TFSI]
**Molecular Formula**: $C_9H_{13}F_6N_3O_5S_2$
**Molar Mass**: 421.34
**Structure**:



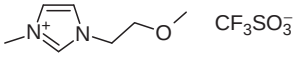
**Character**:
**Application**: 3% Wt [11]

| $T_g$ (K) |
|---|
| 223-243 [11] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.496 [11] | 295.15 | 54 [11] | 293.15 | 0.42 [11] | 293.15 |

### 210-43: 1-(2-Methoxyethyl)-3-methylimidazolium trifluoromethanesulfonate

**Abbreviation**: $[C_2OCMIm][TfO]$
**Molecular Formula**: $C_8H_{13}F_3N_2O_4S$
**Molar Mass**: 290.26
**Structure**:



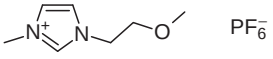
**Character**:
**Application**: [11]

| $T_m$ (K) |
|---|
| 300.15 |

| $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 74 | 293.15 | 0.36 | 293.15 |

### 210-51: 1-(2-Methoxyethyl)-3-methylimidazolium hexafluorophosphate

**Abbreviation**: $[C_2OCMIm][PF_6]$
**Molecular Formula**: $C_7H_{13}F_6N_2OP$
**Molar Mass**: 286.16
**Structure**:



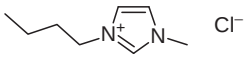
**Character**:
**Application**: [82]

| $T_m$ (K) |
|---|
| 299.15 |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.4 | 298.15 | 283.6 | 293.15 |

### 211-11: 1-Butyl-3-methylimidazolium chloride

**Abbreviation**: [$C_4$MIm]Cl, [BMIM]Cl, [bmim]Cl
**Molecular Formula**: $C_8H_{15}ClN_2$
**Molar Mass**: 174.67
**Structure**:



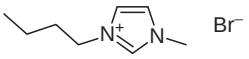
**Character**:
**Application**: Water content 2200 ppm [83,84]

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 314.15 [83, 84] | 204.15 [40] | 527.15 [83, 84] |
| 338.15 [7, 8] | 197.35 [85] | |
| 341.95 [85] | | |
| 343.15 [18] | | |
| 338.15 [12] | | |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $C_p$ (J·mol$^{-1}$·K$^{-1}$) | $T$ (K) | Log $P$ |
|---|---|---|---|---|---|---|
| 1.08 [83, 84] | 298.15 | 3950 [87] | 303 | 322.7 ± 4.1% [40] | 298.15 | −1.44 [18] |
| 1.0826-1.1261 [8] | | 1050 [87] | 318 | 333.7 ± 4.1% [40] | 323.15 | |
| 1.1 [86] | | 280 [87] | 338 | | | |
| 1.10 [12] | 338.15 | 100 [87] | 357 | | | |
| | | 42 [87] | 377 | | | |
| | | 27 [87] | 394 | | | |

### 211-12: 1-Butyl-3-methylimidazolium bromide

**Abbreviation**: [$C_4$MIm]Br, [BMIM]Br, [bmim]Br
**Molecular Formula**: $C_8H_{15}BrN_2$
**Molar Mass**: 219.12
**Structure**:



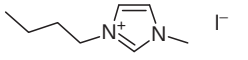
**Character**:
**Application**: [40]

| $T_g$ (K) |
|---|
| 223.15 |

| $C_p$ (J·mol$^{-1}$·K$^{-1}$) | $T$ (K) |
|---|---|
| 316.7 ± 3.2% | 298.15 |
| 323.6 ± 3.2% | 323.15 |

### 211-13: 1-Butyl-3-methylimidazolium iodine

**Abbreviation**: [$C_4$MIm]I, [BMIM]I, [bmim]I
**Molecular Formula**: $C_8H_{15}IN_2$
**Molar Mass**: 266.12
**Structure**:



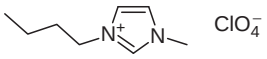
**Character**:
**Application**: Water content 1870 ppm [83,84]

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 201.15 [83] | 538.15 [83,84] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $\sigma$ (N/m) | $T$ (K) | $n$ | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1.44 [83,84] | 298.15 | 1110 [83,84] | 298.15 | 0.0547 [83] | 298.15 | 1.572 [83] | 298.15 |

### 211-14: 1-Butyl-3-methylimidazolium perchlorate

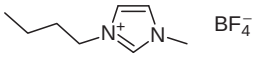
**Abbreviation**: $[C_4MIm][ClO_4]$, $[BMIM][ClO_4]$, $[bmim][ClO_4]$
**Molecular Formula**: $C_8H_{15}ClN_2O_4$
**Molar Mass**: 238.67
**Structure**:



**Character**:
**Application**: [83]

### 211-21: 1-Butyl-3-methylimidazolium tetrafluoroborate

**Abbreviation**: $[C_4Mim][BF_4]$, $[BMIM][BF_4]$, $[bmim][BF_4]$
**Molecular Formula**: $C_8H_{15}BF_4N_2$
**Molar Mass**: 226.03
**Structure**:



**Character**:
**Application**: Water content: 4530 ppm [83,84], <50 ppm [15]

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) | $T_f$ (K) |
|---|---|---|---|
| 192.15 [83, 79, 30] | 188.15 [29, 40] | 708.15 [29, 15] | 202.15 [3] |
| 191 [88] | 176.15 [83, 84] | 676.15 [82, 83] | 191.15 [12] |
| 190.15-191.15 [89] | 188.85 [91] | 680.15 [42] | |
| 198.15 [42] | 185.77 ± 2.43 [19] | 696.88 ± 0.34 [19] | |
| 196.85 [90] | 192 [23] | | |
| | 193.55 [92] | | |
| | 192.95 [90] | | |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $\sigma$ (N/m) | $T$ (K) | $n$ | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1.2048 ± 0.0024 [40] | 295.45 ± 0.1 | 219 [42, 83, 84] | 298.15 | 0.0384 [30] | | 1.429 [12] | 298.15 |
| 1.2005 ± 0.025 [40] | 303.85 ± 1.1 | 180 [29, 15] | 298.15 | 0.0466 [83] | 298.15 | 1.4219 [94] | |
| 1.1940 ± 0.0014 [40] | 313.55 ± 0.1 | 119.78 ± 1.28 [19] | 298.15 | | | | |
| 1.1850 ± 0.0027 [40] | 328.25 ± 0.3 | 233 [89] | 293.15 | | | | |
| 1.1737 ± 0.0022 [40] | 343.85 ± 0.8 | 119.0 ± 0.7 [92] | 288.15 | | | | |
| 1.213 [10] | 298.15 | 90.0 ± 1.49 [92] | 293.15 | | | | |
| 1.1747 ± 0.0001 [19] | 333.15 | 71.7 ± 1.1 [92] | 298.15 | | | | |
| 1.21 [29, 15] | 298.15 | 56.0 ± 0.8 [92] | 303.15 | | | | |
| 1.17 [86] | | 45.2 ± 0.5 [92] | 308.15 | | | | |
| 1.19 [42] | 298.15 | 37.1 ± 0.7 [92] | 313.15 | | | | |
| 1.12 [83, 84] | 298.15 | 233 [31] | 303.15 | | | | |
| 1.170 [31] | 303.15 | 233 [12] | 298.15 | | | | |
| 1.208 [12] | 298.15 | | | | | | |

| Electrochemical window (V) | Cathode limit (V) | Anodic limit (V) |
|---|---|---|
| 4.68 [15] | −2.55 | 2.13 |

| $C_p$ ($J \cdot mol^{-1} \cdot K^{-1}$) | $T$ (K) | $C_p$ ($J \cdot mol^{-1} \cdot K^{-1}$) | $T$ (K) | $C_p$ ($J \cdot mol^{-1} \cdot K^{-1}$) | $T$ (K) | $C_p$ ($J \cdot mol^{-1} \cdot K^{-1}$) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 351.5 ± 3.7% [40] | 298.15 | 364.8 [35] | 298.15 | 376.6 [35] | 323.15 | 388.7 [35] | 348.15 |
| 358 ± 3.7% [40] | 323.15 | 367.2 [35] | 303.15 | 379.0 [35] | 328.15 | 391.2 [35] | 353.15 |
| 357.8 [35] | 283.15 | 369.5 [35] | 308.15 | 381.4 [35] | 333.15 | 393.6 [35] | 358.15 |
| 360.2 [35] | 288.15 | 371.9 [35] | 313.15 | 383.9 [35] | 338.15 | | |
| 362.5 [35] | 293.15 | 374.3 [35] | 318.15 | 386.3 [35] | 343.15 | | |

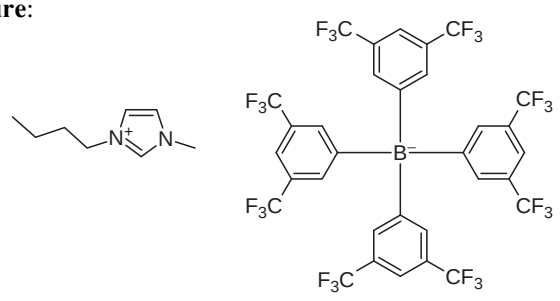
| $T$ (K) | $P$ (MPa) | $\rho$ ($kg/m^3$) [95] | $T$ (K) | $P$ (MPa) | $\rho$ ($kg/m^3$) [95] | $T$ (K) | $P$ (MPa) | $\rho$ ($kg/m^3$) [95] |
|---|---|---|---|---|---|---|---|---|
| 298.34 | 0.1 | 1205.03 | 303.23 | 40.02 | 1218.85 | 322.85 | 20.45 | 1197.2 |
| 298.34 | 0.7 | 1205.32 | 303.23 | 44.31 | 1220.61 | 322.85 | 25.4 | 1199.38 |
| 298.34 | 5.28 | 1207.44 | 303.23 | 49.5 | 1222.73 | 322.85 | 31.09 | 1201.87 |
| 298.34 | 10.6 | 1209.87 | 303.23 | 54.49 | 1224.75 | 322.85 | 34.85 | 1203.51 |
| 298.34 | 15.92 | 1212.24 | 303.23 | 59.82 | 1226.85 | 322.85 | 41.13 | 1206.23 |
| 298.34 | 20.54 | 1214.26 | 313.01 | 0.1 | 1194.59 | 322.85 | 44.88 | 1207.85 |
| 298.34 | 25 | 1216.18 | 313.01 | 4.13 | 1196.19 | 322.85 | 49.83 | 1209.95 |
| 298.34 | 30.71 | 1218.62 | 313.01 | 10.18 | 1198.82 | 322.85 | 54.52 | 1211.91 |
| 298.34 | 35.19 | 1220.47 | 313.01 | 15.65 | 1201.26 | 322.85 | 59.92 | 1214.2 |
| 298.34 | 40.66 | 1222.73 | 313.01 | 21.3 | 1203.75 | 332.73 | 0.1 | 1181.05 |
| 298.34 | 44.37 | 1224.21 | 313.01 | 24.58 | 1205.19 | 332.73 | 4.13 | 1182.92 |
| 298.34 | 49.66 | 1226.32 | 313.01 | 30.11 | 1207.62 | 332.73 | 6.35 | 1183.98 |
| 298.34 | 54.34 | 1228.16 | 313.01 | 35.39 | 1209.88 | 332.73 | 11.21 | 1186.3 |
| 298.34 | 59.23 | 1230.05 | 313.01 | 44.7 | 1213.84 | 332.73 | 15.22 | 1188.15 |
| 303.23 | 0.1 | 1201.29 | 313.01 | 49.72 | 1215.92 | 332.73 | 20.54 | 1190.55 |
| 303.23 | 8.78 | 1205.3 | 313.01 | 54.43 | 1217.91 | 332.73 | 25.28 | 1192.7 |
| 303.23 | 11.17 | 1206.4 | 313.01 | 59.45 | 1219.95 | 332.73 | 30.76 | 1195.16 |
| 303.23 | 15.23 | 1208.22 | 322.85 | 0.1 | 1187.85 | 332.73 | 35.08 | 1197.05 |
| 303.23 | 20.27 | 1210.43 | 322.85 | 3.73 | 1189.5 | 332.73 | 40.11 | 1199.23 |
| 303.23 | 24.89 | 1212.44 | 322.85 | 6.22 | 1190.68 | 332.73 | 44.86 | 1201.24 |
| 303.23 | 30.67 | 1214.92 | 322.85 | 10.02 | 1192.47 | 332.73 | 49.84 | 1203.35 |
| 303.23 | 34.77 | 1216.66 | 322.85 | 14.87 | 1194.68 | 332.73 | 54.76 | 1205.7 |
| | | | | | | 332.73 | 59.13 | 1207.2 |

| $T$ (K) | $P$ (MPa) | $u_s$ (m/s) [95] | $T$ (K) | $P$ (MPa) | $u_s$ (m/s) [95] | $T$ (K) | $P$ (MPa) | $u_s$ (m/s) [95] |
|---|---|---|---|---|---|---|---|---|
| 283.15 | 0.1 | 1599.51 | 293.15 | 10.075 | 1597.7 | 313.15 | 10.185 | 1554.04 |
| 283.15 | 4.956 | 1612.54 | 293.15 | 20.08 | 1624.43 | 313.15 | 20.07 | 1580.96 |
| 283.15 | 9.954 | 1626.2 | 293.15 | 59.673 | 1721.05 | 313.15 | 59.719 | 1679.35 |
| 283.15 | 20.13 | 1653.13 | 293.15 | 98.994 | 1806.08 | 313.15 | 99.014 | 1765.79 |
| 283.15 | 30.003 | 1678.26 | 293.15 | 151.068 | 1907.3 | 313.15 | 123.975 | 1816.59 |
| 283.15 | 44.948 | 1714.66 | 303.15 | 0.1 | 1544.88 | 313.15 | 151.204 | 1869.96 |
| 283.15 | 59.705 | 1749.05 | 303.15 | 5.08 | 1558.6 | 323.15 | 0.1 | 1503.36 |
| 283.15 | 79.788 | 1793.04 | 303.15 | 10.091 | 1572.45 | 323.15 | 4.999 | 1517.83 |
| 283.15 | 99.235 | 1833.62 | 303.15 | 20.063 | 1599.53 | 323.15 | 10.202 | 1533.4 |
| 283.15 | 124.38 | 1882.86 | 303.15 | 59.767 | 1697 | 323.15 | 20.046 | 1561.37 |
| 283.15 | 151.416 | 1932.2 | 303.15 | 99.007 | 1782.61 | 323.15 | 59.977 | 1662.08 |
| 293.15 | 0.1 | 1570.23 | 303.15 | 124.609 | 1834.02 | 323.15 | 99.014 | 1748.81 |
| 293.15 | 5.094 | 1583.99 | 313.15 | 0.1 | 1525.22 | 323.15 | 123.945 | 1798.92 |
| | | | 313.15 | 5.091 | 1539.35 | 323.15 | 151.374 | 1853.24 |

| VP (Pa) [96] | $T$ (K) | VP (Pa) [96] | $T$ (K) | VP (Pa) [96] | $T$ (K) |
|---|---|---|---|---|---|
| $1.22 \times 10^{-2}$ | 457.66 | $8.74 \times 10^{-2}$ | 487.54 | $46.6 \times 10^{-2}$ | 517.45 |
| $2.29 \times 10^{-2}$ | 467.52 | $15.2 \times 10^{-2}$ | 497.53 | | |
| $5.07 \times 10^{-2}$ | 477.68 | $27.4 \times 10^{-2}$ | 507.54 | | |

### 211-217: 1-Butyl-3-methylimidazolium tetrakis (3,5-bis(trifluoromethyl)phenyl)borate

**Abbreviation**: $[C_4MIm][B\{C_6H_3(CF_3)_2\text{-}3,5\}_4]$ [TFPB], [bmim][TFPB]
**Molecular Formula**: $C_{40}H_{27}BF_{24}N_2$
**Molar Mass**: 1002.44
**Structure**:

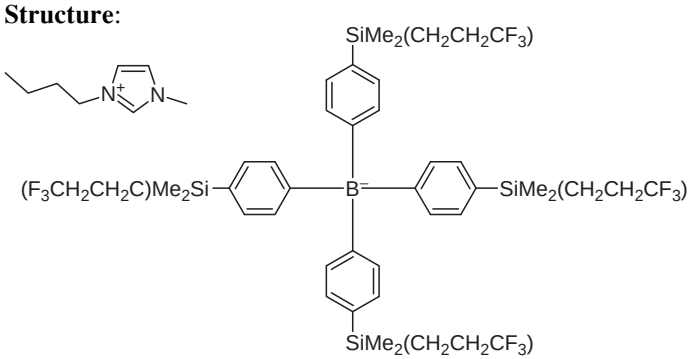


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 382.15 [97] | 518.15 [97] |
| 377.15 [98] | |

### 211-219: 1-Butyl-3-methylimidazolium tetrakis ((4-dimethyl-(3,3,3-trifluoropropyl)-silyl)phenyl)borate

**Abbreviation**: $[C_4MIm][B(C_6H_4\{SiMe_2(CH_2CH_2CF_3)\}\text{-}4)_4]$, [BMIM][BPSiF], [bmim][BPSiF]
**Molecular Formula**: $C_{52}H_{71}BF_{12}N_2Si_4$
**Molar Mass**: 1075.28
**Structure**:

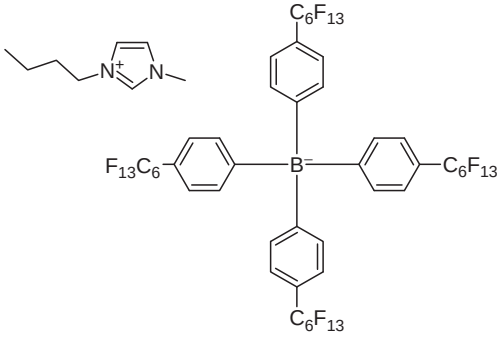


**Character**:
**Application**: [97]

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 377.15 | 448.15 |

### 211-220: 1-Butyl-3-methylimidazolium tetrakis ((4-perfluorohexyl)phenyl)borate

**Abbreviation**: $[C_4MIm][B\{C_6H_4(C_6F_{13})\text{-}4\}_4]$, [BMIM][BPF], [bmim][BPF]
**Molecular Formula**: $C_{56}H_{31}BF_{52}N_2$
**Molar Mass**: 1730.6
**Structure**:

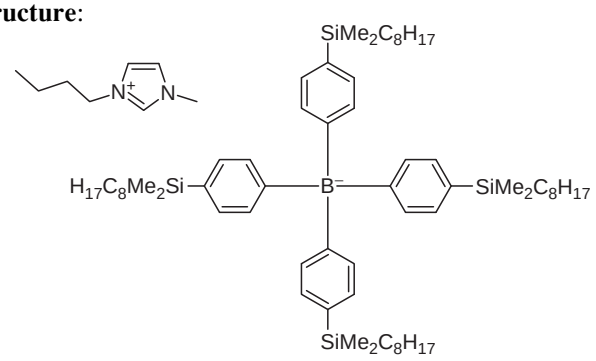


**Character**:
**Application**: [97]

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 363.15 | 498.15 |

### 211-221: 1-Butyl-3-methylimidazolium tetrakis ((4-dimethyl-octylsilyl)phenyl)borate

**Abbreviation**: $[C_4MIm][B\{C_6H_4SiMe_2C_8H_{17}\text{-}4\}_4]$, [BMIM][BPSiM], [bmim][BPSiM]
**Molecular Formula**: $C_{72}H_{123}BN_2Si_4$
**Molar Mass**: 1139.91
**Structure**:

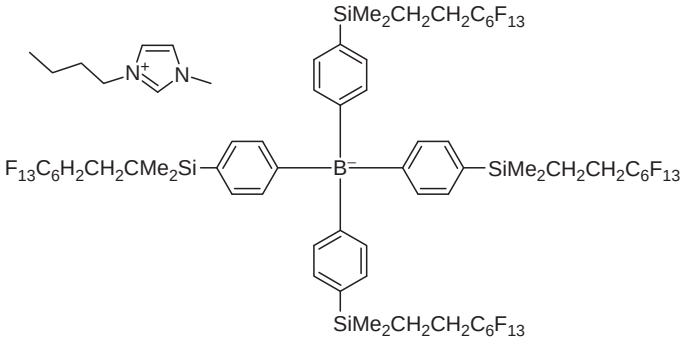


**Character**:
**Application**: [97]

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 253.15 | 443.15 |

### 211-222: 1-Butyl-3-methylimidazolium tetrakis ((4-dimethyl-tridecylfluorooctylsilyl)phenyl)borate

**Abbreviation**: $[C_4MIm][B\{C_6H_4SiMe_2(CH_2CH_2C_6F_{13})\text{-}4\}_4]$, $[BMIM][B\{C_6H_4SiMe_2(CH_2CH_2C_6F_{13})\text{-}4\}_4]$, [bmim][BPSiMF]
**Molecular Formula**: $C_{72}H_{71}BF_{52}N_2Si_4$
**Molar Mass**: 2075.44
**Structure**:



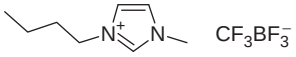
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 263.15 [97] | 463.15 [97] |
| 283.15 [99] | |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 1.38 [98] | 298.15 | 0.000019 [98] | 298.15 |
| | | 0.0011 [98] | 368.15 |

### 211-223: 1-Butyl-3-methylimidazolium trifluoromethyltrifluoroborate

**Abbreviation**: $[C_4MIm][CF_3BF_3]$, [BMIM] $[CF_3BF_3]$, [bmim]$[CF_3BF_3]$
**Molecular Formula**: $C_9F_6H_{15}BN_2$
**Molar Mass**: 276.03
**Structure**:



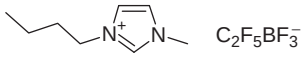
**Character**: Hydrophobic
**Application**: [15] Water content <50 ppm. Solvents for organic and biocatalytic reactions, electrolytes for electrochemical devices.

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 165.15 | 511.15 |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.27 | 298.15 | 49 | 298.15 | 0.59 | 298.15 |

### 211-224: 1-Butyl-3-methylimidazolium pentafluoroethyltrifluoroborate

**Abbreviation**: $[C_4MIm][C_2F_5BF_3]$, [BMIM]$[C_2F_5BF_3]$, [bmim]$[C_2F_5BF_3]$
**Molecular Formula**: $C_{10}F_8H_{15}BN_2$
**Molar Mass**: 326.04
**Structure**:



**Character**: Hydrophobic
**Application**: [15] Water content <50 ppm. Solvents for organic and biocatalytic reactions, electrolytes for electrochemical devices.

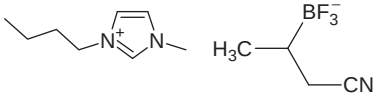
| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 231.15 | 167.15 | 582.15 |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.34 | 298.15 | 41 | 298.15 | 0.55 | 298.15 |

| Electrochemical window (V) | Cathode limit (V) | Anodic limit (V) |
|---|---|---|
| 4.73 | −2.52 | 2.21 |

### 211-227: 1-Butyl-3-methylimidazolium 3-(trifluoroborate)-butylnitrile

**Abbreviation**: $[C_4MIm][CH_3CH(BF_3)CH_2CN]$, [BMIM]$[CH_3CH(BF_3)CH_2CN]$, [bmim]$[CH_3CH(BF_3)CH_2CN]$
**Molecular Formula**: $C_{12}H_{21}BF_3N_3$
**Molar Mass**: 275.12
**Structure**:



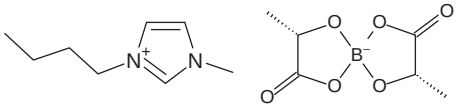
**Character**:
**Application**: [100]

| $T_m$ (K) |
|---|
| 188.65 |

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 101 | 293.15 |

### 211-235: l-Butyl-3-methylimidazolium (T-4)-bis [(2*S*)-2-(hydroxy-κO)propanoato-κO]borate

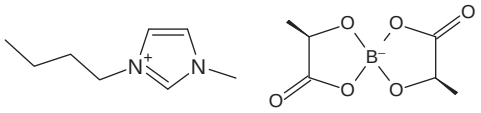
**Abbreviation**: [BMIm][BLLB]
**Molecular Formula**: $C_{14}H_{23}BN_2O_6$
**Molar Mass**: 326.15
**Structure**:



**Character**:
**Application**: [39]

**211-236: l-Butyl-3-methylimidazolium (T-4)-bis [(2*R*)-2-(hydroxy-κO)propanoato-κO]boraten**

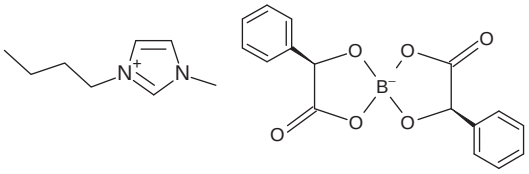
**Abbreviation**: [BMIm][BDLB]
**Molecular Formula**: $C_{14}H_{23}BN_2O_6$
**Molar Mass**: 326.15
**Structure**:



**Character**:
**Application**: [39]

**211-237: l-Butyl-3-methylimidazolium (T-4)-bis [(α*R*)-α-(hydroxy-κO)benzeneacetato-κO]borate**

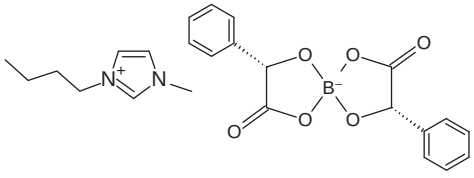
**Abbreviation**: [BMIm][BRMB]
**Molecular Formula**: $C_{24}H_{27}BN_2O_6$
**Molar Mass**: 450.29
**Structure**:



**Character**:
**Application**: [39]

**211-238: l-Butyl-3-methylimidazolium (T-4)-bis [(α*S*)-α-(hydroxy-κO)benzeneacetato-κO]borate**

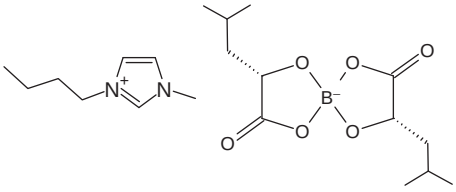
**Abbreviation**: [BMIm][BSMB]
**Molecular Formula**: $C_{24}H_{27}BN_2O_6$
**Molar Mass**: 450.29
**Structure**:



**Character**:
**Application**: [39]

**211-239: l-Butyl-3-methylimidazolium (T-4)-bis [(2*S*)-2-(hydroxy-κO)-4-methyl-pentanoato-κO]borate**

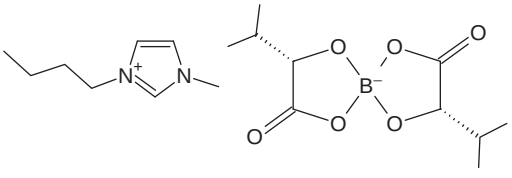
**Abbreviation**: [BMIm][BLHcB]
**Molecular Formula**: $C_{20}H_{35}BN_2O_6$
**Molar Mass**: 410.31
**Structure**:



**Character**:
**Application**: [39]

**211-240: l-Butyl-3-methylimidazolium (T-4)-bis [(2*S*)-2-(hydroxy-κO)-3-methyl-butanoato-κO]borate**

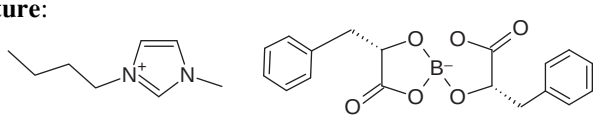
**Abbreviation**: [BMIm][BLHvB]
**Molecular Formula**: $C_{18}H_{31}BN_2O_6$
**Molar Mass**: 382.26
**Structure**:



**Character**:
**Application**: [39]

**211-241: l-Butyl-3-methylimidazolium (T-4)-bis [(α*S*)-α-(hydroxy-κO)benzeneepropanoato-κO]borate**

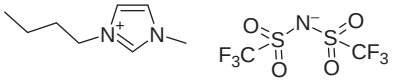
**Abbreviation**: [BMIm][BLPLB]
**Molecular Formula**: $C_{26}H_{31}N_2BO_6$
**Molar Mass**: 478.35
**Structure**:



**Character**:
**Application**: [39]

## 211-31: 1-Butyl-3-methylimidazolium bis ((trifluoromethyl)sulfonyl)imide

**Abbreviation**: $[C_4MIm][NTf_2]$, $[BMIM][NTf_2]$, $[bmim][NTf_2]$
**Molecular Formula**: $C_{10}H_{15}F_6N_3O_4S_2$
**Molar Mass**: 419.37
**Structure**:



**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_f$ (K) | $T_d$ (K) |
|---|---|---|---|
| 271.15 [40] | 187.15 [40] | 257.15 [91] | 675.15 [42] |
| 264.15 [101] | 187.25 [91] | | 712.15 [83] |
| 268.25 [91] | 186.15 [44] | | |
| 267.15 [44] | 169.15 [83] | | |
| 269.15 [11, 89] | | | |
| 269.15 [12] | | | |

| $\rho$ ( g/cm$^3$) | $T$ (K) | $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1.429 [89] | 292.15 | 1.4386 ± 0.0003 [40] | 23.3 ± 0.4 | 52 [102] | 293.15 | 0.265 [52] | 288.15 |
| 1.429 [31] | 292.15 | 1.4336 ± 0.0008 [40] | 31.0 ± 0.3 | 57.6 [49] | 293.15 | 0.331 [52] | 293.15 |
| 1.44 [102] | 293.15 | 1.4247 ± 0.0013 [40] | 40.3 ± 0.1 | 52.0 [31] | 293.15 | 0.39 [11, 89] | 293.15 |
| 1.429 [103] | 295.15 | 1.4142 ± 0.0008 [40] | 50.2 ± 0.4 | 52 [11, 86] | 293.15 | 0.4 [106] | 293.15 |
| 1.43 [83, 86] | 298.15 | 1.4054 ± 0.0010 [40] | 60.6 ± 0.1 | 69 [83] | 298.15 | 0.406 [52] | 298.15 |
| 1.433 [10] | 298.15 | 1.43 [104] | | 54.5 [42] | 298.15 | 0.585 [52] | 308.15 |
| 1.436 [44, 47] | 298.15 | 1.429 [12] | 25 | 35.9 [105] | 298.15 | 0.924 [107] | 323.15 |

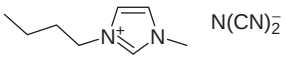
| $\sigma$ (N/m) | $T$ (K) | $C_p$ (J·mol$^{-1}$·K$^{-1}$) [40] | $T$ (K) |
|---|---|---|---|
| 0.0375 [83] | 298.15 | 536.3 ± 3.6% | 298.15 |
| | | 543.9 ± 3.6% | 323.15 |

| Electrochemical window (V) | Cathode limit (V) | Anodic limit (V) | $n$ | $T$ (K) |
|---|---|---|---|---|
| 4.62 [15] | −2.50 | 2.12 | 1.4271 [12] | 298.15 |

| $T$ (K) | $P$ (MPa) | $u_s$ (m/s) [108] | $T$ (K) | $P$ (MPa) | $u_s$ (m/s) [108] | $T$ (K) | $P$ (MPa) | $u_s$ (m/s) [108] |
|---|---|---|---|---|---|---|---|---|
| 283.15 | 0.1 | 1264.55 | 293.15 | 10.02 | 1271.15 | 313.15 | 5.01 | 1211.49 |
| 283.15 | 5.09 | 1280.8 | 293.15 | 20.01 | 1302.51 | 313.15 | 10.01 | 1228.65 |
| 283.15 | 9.98 | 1296.79 | 293.15 | 59.65 | 1411.77 | 313.15 | 19.96 | 1261.1 |
| 283.15 | 20.02 | 1327.89 | 293.15 | 99.72 | 1505.9 | 313.15 | 59.73 | 1373.46 |
| 283.15 | 29.95 | 1357.26 | 293.15 | 151.2 | 1611.94 | 313.15 | 98.97 | 1466.37 |
| 283.15 | 44.83 | 1398.7 | 303.15 | 0.1 | 1217.51 | 313.15 | 150.89 | 1573.23 |
| 283.15 | 59.71 | 1437.55 | 303.15 | 5.03 | 1233.96 | 323.15 | 0.1 | 1172.58 |
| 283.15 | 79.7 | 1486.76 | 303.15 | 10 | 1250.67 | 323.15 | 5.05 | 1190.18 |
| 283.15 | 98.92 | 1531.26 | 303.15 | 20.03 | 1282.84 | 323.15 | 10.03 | 1207.77 |
| 283.15 | 124.41 | 1586.58 | 303.15 | 59.72 | 1393.47 | 323.15 | 19.94 | 1240.95 |
| 283.15 | 151 | 1640.47 | 303.15 | 98.96 | 1485.86 | 323.15 | 59.81 | 1355.93 |
| 293.15 | 0.1 | 1238.06 | 303.15 | 150.84 | 1592.89 | 323.15 | 99.22 | 1450.79 |
| 293.15 | 5 | 1254.63 | 313.15 | 0.1 | 1194.5 | 323.15 | 150.84 | 1557.39 |

### 211-34: 1-Butyl-3-methylimidazolium dicyanamide

**Abbreviation**: [$C_4$MIm][dca], [BMIM][dca], [bmim][dca]
**Molecular Formula**: $C_{10}H_{15}N_5$
**Molar Mass**: 205.26
**Structure**:




**Character**:
**Application**: [40]

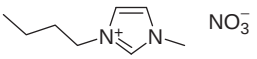
| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 267.15 | 183.15 |
| 267.15 [12] | |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $C_p$ (J·mol$^{-1}$·K$^{-1}$) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1.0580 ± 0.0010 | 297.15 ± 0.1 | 1.06 [12] | 298.15 | 37 [12] | 298.15 | 364.6 ± 3.8% | 298.15 |
| 1.0525 ± 0.0011 | 312.95 ± 0.1 | 1.061 [31] | 301.15 | 32.6 [31] | 301.15 | 370 ± 3.8% | 323.15 |
| 1.0466 ± 0.0011 | 324.35 ± 0.1 | 1.0340 ± 0.0010 | 344.15 ± 0.1 | | | | |
| 1.0415 ± 0.0010 | 333.95 ± 0.1 | 1.0258 ± 0.0010 | 355.85 ± 0.1 | | | | |

| VP (Pa) | $T$ (K) | VP (Pa) | $T$ (K) | VP (Pa) | $T$ (K) |
|---|---|---|---|---|---|
| 0.192 [53] | 448.7 | 0.614 [53] | 463.2 | 2.206 [53] | 479.6 |
| 0.298 [53] | 453.9 | 1.436 [53] | 474.2 | | |

### 211-39: 1-Butyl-3-methylimidazolium nitrate

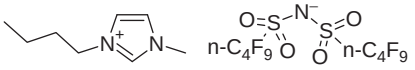
**Abbreviation**: $[C_4MIm][NO_3]$, [BMIM][$NO_3$], [bmim][$NO_3$]
**Molecular Formula**: $C_8H_{15}N_3O_3$
**Molar Mass**: 201.23
**Structure**:



**Character**:
**Application**:

### 211-310: 1-Butyl-3-methylimidazolium bis(nonafluorobutane-1-sulfonyl)imide

**Abbreviation**: $[C_4MIm][NNf_2]$, [BMIM][$NNf_2$], [bmim][$NNf_2$]
**Molecular Formula**: $C_{16}H_{15}F_{18}N_3O_4S_2$
**Molar Mass**: 719.41
**Structure**:

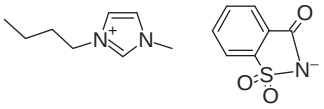


**Character**:
**Application**: [58]

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| <298.15 | 593.15 |

### 211-312: 1-Butyl-3-methylimidazolium Saccharinate

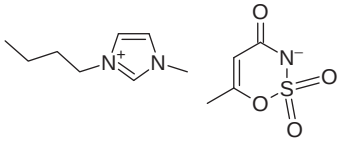
**Abbreviation**: $[C_4MIm][Sac]$, [BMIM][Sac], [bmim][Sac]
**Molecular Formula**: $C_{15}H_{19}N_3O_3S$
**Molar Mass**: 321.4
**Structure**:



**Character**: Liquid, non-toxic
**Application**: [16]

### 211-315: 1-Butyl-3-methylimidazolium Acesulfamate

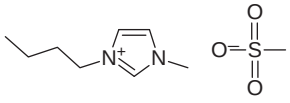
**Abbreviation**: $[C_4MIm][Ace]$, [BMIM][Ace], [bmim][Ace]
**Molecular Formula**: $C_{12}H_{19}N_3O_4S$
**Molar Mass**: 301.36
**Structure**:



**Character**: Liquid, non-toxic
**Application**: [16]

### 211-42: 1-Butyl-3-methylimidazolium mesylate

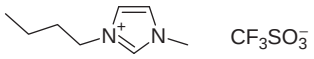
**Abbreviation**: $[C_4MIm][mesy]$, [BMIM][mesy], [bmim][mesy]
**Molecular Formula**: $C_9H_{18}N_2O_3S$
**Molar Mass**: 234.32
**Structure**:



**Character**:
**Application**:

**211-43: 1-Butyl-3-methylimidazolium trifluoromethanesulfonate**

**Abbreviation**: [$C_4$MIm][TfO], [BMIM][TfO], [bmim][TfO]
**Molecular Formula**: $C_9H_{15}F_3N_2O_3S$
**Molar Mass**: 288.29
**Structure**:




**Character**:
**Application**:

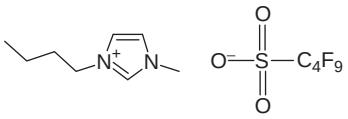
| $T_m$ (K) | $T_f$ (K) | $T_g$ (K) |
|---|---|---|
| 289.55 [11, 89, 7, 91] | 254.15 [40] | 191.55 [91] |
| 286.15 [40] | | |
| 289.15 [12] | | |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $n$ | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1.2908 [11] | 293.15 | 1.3013 ± 0.0015 [40] | 295.75 ± 0.1 | 90 [11, 89] | 293.15 | 1.438 [12] | 298.15 |
| 1.29 [89] | 293.15 | 1.2965 ± 0.0014 [40] | 303.95 ± 0.4 | 90 [12] | 298.15 | | |
| 1.296 [47] | 298.15 | 1.2894 ± 0.0012 [40] | 313.35 ± 0.1 | | | | |
| 1.29 [12] | 298.15 | 1.2790 ± 0.0023 [40] | 328.75 ± 0.5 | | | | |
| | | 1.2700 ± 0.0038 [40] | 342.95 ± 0.9 | | | | |

| $C_p$ (J·mol$^{-1}$·K$^{-1}$) [61] | $T$ (K) | $C_p$ (J·mol$^{-1}$·K$^{-1}$) [61] | $T$ (K) | $C_p$ (J·mol$^{-1}$·K$^{-1}$) [61] | $T$ (K) | $C_p$ (J·mol$^{-1}$·K$^{-1}$) [61] | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 457 | 335.15 | 498 | 410.15 | 468 | 383.15 | 459 | 353.18 |
| 460 | 340.15 | 500 | 415.15 | 471 | 388.15 | 463 | 358.13 |
| 462 | 345.15 | 503 | 420.15 | 472 | 393.15 | 467 | 363.14 |
| 465 | 350.15 | 506 | 425.15 | 475 | 398.15 | 471 | 368.14 |
| 468 | 355.15 | 443 | 328.15 | 476 | 403.15 | 472 | 373.13 |
| 470 | 360.15 | 446 | 333.15 | 477 | 408.15 | 474 | 378.12 |
| 473 | 365.15 | 448 | 338.15 | 481 | 413.15 | 477 | 383.16 |
| 476 | 370.15 | 450 | 343.15 | 448 | 313.16 | 479 | 388.15 |
| 479 | 375.15 | 453 | 348.15 | 449 | 318.15 | 482 | 393.13 |
| 481 | 380.15 | 454 | 353.15 | 451 | 323.14 | 484 | 398.16 |
| 484 | 385.15 | 458 | 358.15 | 451 | 328.12 | 487 | 403.14 |
| 487 | 390.15 | 460 | 363.15 | 450 | 333.17 | 489 | 408.17 |
| 489 | 395.15 | 463 | 368.15 | 453 | 338.15 | 491 | 413.14 |
| 492 | 400.15 | 464 | 373.15 | 455 | 343.14 | 494 | 418.17 |
| 495 | 405.15 | 468 | 378.15 | 456 | 348.18 | 494 | 423.14 |

### 211-45: 1-Butyl-3-methylimidazolium perfluorobutylsulfonate

**Abbreviation**: [BMIM][PFBS], [BMIM][NfO]
**Molecular Formula**: $C_{12}H_{15}F_9N_2O_3S$
**Molar Mass**: 438.31
**Structure**:



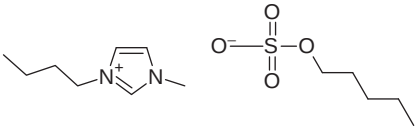
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 293.15 [12] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $n$ |
|---|---|---|---|---|
| 1.473 [12] | 298.15 | 373 [12] | 298.15 | 1.4052 [12] |

### 211-412: 1-Butyl-3-methylimidazolium pentyl sulfate

**Abbreviation**: $[C_4MIm][C_5H_{11}OSO_3]$, $[BMIM][C_5H_{11}OSO_3]$, $[bmim][C_5F_0]$
**Molecular Formula**: $C_{13}H_{26}N_2SO_4$
**Molar Mass**: 306.42
**Structure**:



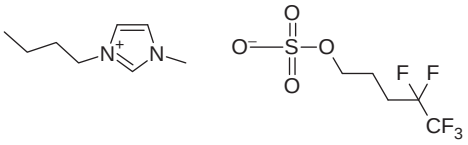
**Character**: Hydrophilic
**Application**: Medium for lipase-catalyzed reaction

| $T_m$ (K) |
|---|
| 256.15 [62] |

| $K$ (S/m) | $\eta_D$ (cp) |
|---|---|
| 0.083 [62] | 240 [62] |

### 211-413: 1-Butyl-3-methylimidazolium 4,4,5,5,5-pentafluoropentyl sulfate

**Abbreviation**: $[C_4MIm][CF_3CF_2CH_2CH_2CH_2OSO_3]$, $[BMIM][C_5F_5]$, $[bmim][C_5F_5]$
**Molecular Formula**: $C_{13}H_{21}F_5N_2SO_4$
**Molar Mass**: 396.37
**Structure**:



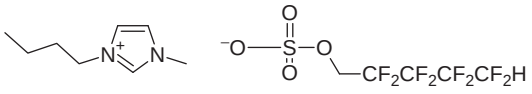
**Character**: Half-hydrophobic
**Application**: Medium for lipase-catalyzed reaction

| $T_m$ (K) |
|---|
| 258.05 [62] |

| $K$ (S/m) | $\eta_D$ (cp) |
|---|---|
| 0.063 [62] | 250 [62] |

### 211-414: 1-Butyl-3-methylimidazolium 2,2,3,3,4,4,5,5-octafluoropentyl sulfate

**Abbreviation**: $[C_4MIm][CHF_2CF_2CF_2CF_2CH_2OSO_3]$, $[BMIM][C_5F_8]$, $[bmim][C_5F_8]$
**Molecular Formula**: $C_{13}H_{18}F_8N_2SO_4$
**Molar Mass**: 450.35
**Structure**:



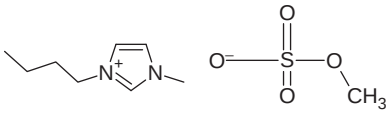
**Character**: Hydrophobic
**Application**: Medium for lipase-catalyzed reaction

| $T_m$ (K) |
|---|
| 211.95 [62] |

| $K$ (S/m) | $\eta_D$ (cp) |
|---|---|
| 0.085 [62] | 170 [62] |

### 211-417: 1-Butyl-3-methylimidazolium methylsulfate

**Abbreviation**: [BMIM][MS], [BMIM][$MeSO_4$]
**Molecular Formula**: $C_9H_{18}N_2O_4S$
**Molar Mass**: 250.31
**Structure**:



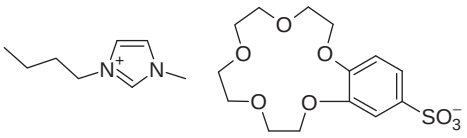
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 253.15 [12] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.2 [12] | 298.15 | 180 [12] | 298.15 |

### 211-422: 1-Butyl-3-methylimidazolium (monobenzo-15-crown-5)-4′-sulphonate

**Abbreviation**: [$C_4$MIm][Crs], [BMIM][Crs], [bmim][Crs]
**Molecular Formula**: $C_{22}H_{34}N_2O_8S$
**Molar Mass**: 486.58
**Structure**:

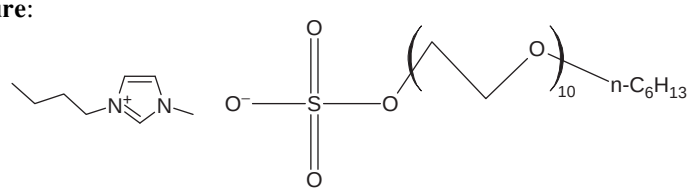


**Character**:
**Application**: [109]

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 239.15 | 540.15 |

### 211-424: 1-Butyl-3-methylimidazolium polyethylenoxy (10) cetyl ether sulfate

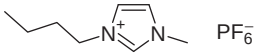
**Abbreviation**: [$C_4$MIm][cetyl-PEG10-sulfate], [BMIM][cetyl-PEG10-sulfate], [bmim][cetyl-PEG10-sulfate]
**Molecular Formula**: $C_{34}H_{69}N_2O_{14}S$
**Molar Mass**: 761.98
**Structure**:



**Character**:
**Application**: [110]

## 211-51: 1-Butyl-3-methylimidazolium hexafluorophosphate

**Abbreviation**: $[C_4MIm][PF_6]$, [BMIM][$PF_6$], [bmim][$PF_6$]
**Molecular Formula**: $C_8H_{15}F_6N_2P$
**Molar Mass**: 284.18
**Structure**:



**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 212.15 [89, 30] | 197.15 [40] | 663.15 [42] |
| 284.15 [40] | 212 [79] | 622.15 [83] |
| 265.15 [86] | 196.15 [112, 44] | |
| 277.15 [42] | 193.15 [83] | |
| 276.43 [68] | | |
| 283.15 [83] | | |
| 265.15 [111] | | |
| 283.15 [12] | | |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.35 [83, 84] | 298.15 | 524.4 ± 11.3 [92] | 288.15 | 0.15 [51] | RT |
| 1.363 [112, 10] | 298.15 | 285.83 ± 6.08 [116] | 293.15 | 0.079 [52] | 288.15 |
| 1.368 [44] | 298.15 | 366.7 ± 2.2 [92] | 293.15 | 0.109 [52] | 293.15 |
| 1.3603 ± 0.008 [4] | 298.15 | 308.3 [82] | 293.15 | 0.1 [79] | 298.15 |
| 1.31 [82] | 298.15 | 397 [83, 84] | 298.15 | 0.146 [79, 89] | 298.15 |
| 1.369 [47] | 298.15 | 450 [83] | 298.15 | 0.146 [52, 117] | 298.15 |
| 1.32 [113] | 298.15 | 312 [42] | 298.15 | 0.247 [52] | 308.15 |
| 1.373 [12] | 298.15 | 207 ± 11.2 [116] | 298.15 | 0.477 [52] | 323.15 |
| 1.36-1.37 [111] | 298.15 | 393 [115] | 298.15 | | |
| 1.370 [31] | 303.15 | 269.0 ± 1.8 [92] | 298.15 | | |
| 1.3443 [48] | 303.15 | 275 [117] | 298.15 | | |
| 1.36 [86] | | 148–450 [111] | 298.15 | | |
| 1.3669 [114] | | 400 [12] | 298.15 | | |
| 1.37 [115] | | 199.7 ± 1.7 [92] | 303.15 | | |
| | | 312 [31] | 303.15 | | |
| | | 153.9 ± 0.9 [92] | 308.15 | | |
| | | 120.7 ± 1.0 [92] | 313.15 | | |

| $T$ (K) | $P$ (MPa) | $\rho$ (g/cm$^3$) [118] | $T$ (K) | $P$ (MPa) | $\rho$ (g/cm$^3$) [118] | $T$ (K) | $P$ (MPa) | $\rho$ (g/cm$^3$) [118] |
|---|---|---|---|---|---|---|---|---|
| 273.15 | 0.1 | 1.3889 | 308.15 | 50.3 | 1.3864 | 323.15 | 249.3 | 1.4420 |
| 278.15 | 0.1 | 1.3846 | 308.15 | 75.6 | 1.3978 | 333.15 | 0.1 | 1.3386 |
| 283.15 | 0.1 | 1.3803 | 308.15 | 100.3 | 1.4078 | 333.15 | 10.7 | 1.3455 |
| 288.15 | 0.1 | 1.3760 | 308.15 | 125.2 | 1.4168 | 333.15 | 26.2 | 1.3549 |
| 293.15 | 0.1 | 1.3717 | 308.15 | 140.6 | 1.4219 | 333.15 | 51.1 | 1.3685 |
| 298.15 | 0.1 | 1.3674 | 308.15 | 151.0 | 1.4252 | 333.15 | 75.7 | 1.3804 |
| 298.15 | 12.1 | 1.3744 | 313.15 | 0.1 | 1.3550 | 333.15 | 91.1 | 1.3871 |
| 298.15 | 24.7 | 1.3812 | 323.15 | 0.1 | 1.3468 | 333.15 | 100.1 | 1.3909 |
| 298.15 | 25.7 | 1.3817 | 323.15 | 1.3 | 1.3475 | 343.15 | 0.1 | 1.3305 |
| 298.15 | 50.6 | 1.3940 | 323.15 | 3.1 | 1.3487 | 343.15 | 0.1 | 1.3304 |
| 298.15 | 75.8 | 1.4050 | 323.15 | 5.6 | 1.3503 | 343.15 | 5.5 | 1.3341 |
| 298.15 | 100.3 | 1.4146 | 323.15 | 10.7 | 1.3535 | 343.15 | 10.6 | 1.3375 |
| 298.15 | 125.1 | 1.4233 | 323.15 | 25.8 | 1.3623 | 343.15 | 25.7 | 1.3470 |
| 298.15 | 125.6 | 1.4235 | 323.15 | 50.8 | 1.3757 | 343.15 | 50.6 | 1.3610 |
| 298.15 | 150.3 | 1.4313 | 323.15 | 75.8 | 1.3874 | 343.15 | 75.6 | 1.3734 |
| 298.15 | 174.1 | 1.4382 | 323.15 | 100.7 | 1.3978 | 343.15 | 100.6 | 1.3844 |
| 303.15 | 0.1 | 1.3632 | 323.15 | 125.5 | 1.4071 | 343.15 | 125.4 | 1.3941 |
| 308.15 | 0.1 | 1.3591 | 323.15 | 150.4 | 1.4155 | 343.15 | 140.2 | 1.3994 |
| 308.15 | 0.9 | 1.3596 | 323.15 | 175.2 | 1.4231 | 343.15 | 149.9 | 1.4027 |
| 308.15 | 9.6 | 1.3649 | 323.15 | 200 | 1.4299 | 343.15 | 172.9 | 1.4101 |
| 308.15 | 25.8 | 1.3740 | 323.15 | 224.6 | 1.4362 | 353.15 | 0.1 | 1.3224 |

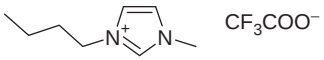
| $T$ (K) | $P$ (MPa) | $u_s$ (m/s) [95] | $T$ (K) | $P$ (MPa) | $u_s$ (m/s) [95] | $T$ (K) | $P$ (MPa) | $u_s$ (m/s) [95] |
|---|---|---|---|---|---|---|---|---|
| 283.16 | 0.1 | 1455.52 | 291.15 | 59.912 | 1583.22 | 303.16 | 98.921 | 1634.38 |
| 283.16 | 0.1 | 1457.6 | 293.16 | 0.1 | 1432.85 | 313.16 | 0.1 | 1389.49 |
| 283.16 | 5.088 | 1468.58 | 293.16 | 5.157 | 1446.45 | 313.16 | 5.01 | 1402.83 |
| 283.16 | 5.131 | 1470.64 | 293.16 | 10.195 | 1459.01 | 313.16 | 10.043 | 1416.43 |
| 283.16 | 10.263 | 1481.79 | 293.16 | 20.215 | 1484.18 | 313.16 | 20.319 | 1443.3 |
| 283.16 | 20.249 | 1506.72 | 293.16 | 29.959 | 1507.92 | 313.16 | 41.702 | 1495.14 |
| 283.16 | 29.954 | 1529.87 | 293.16 | 44.757 | 1542.2 | 313.16 | 44.866 | 1502.87 |
| 283.16 | 29.995 | 1532.46 | 293.16 | 59.732 | 1574.7 | 313.16 | 59.754 | 1536.27 |
| 283.16 | 44.961 | 1564.25 | 293.16 | 78.627 | 1613.77 | 313.16 | 79.721 | 1578.64 |
| 283.16 | 59.682 | 1596.68 | 293.16 | 99.149 | 1654.46 | 313.16 | 99.097 | 1617.38 |
| 283.16 | 59.829 | 1599.61 | 294.15 | 0.1 | 1431.59 | 313.16 | 125.283 | 1662.16 |
| 283.16 | 79.904 | 1638.64 | 294.15 | 5.125 | 1444.54 | 323.25 | 0.1 | 1367.98 |
| 283.16 | 99.077 | 1677.06 | 294.15 | 10.105 | 1457.17 | 323.25 | 5.061 | 1381.82 |
| 283.16 | 124.179 | 1724.36 | 294.15 | 20.357 | 1483.23 | 323.25 | 9.942 | 1395.37 |
| 283.16 | 150.925 | 1772.61 | 294.15 | 29.785 | 1506.04 | 323.25 | 20.234 | 1422.72 |
| 291.15 | 0.1 | 1440.19 | 303.16 | 0.1 | 1410.27 | 323.25 | 29.721 | 1446.75 |
| 291.15 | 5.069 | 1453.26 | 303.16 | 5.078 | 1423.48 | 323.25 | 44.935 | 1482.19 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 291.15 | 10.166 | 1466.63 | 303.16 | 10.204 | 1437.13 | 323.25 | 59.711 | 1515.95 |
| 291.15 | 20.4 | 1492.36 | 303.16 | 20.225 | 1462.82 | 323.25 | 79.553 | 1557.89 |
| 291.15 | 30.019 | 1515.72 | 303.16 | 44.714 | 1521.26 | 323.25 | 98.901 | 1592.52 |
| 291.15 | 44.92 | 1549.95 | 303.16 | 59.773 | 1554.58 | | | |

| $\sigma$ (N/m) | $T$ (K) | $n$ | $T$ (K) | $C_p$ (J·mol$^{-1}$·K$^{-1}$) | $T$ (K) |
|---|---|---|---|---|---|
| 0.0488 [83] | 298.15 | 1.409 [83] | 298.15 | 397.6 ± 4.4% [40] | 298.15 |
| 0.0429 [30] | 298.15 | 1.411 [12] | 298.15 | 405.1 ± 4.4% [40] | 323.15 |

### 211-61: 1-Butyl-3-methylimidazolium trifluoroacetate

**Abbreviation**: [$C_4$MIm][$CF_3CO_2$], [BMIM][$CF_3CO_2$], [bmim][$CF_3CO_2$]
**Molecular Formula**: $C_{10}H_{15}F_3N_2O_2$
**Molar Mass**: 252.23
**Structure**:



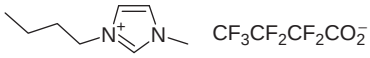

**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 233.15 ± 10 [11, 89] | 233.15 ± 10 [119] |
| | 203.6 ± 0.1 [120] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.209 [73] | 283.15 | 73 [11] | 293.15 | 0.32 [11] | 293.15 |
| 1.209 [78] | 295.15 | | | | |
| 1.198 [10] | 298.15 | | | | |

### 211-62: 1-Butyl-3-methylimidazolium heptafluorobutanoate

**Abbreviation**: [$C_4$MIm][$CF_3CF_2CF_2CO_2$], [BMIM][$CF_3CF_2CF_2CO_2$], [bmim][$CF_3CF_2CF_2CO_2$]
**Molecular Formula**: $C_{12}H_{15}F_7N_2O_2$
**Molar Mass**: 352.25
**Structure**:



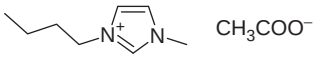

**Character**:
**Application**: [11]

| $T_g$ (K) |
|---|
| 233.15 ± 10 |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.333 | 295.15 | 182 | 293.15 | 0.1 | 293.15 |

### 211-63: 1-Butyl-3-methylimidazolium acetate

**Abbreviation**: [$C_4$MIm][OAc], [BMIM][OAc], [bmim][OAc]
**Molecular Formula**: $C_{10}H_{18}N_2O_2$
**Molar Mass**: 198.27
**Structure**:



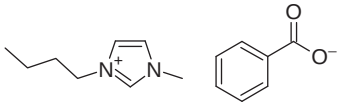

**Character**:
**Application**:

| $T_m$(K) |
|---|
| 253.15 [12] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.06 [12] | 298.15 |

### 211-64: 1-Butyl-3-methylimidazolium benzoate

**Abbreviation**: [$C_4$MIm][ba], [BMIM][ba], [bmim][ba]
**Molecular Formula**: $C_{15}H_{20}N_2O_2$
**Molar Mass**: 260.33
**Structure**:

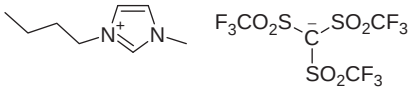



**Character**:
**Application**: [121]

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 201.07 | 552.75 |
| 210.79 | |

### 211-71: 1-Butyl-3-methylimidazolium tris(trifluoromethylsulfonyl)methide

**Abbreviation**: [$C_4$MIm][$Tf_3C$], [BMIM][$Tf_3C$], [bmim][$Tf_3C$]
**Molecular Formula**: $C_{12}H_{15}F_9N_2O_6S_3$
**Molar Mass**: 550.44
**Structure**:

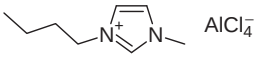


**Character**:
**Application**: [40]

| $\rho$ (g/cm$^3$) | $T$ (K) | $C_p$ (J·mol$^{-1}$·K$^{-1}$) | $T$ (K) |
|---|---|---|---|
| 1.5630 ± 0.0012 | 297.65 ± 0.1 | 782.8 ± 2.3% | 298.15 |
| 1.5573 ± 0.0014 | 305.25 ± 0.2 | 802.4 ± 2.3% | 323.15 |
| 1.5484 ± 0.0012 | 313.65 ± 0.1 | | |
| 1.5390 ± 0.0019 | 323.45 ± 0.1 | | |
| 1.5288 ± 0.0013 | 333.25 ± 1.3 | | |

### 211-81: 1-Butyl-3-methylimidazolium tetrachloroaluminate

**Abbreviation**: [BMIM][[$AlCl_4$]
**Molecular Formula**: $C_8H_{15}N_2AlCl_4$
**Molar Mass**: 308.01
**Structure**:



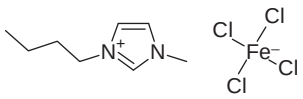
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 263.15 [12] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.24 [12] | 298.15 | 26 [12] | 298.15 |

### 211-811: 1-Butyl-3-methylimidazolium tetrachloroferrate

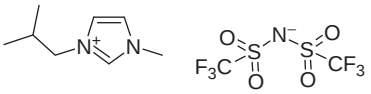
**Abbreviation**: [bmim][$FeCl_4$]
**Molecular Formula**: $C_8H_{15}N_2FeCl_4$
**Molar Mass**: 336.87
**Structure**:



**Character**:
**Application**: Lewis acidic [122]

### 212-31: 1-Isobutyl-3-methylimidazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [*i*-$C_4$MIm][$NTf_2$]
**Molecular Formula**: $C_{10}H_{15}F_6N_3O_4S_2$
**Molar Mass**: 419.37
**Structure**:



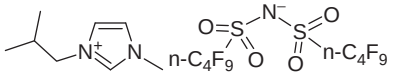
**Character**:
**Application**: [11] Water content 1.5% wt.

| $T_m$ (K) |
|---|
| 233.15 ± 10 |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.428 | 293.15 | 83 | 293.15 | 0.26 | 293.15 |

### 212-310: 1-Isobutyl-3-methylimidazolium bis(nonafluorobutane-1-sulfonyl)imide

**Abbreviation**: [*i*-$C_4$MIm][$NNf_2$]
**Molecular Formula**: $C_{16}H_{15}F_{18}N_3O_4S_2$
**Molar Mass**: 719.41
**Structure**:

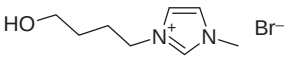


**Character**:
**Application**: [58]

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| <277.15 | 568.15 |

### 214-12: 3-(4-Hydroxy-butyl)-1-methylimidazolium bromide

**Abbreviation**: [$OH(CH_2)_4$MIm]Br
**Molecular Formula**: $C_8H_{15}BrN_2O$
**Molar Mass**: 235.12
**Structure**:

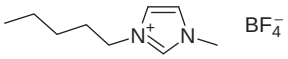


**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 190.15 [82] |

### 216-21: 1-Amyl-3-methylimidazolium tetrafluoroborate

**Abbreviation**: [$C_5$MIm][$BF_4$]
**Molecular Formula**: $C_9H_{17}BF_4N_2$
**Molar Mass**: 240.05
**Structure**:



**Character**:
**Application**: [3]

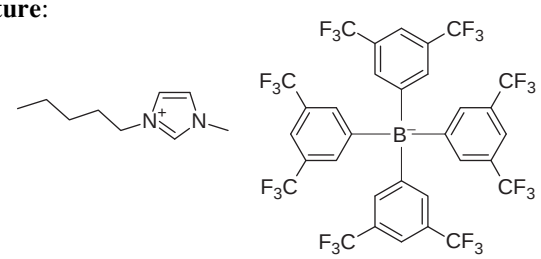
| $T_f$ (K) | $T_g$ (K) |
|---|---|
| 185.15 | 185.65 |

| $\sigma$ (N/m) [123] | $T$ (K) | Water content (ppm) | $\sigma$ (N/m) [123] | $T$ (K) | Water content (ppm) | $\sigma$ (N/m) [123] | $T$ (K) | Water content (ppm) |
|---|---|---|---|---|---|---|---|---|
| 0.0403 | 278.15 | 0 | 0.0416 | 278.15 | 4000 | 0.042 | 278.15 | 6057 |
| 0.0402 | 283.15 | 0 | 0.0414 | 283.15 | 4000 | 0.0417 | 283.15 | 6057 |
| 0.040 | 288.15 | 0 | 0.0411 | 288.15 | 4000 | 0.0415 | 288.15 | 6057 |
| 0.0397 | 293.15 | 0 | 0.0409 | 293.15 | 4000 | 0.0413 | 293.15 | 6057 |
| 0.0396 | 298.15 | 0 | 0.0408 | 298.15 | 4000 | 0.0411 | 298.15 | 6057 |
| 0.0394 | 303.15 | 0 | 0.0406 | 303.15 | 4000 | 0.041 | 303.15 | 6057 |
| 0.0392 | 308.15 | 0 | 0.0404 | 308.15 | 4000 | 0.0409 | 308.15 | 6057 |
| 0.039 | 313.15 | 0 | 0.0402 | 313.15 | 4000 | 0.0408 | 313.15 | 6057 |
| 0.0389 | 318.15 | 0 | 0.0399 | 318.15 | 4000 | 0.0406 | 318.15 | 6057 |
| 0.0387 | 323.15 | 0 | 0.0397 | 323.15 | 4000 | 0.0404 | 323.15 | 6057 |
| 0.0386 | 328.15 | 0 | 0.0396 | 328.15 | 4000 | 0.0402 | 328.15 | 6057 |
| 0.0385 | 333.15 | 0 | 0.0395 | 333.15 | 4000 | 0.04 | 333.15 | 6057 |
| 0.0384 | 338.15 | 0 | 0.0393 | 338.15 | 4000 | 0.0398 | 338.15 | 6057 |
| 0.0413 | 278.15 | 3055 | 0.0418 | 278.15 | 4986 | 0.0426 | 278.15 | 6988 |
| 0.0411 | 283.15 | 3055 | 0.0415 | 283.15 | 4986 | 0.0423 | 283.15 | 6988 |
| 0.0409 | 288.15 | 3055 | 0.0413 | 288.15 | 4986 | 0.0421 | 288.15 | 6988 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 0.0407 | 293.15 | 3055 | 0.0411 | 293.15 | 4986 | 0.0419 | 293.15 | 6988 |
| 0.0405 | 298.15 | 3055 | 0.0409 | 298.15 | 4986 | 0.0417 | 298.15 | 6988 |
| 0.0403 | 303.15 | 3055 | 0.0407 | 303.15 | 4986 | 0.0415 | 303.15 | 6988 |
| 0.0401 | 308.15 | 3055 | 0.0405 | 308.15 | 4986 | 0.0413 | 308.15 | 6988 |
| 0.0399 | 313.15 | 3055 | 0.0404 | 313.15 | 4986 | 0.041 | 313.15 | 6988 |
| 0.0396 | 318.15 | 3055 | 0.0402 | 318.15 | 4986 | 0.0408 | 318.15 | 6988 |
| 0.0395 | 323.15 | 3055 | 0.04 | 323.15 | 4986 | 0.0406 | 323.15 | 6988 |
| 0.0394 | 328.15 | 3055 | 0.0398 | 328.15 | 4986 | 0.0404 | 328.15 | 6988 |
| 0.0393 | 333.15 | 3055 | 0.0396 | 333.15 | 4986 | 0.0401 | 333.15 | 6988 |
| 0.0391 | 338.15 | 3055 | 0.0395 | 338.15 | 4986 | 0.0399 | 338.15 | 6988 |

### 216-217: 1-Amyl-3-methylimidazolium tetrakis (3,5-bis(trifluoromethyl)phenyl)borate

**Abbreviation**: [$C_5$MIm][TFPB]
**Molecular Formula**: $C_{41}H_{29}BF_{24}N_2$
**Molar Mass**: 1016.46
**Structure**:

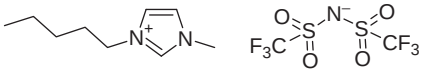


**Character**:
**Application**: [98]

| $T_m$ (K) |
|---|
| 355.15 |

### 216-31: 1-Amyl-3-methylimidazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [$C_5$MIm][$NTf_2$]
**Molecular Formula**: $C_{11}H_{17}F_6N_3O_4S_2$
**Molar Mass**: 433.39
**Structure**:



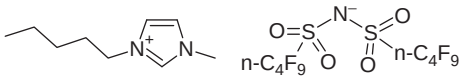
**Character**:
**Application**: [44]

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 264.15 | 188.15 |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.403 | 298.15 |

### 216-310: 1-Amyl-3-methylimidazolium bis(nonafluorobutane-1-sulfonyl)imide

**Abbreviation**: [$C_5$MIm][$NNf_2$]
**Molecular Formula**: $C_{17}H_{17}F_{18}N_3O_4S_2$
**Molar Mass**: 733.44
**Structure**:

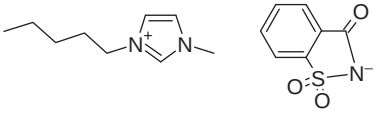


**Character**:
**Application**: [58]

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| <298.15 | 568.15 |

### 216-312: 1-Amyl-3-methylimidazolium Saccharinate

**Abbreviation**: [$C_5$MIm][Sac]
**Molecular Formula**: $C_{16}H_{21}N_3O_3S$
**Molar Mass**: 335.42
**Structure**:

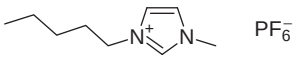


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 337.15 [16] |

### 216-51: 1-Amyl-3-methylimidazolium hexafluorophosphate

**Abbreviation**: $[C_5MIm][PF_6]$
**Molecular Formula**: $C_9H_{17}F_6N_2P$
**Molar Mass**: 298.21
**Structure**:



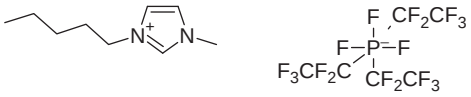
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 193.15 [44, 112] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.326 [44] | 298.15 |
| 1.333 [112] | |

### 216-54: 1-Amyl-3-methylimidazolium tris(pentafluoroethyl)trifluorophosphate

**Abbreviation**: $[C_5MIm][(C_2F_5)_3PF_3]$
**Molecular Formula**: $C_{15}H_{17}F_{18}PN_2$
**Molar Mass**: 598.25
**Structure**:



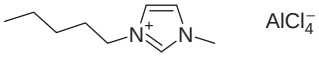
**Character**:
**Application**: [36]

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| $<$223.15 | 573.15 |

| Electrochemical window (V) | Cathode limit (V) | Anodic limit (V) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|
| 6.5 | −2.6 | 3.9 | 0.166 | 293.15 |

### 216-81: 1-Amyl-3-methylimidazolium tetrachloroaluminate

**Abbreviation**: $[C_5MIm][AlCl_4]$
**Molecular Formula**: $C_9H_{17}AlCl_4N_2$
**Molar Mass**: 322.04
**Structure**:

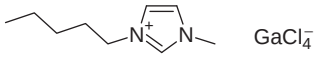


**Character**:
**Application**: [124]

| $\rho$ (g/cm$^3$) | $T$ (K) | $\rho$ (g/cm$^3$) | $T$ (K) | $\sigma$ (N/m) | $T$ (K) | $\sigma$ (N/m) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1.2311 | 273.15 | 1.2027 | 313.15 | 0.044 | 273.15 | 0.0419 | 313.15 |
| 1.2276 | 278.15 | 1.1989 | 318.15 | 0.0437 | 278.15 | 0.0415 | 318.15 |
| 1.2243 | 283.15 | 1.1959 | 323.15 | 0.0434 | 283.15 | 0.0412 | 323.15 |
| 1.2208 | 288.15 | 1.1922 | 328.15 | 0.0431 | 288.15 | 0.0408 | 328.15 |
| 1.2174 | 293.15 | 1.1882 | 333.15 | 0.0429 | 293.15 | 0.0406 | 333.15 |
| 1.2133 | 298.15 | 1.1858 | 338.15 | 0.0426 | 298.15 | 0.0403 | 338.15 |
| 1.2094 | 303.15 | 1.1823 | 343.15 | 0.0424 | 303.15 | 0.04 | 343.15 |
| 1.2059 | 308.15 | | | 0.0421 | 308.15 | | |

### 216-89: 1-Amyl-3-methylimidazolium tetrachlorogalldate

**Abbreviation**: $[C_5MIm][GaCl_4]$
**Molecular Formula**: $C_9H_{17}Cl_4GaN_2$
**Molar Mass**: 364.78
**Structure**:

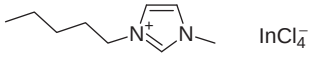



**Character**:
**Application**: [124]

| $\rho$ (g/cm$^3$) | $T$ (K) | $\rho$ (g/cm$^3$) | $T$ (K) | $\rho$ (g/cm$^3$) | $T$ (K) | $\sigma$ (N/m) | $T$ (K) | $\sigma$ (N/m) | $T$ (K) | $\sigma$ (N/m) | $T$ (K) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.3956 | 273.15 | 1.3756 | 298.15 | 1.3562 | 323.15 | 0.0444 | 273.15 | 0.0431 | 298.15 | 0.0418 | 323.15 |
| 1.3916 | 278.15 | 1.3715 | 303.15 | 1.3521 | 328.15 | 0.0442 | 278.15 | 0.0428 | 303.15 | 0.0415 | 328.15 |
| 1.3875 | 283.15 | 1.3675 | 308.15 | 1.3483 | 333.15 | 0.0439 | 283.15 | 0.0426 | 308.15 | 0.0411 | 333.15 |
| 1.3835 | 288.15 | 1.3636 | 313.15 | 1.3443 | 338.15 | 0.0435 | 288.15 | 0.0423 | 313.15 | 0.0408 | 338.15 |
| 1.3796 | 293.15 | 1.3597 | 318.15 | 1.3402 | 343.15 | 0.0433 | 293.15 | 0.0421 | 318.15 | 0.0404 | 343.15 |

### 216-810: 1-Amyl-3-methylimidazolium tetrachloroindate

**Abbreviation**: $[C_5MIm][InCl_4]$
**Molecular Formula**: $C_9H_{17}Cl_4InN_2$
**Molar Mass**: 409.87
**Structure**:

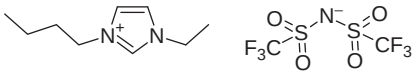



**Character**:
**Application**: [124]

| $\rho$ (g/cm$^3$) | $T$ (K) | $\rho$ (g/cm$^3$) | $T$ (K) | $\rho$ (g/cm$^3$) | $T$ (K) | $\sigma$ (N/m) | $T$ (K) | $\sigma$ (N/m) | $T$ (K) | $\sigma$ (N/m) | $T$ (K) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.5342 | 273.15 | 1.5108 | 298.15 | 1.487 | 323.15 | 0.0451 | 273.15 | 0.0434 | 298.15 | 0.042 | 323.15 |
| 1.5296 | 278.15 | 1.5059 | 303.15 | 1.4827 | 328.15 | 0.0448 | 278.15 | 0.0433 | 303.15 | 0.0417 | 328.15 |
| 1.5246 | 283.15 | 1.501 | 308.15 | 1.4784 | 333.15 | 0.0445 | 283.15 | 0.043 | 308.15 | 0.0415 | 333.15 |
| 1.52 | 288.15 | 1.496 | 313.15 | 1.4737 | 338.15 | 0.0441 | 288.15 | 0.0428 | 313.15 | 0.0413 | 338.15 |
| 1.5152 | 293.15 | 1.4914 | 318.15 | 1.4696 | 343.15 | 0.0437 | 293.15 | 0.0425 | 318.15 | 0.041 | 343.15 |

### 217-31: 1-Butyl-3-ethylimidazolium bis((trifluoromethyl) sulfonyl)imide

**Abbreviation**: $[C_4C_2Im][NTf_2]$
**Molecular Formula**: $C_{11}H_{17}F_6N_3O_4S_2$
**Molar Mass**: 433.39
**Structure**:



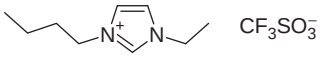
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 233.15 ± 10 [11] |
| 265.15 [12] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) | $n$ | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1.404 [103] | 295.15 | 48 [11] | 293.15 | 0.41 [11] | 293.15 | 1.4285 [12] | 298.15 |
| 1.404 [12] | 298.15 | 48 [12] | 298.15 | | | | |

### 217-43: 1-Butyl-3-ethylimidazolium trifluoromethanesulfonate

**Abbreviation**: $[C_4C_2Im][TfO]$
**Molecular Formula**: $C_{10}H_{17}F_3N_2O_3S$
**Molar Mass**: 302.32
**Structure**:



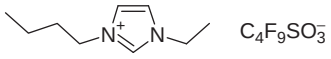
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 275 [11] |
| 275.15 [12] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $n$ | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1.27 [60] | | 0.27 [11] | 293.15 | 90 [12] | 298.15 | 1.441 [12] | 298.15 |
| 1.18 [12] | 298.15 | 0.27 [60] | 298.15 | | | | |

### 217-45: 1-Butyl-3-ethylimidazolium perfluorobutylsulfonate

**Abbreviation**: $[C_4C_2Im][NfO]$
**Molecular Formula**: $C_{13}H_{17}F_9N_2O_3S$
**Molar Mass**: 452.34
**Structure**:



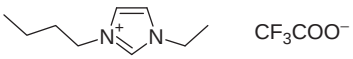
**Character**:
**Application**: Water content 8.9% by mass [11]

| $T_m$ (K) |
|---|
| 294.15 [11]<br>294.15 [12] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) | $n$ | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1.427 [125] | 295.15 | 323 [11] | 293.15 | 0.053 [11] | 293.15 | 1.4025 [12] | 298.15 |
| 1.427 [12] | 298.15 | 320 [12] | 298.15 | | | | |

### 217-61: 1-Butyl-3-ethylimidazolium trifluoroacetate

**Abbreviation**: $[C_4C_2Im][CF_3COO]$
**Molecular Formula**: $C_{11}H_{17}F_3N_2O_2$
**Molar Mass**: 266.26
**Structure**:



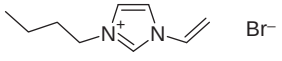
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 233.15 ± 10 [11] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 1.183 [126] | 295.15 | 0.25 [11] | 293.15 |

### 218-12: 1-Vinyl-3-butylimidazolium bromide

**Abbreviation**: [VBIm]Br
**Molecular Formula**: $C_9H_{15}BrN_2$
**Molar Mass**: 231.14
**Structure**:

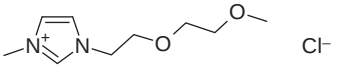


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 356.15 [9] |

### 220-11: 1-[2-(2-Methoxyethoxy)ethyl]-3-methylimidazolium chloride

**Abbreviation**: $[C_5O_2MIm]Cl$
**Molecular Formula**: $C_9H_{17}ClN_2O_2$
**Molar Mass**: 220.7
**Structure**:



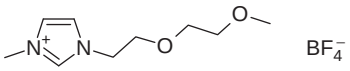
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 188.6 [127]<br>188.15 [82] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.14 [82] | 298.15 | 613.4 [82] | 293.15 |

### 220-21: 1-[2-(2-Methoxyethoxy)ethyl]-3-methylimidazolium tetrafluoroborate

**Abbreviation**: $[C_5O_2MIm][BF_4]$
**Molecular Formula**: $C_9H_{17}BF_4N_2O_2$
**Molar Mass**: 272.05
**Structure**:



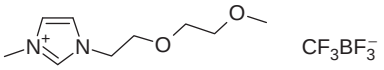
**Character**:
**Application**: [82]

| $T_g$ (K) |
|---|
| 187.15 |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.22 | 298.15 | 377 | 293.15 |

### 220-223: 1-[2-(2-Methoxyethoxy)ethyl]-3-methylimidazolium trifluoromethyltrifluoroborate

**Abbreviation**: $[C_5O_2MIm][CF_3BF_3]$
**Molecular Formula**: $C_{10}F_6H_{17}N_2BO_2$
**Molar Mass**: 322.06
**Structure**:



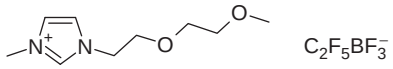
**Character**: Hydrophobic
**Application**: [15] water content <50 ppm. Solvents for organic and biocatalytic reactions, electrolytes for electrochemical devices.

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 186.15 | 511.15 |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.31 | 298.15 | 62 | 298.15 | 0.34 | 298.15 |

### 220-224: 1-[2-(2-Methoxyethoxy)ethyl]-3-methylimidazolium pentafluoroethyltrifluoroborate

**Abbreviation**: $[C_5O_2MIm][C_2F_5BF_3]$
**Molecular Formula**: $C_{11}F_8H_{17}N_2BO_2$
**Molar Mass**: 372.06
**Structure**:



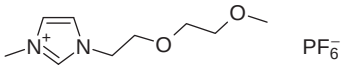
**Character**: Hydrophobic
**Application**: [15] water content <50 ppm. Solvents for organic and biocatalytic reactions, electrolytes for electrochemical devices.

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 183.15 | 566.15 |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.37 | 298.15 | 51 | 298.15 | 0.34 | 298.15 |

### 220-51: 1-[2-(2-Methoxyethoxy)ethyl]-3-methylimidazolium hexafluorophosphate

**Abbreviation**: $[C_5O_2MIm][PF_6]$
**Molecular Formula**: $C_9H_{17}F_6N_2O_2P$
**Molar Mass**: 330.21
**Structure**:



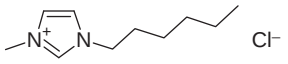
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 204.15 [82] |
| 206.3 [127] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.32 [82] | 298.15 | 425.8 [82] | 293.15 |

### 221-11: 1-Hexyl-3-methylimidazolium chloride

**Abbreviation**: $[C_6MIm]Cl$
**Molecular Formula**: $C_{10}H_{19}ClN_2$
**Molar Mass**: 202.73
**Structure**:



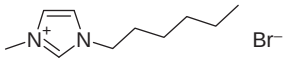

**Character**:
**Application**: Water content 1130 ppm [83, 84]

| $T_g$ (K) | $T_d$ (K) | $T_m$ (K) |
|---|---|---|
| 198.15 [83, 84] | 526.15 [83, 84] | 198.15 [12] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_K$ (mm$^2$/s) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $\sigma$ (N/m) | $T$ (K) | $n$ | $T$ (K) | Log $P$ |
|---|---|---|---|---|---|---|---|---|---|---|
| 1.05 [12, 36] | 293.15 | 7453 [36] | 293.15 | 716 [83, 84] | 298.15 | 0.0425 [83] | 298.15 | 1.515 [83] | 298.15 | −0.71 |
| 1.03 [83, 84] | 298.15 | | | 7500 [12] | 298.15 | | | | | |

### 221-12: 1-Hexyl-3-methylimidazolium bromide

**Abbreviation**: $[C_6MIm]Br$
**Molecular Formula**: $C_{10}H_{19}N_2Br$
**Molar Mass**: 247.18
**Structure**:

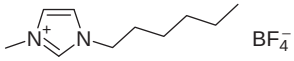



**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 224 [128] |

### 221-21: 1-Hexyl-3-methylimidazolium tetrafluoroborate

**Abbreviation**: $[C_6MIm][BF_4]$
**Molecular Formula**: $C_{10}H_{19}BF_4N_2$
**Molar Mass**: 254.08
**Structure**:



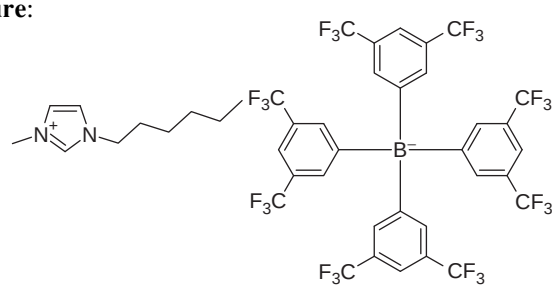

**Character**:
**Application**: Water content <50 ppm [15]

| $T_g$ (K) | $T_d$ (K) | $T_m$ (K) |
|---|---|---|
| 194 [128] | 682.15 [15] | 191.15 [12] |
| 190.75 [3] | | |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $\eta_K$ (mm$^2$/s) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1.15 [36] | 293.15 | 314 [129] | 293.15 | 195 [36] | 293.15 | 0.12 [15] | 298.15 |
| 1.16 [15] | 298.15 | 310 [12] | 298.15 | | | | |
| 1.177 [10] | 298.15 | 220 [15] | 298.15 | | | | |
| 1.208 [12] | 298.15 | | | | | | |

### 221-217: 1-Hexyl-3-methylimidazolium tetrakis (3,5-bis(trifluoromethyl)phenyl)borate

**Abbreviation**: [$C_6$MIm][TFPB]
**Molecular Formula**: $C_{42}H_{31}BF_{24}N_2$
**Molar Mass**: 1030.48
**Structure**:

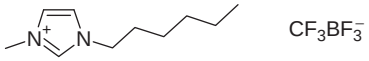


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 355.15 [98] |

### 221-223: 1-Hexyl-3-methylimidazolium trifluoromethyltrifluoroborate

**Abbreviation**: [$C_6$MIm][$CF_3BF_3$]
**Molecular Formula**: $C_{11}F_6H_{19}BN_2$
**Molar Mass**: 304.08
**Structure**:



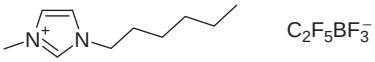
**Character**: Hydrophobic
**Application**: [15] water content <50 ppm. Solvents for organic and biocatalytic reactions, electrolytes for electrochemical devices.

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 173.15 | 470.15 |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.22 | 298.15 | 77 | 298.15 | 0.28 | 298.15 |

### 221-224: 1-Hexyl-3-methylimidazolium pentafluoroethyltrifluoroborate

**Abbreviation**: [$C_6$MIm][$C_2F_5BF_3$]
**Molecular Formula**: $C_{12}F_8H_{19}BN_2$
**Molar Mass**: 354.09
**Structure**:



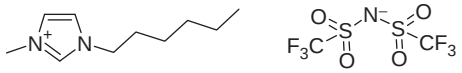
**Character**: Hydrophobic
**Application**: [15] water content <50 ppm. Solvents for organic and biocatalytic reactions, electrolytes for electrochemical devices.

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 263.15 | 173.15 | 579.15 |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.28 | 298.15 | 59 | 298.15 | 0.27 | 298.15 |

**221-31: 1-Hexyl-3-methylimidazolium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: $[C_6MIm][NTf_2]$
**Molecular Formula**: $C_{12}H_{19}F_6N_3O_4S_2$
**Molar Mass**: 447.42
**Structure**:



**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 266 [128] | 189 [128] |
| | 189.15 [44] |

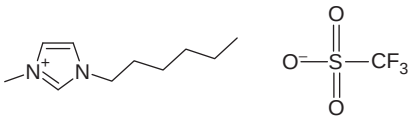
| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $\eta_K$ (mm$^2$/s) | $T$ (K) | $K$ (S/m) [52] | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1.377 [36] | 293.15 | 87.3 [130] | 295.15 | 44 [36] | 293.15 | 0.135 | 288.15 |
| 1.373 [47] | 298.15 | | | | | 0.173 | 293.15 |
| 1.378 [10] | 298.15 | | | | | 0.218 | 298.15 |
| 1.372 [44] | 298.15 | | | | | 0.327 | 308.15 |
| 1.3455 [48] | 303.15 | | | | | 0.546 | 323.15 |

| Electrochemical window (V) | Cathode limit (V) | Anodic limit (V) |
|---|---|---|
| 6.3 [36] | −2.6 | 3.7 |

| $C_p$ (J·mol$^{-1}$·K$^{-1}$) [61] | $T$ (K) | $C_p$ (J·mol$^{-1}$·K$^{-1}$) [61] | $T$ (K) | $C_p$ (J·mol$^{-1}$·K$^{-1}$) [61] | $T$ (K) | $C_p$ (J·mol$^{-1}$·K$^{-1}$) [61] | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 672 | 320.15 | 716 | 395.15 | 701 | 363.15 | 676 | 343.17 |
| 675 | 325.15 | 720 | 400.15 | 705 | 368.15 | 677 | 348.18 |
| 679 | 330.15 | 725 | 405.15 | 706 | 373.15 | 680 | 353.13 |
| 681 | 335.15 | 728 | 410.15 | 709 | 378.15 | 682 | 358.12 |
| 684 | 340.15 | 732 | 415.15 | 711 | 383.15 | 686 | 363.16 |
| 686 | 345.15 | 736 | 420.15 | 714 | 388.15 | 689 | 368.18 |
| 688 | 350.15 | 739 | 425.15 | 716 | 393.15 | 691 | 373.13 |
| 691 | 355.15 | 680 | 323.15 | 718 | 398.15 | 694 | 378.13 |
| 693 | 360.15 | 682 | 328.15 | 720 | 403.15 | 697 | 383.17 |
| 696 | 365.15 | 685 | 333.15 | 723 | 408.15 | 698 | 388.16 |
| 700 | 370.15 | 688 | 338.15 | 723 | 413.15 | 703 | 393.14 |
| 703 | 375.15 | 689 | 343.15 | 668 | 318.17 | 706 | 398.18 |
| 706 | 380.15 | 693 | 348.15 | 672 | 323.13 | 709 | 403.16 |
| 709 | 385.15 | 695 | 353.15 | 673 | 328.14 | 712 | 408.13 |
| 713 | 390.15 | 698 | 358.15 | 673 | 333.16 | 716 | 413.16 |
| | | | | 675 | 338.16 | 719 | 418.13 |

### 221-43: 1-Hexyl-3-methylimidazolium trifluoromethanesulfonate

**Abbreviation**: [HMIM][TfO]
**Molecular Formula**: $C_{11}H_{19}F_3N_2O_3S$
**Molar Mass**: 316.34
**Structure**:



**Character**:
**Application**:

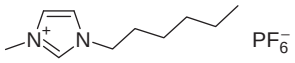
| $T_m$ (K) |
|---|
| 302.15 [12] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.2 [12] | 298.15 | 160 [12] | 298.15 |

| $C_p$ (J·mol$^{-1}$·K$^{-1}$) [61] | $T$ (K) | $C_p$ (J·mol$^{-1}$·K$^{-1}$) [61] | $T$ (K) | $C_p$ (J·mol$^{-1}$·K$^{-1}$) [61] | $T$ (K) | $C_p$ (J·mol$^{-1}$·K$^{-1}$) [61] | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 528 | 320.15 | 571 | 395.15 | 540 | 368.15 | 534 | 343.17 |
| 530 | 325.15 | 574 | 400.15 | 543 | 373.15 | 535 | 348.18 |
| 532 | 330.15 | 577 | 405.15 | 544 | 378.15 | 539 | 353.13 |
| 536 | 335.15 | 580 | 410.15 | 547 | 383.15 | 542 | 358.12 |
| 539 | 340.15 | 583 | 415.15 | 549 | 388.15 | 545 | 363.16 |
| 541 | 345.15 | 586 | 420.15 | 552 | 393.15 | 548 | 368.18 |
| 545 | 350.15 | 589 | 425.15 | 554 | 398.15 | 550 | 373.13 |
| 548 | 355.15 | 519 | 328.15 | 556 | 403.15 | 552 | 378.13 |
| 551 | 360.15 | 522 | 333.15 | 557 | 408.15 | 555 | 383.17 |
| 554 | 365.15 | 524 | 338.15 | 562 | 413.15 | 558 | 388.16 |
| 556 | 370.15 | 528 | 343.15 | 522 | 318.17 | 560 | 393.14 |
| 559 | 375.15 | 530 | 348.15 | 525 | 323.13 | 562 | 398.18 |
| 562 | 380.15 | 532 | 353.15 | 527 | 328.14 | 564 | 403.16 |
| 565 | 385.15 | 535 | 358.15 | 528 | 333.16 | 566 | 408.13 |
| 568 | 390.15 | 538 | 363.15 | 531 | 338.16 | 569 | 413.16 |
| | | | | | | 573 | 418.13 |

### 221-51: 1-Hexyl-3-methylimidazolium hexafluorophosphate

**Abbreviation**: $[C_6MIm][PF_6]$
**Molecular Formula**: $C_{10}H_{19}F_6N_2P$
**Molar Mass**: 312.24
**Structure**:



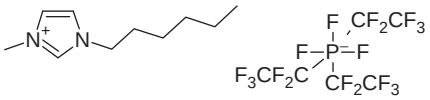
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 212.15 [79, 111] | 193.15 [44, 112] |
| | 195.15 [83] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $\eta_K$ (mm$^2$/s) | $T$ (K) | $\sigma$ (N/m) | $T$ (K) | Friction Coefficient |
|---|---|---|---|---|---|---|---|---|
| 1.297 [36] | 293.15 | 690 [130] | 293.15 | 548 [36] | 293.15 | 0.0434 [83] | 298.15 | 0.097 [114] |
| 1.302 [47] | 298.15 | 585 [83] | 293.15 | | | | | |
| 1.307 [112] | | 560 [115] | 298.15 | | | | | |
| 1.3 [115] | | 560-586 [111] | 298.15 | | | | | |
| 1.2928 [114] | | | | | | | | |
| 1.292 [44] | 298.15 | | | | | | | |
| 1.24 [84] | 298.15 | | | | | | | |
| 1.29 [83] | 298.15 | | | | | | | |
| 1.29-1.31 [111] | 298.15 | | | | | | | |
| 1.304 [13] | 298.15 | | | | | | | |

### 221-54: 1-Hexyl-3-methylimidazolium tris (pentafluoroethyl)trifluorophosphate

**Abbreviation**: $[C_6MIm][TPTP]$
**Molecular Formula**: $C_{16}H_{19}F_{18}PN_2$
**Molar Mass**: 612.28
**Structure**:



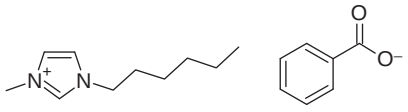
**Character**:
**Application**: [36]

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 223.15 | 563.15 |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_K$ (mm$^2$/s) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.56 | 293.15 | 74 | 293.15 | 0.132 | 293.15 |

### 221-64: 1-Hexyl-3-methylimidazolium benzoate

**Abbreviation**: $[C_6MIm][ba]$
**Molecular Formula**: $C_{17}H_{24}N_2O_2$
**Molar Mass**: 288.38
**Structure**:

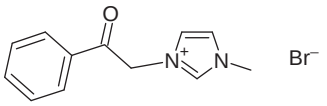


**Character**:
**Application**: [121]

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 198.19 | 542.65 |

### 222-12: 1-Phenylethanoyl-3-methylimidazolium bromide

**Abbreviation**: [$PhCOCH_2MIm$]Br
**Molecular Formula**: $C_{12}H_{13}BrN_2O$
**Molar Mass**: 281.15
**Structure**:

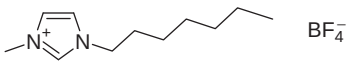


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 322.15 [9] |

### 224-21: 1-Heptyl-3-methylimidazolium tetrafluoroborate

**Abbreviation**: [$C_7MIm$][$BF_4$]
**Molecular Formula**: $C_{11}H_{21}BF_4N_2$
**Molar Mass**: 268.11
**Structure**:

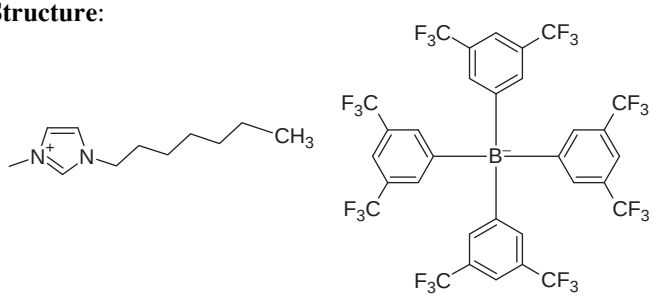


**Character**:
**Application**: [3]

| $T_f$ (K) | $T_g$ (K) |
|---|---|
| 191.25 | 192.75 |

### 224-217: 1-Heptyl-3-methylimidazolium tetrakis (3,5-bis(trifluoromethyl)phenyl)borate

**Abbreviation**: [$C_7MIm$][TFPB]
**Molecular Formula**: $C_{43}H_{33}BF_{24}N_2$
**Molar Mass**: 1044.51
**Structure**:

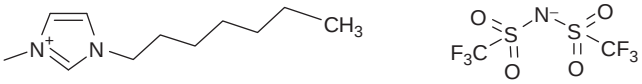


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 342.15 [98] |

### 224-31: 1-Heptyl-3-methylimidazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [$C_7MIm$][$NTf_2$]
**Molecular Formula**: $C_{13}H_{21}F_6N_3O_4S_2$
**Molar Mass**: 461.45
**Structure**:



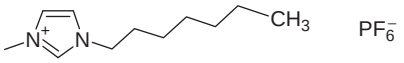
**Character**:
**Application**: [44]

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 280.15 | 188.15 |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.344 | 298.15 |

### 224-51: 1-Heptyl-3-methylimidazolium hexafluorophosphate

**Abbreviation**: $[C_7MIm][PF_6]$
**Molecular Formula**: $C_{11}H_{21}F_6N_2P$
**Molar Mass**: 326.26
**Structure**:



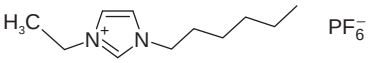
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 189.15 [44, 112] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.262 [44] | 298.15 |
| 1.274 [112] | 298.15 |

### 225-51: 1-Hexyl-3-ethylimidazolium hexafluorophosphate

**Abbreviation**: $[C_6C_2Im][PF_6]$
**Molecular Formula**: $C_{11}H_{21}F_6N_2P$
**Molar Mass**: 326.26
**Structure**:

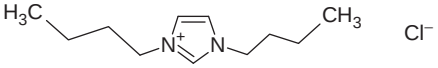


**Character**:
**Application**:

| $\rho$ (g/cm$^3$) | $\eta_K$ (mm$^2$/s) | $T$ (K) |
|---|---|---|
| 1.2622 [114] | 120.81 [131] | 313.15 |
| 1.2038 [131] | 13.98 [131] | 373.15 |

### 226-11: 1,3-Dibutylimidazolium chloride

**Abbreviation**: $[C_4C_4MIm]Cl$
**Molecular Formula**: $C_{11}H_{21}ClN_2$
**Molar Mass**: 216.75
**Structure**:

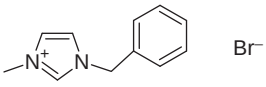


**Character**:
**Application**: [8]

| $T_m$ (K) |
|---|
| 328.15 |

### 227-12: 1-Benzyl-3-methylimidazolium bromide

**Abbreviation**: $[PhCH_2MIm]Br$
**Molecular Formula**: $C_{11}H_{13}BrN_2$
**Molar Mass**: 253.14
**Structure**:

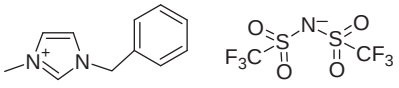


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 399.15 [9] |

### 227-31: 1-Benzyl-3-methylimidazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: $[PhCH_2MIm][NTf_2]$
**Molecular Formula**: $C_{13}H_{13}F_6N_3O_4S_2$
**Molar Mass**: 453.38
**Structure**:



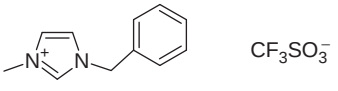
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 217.15 [44] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\sigma$ (N/m) |
|---|---|---|
| 1.493 [10] | 298.15 | 0.0408 [44] |

### 227-43: 1-Benzyl-3-methylimidazolium trifluoromethanesulfonate

**Abbreviation**: $[PhCH_2MIm][TfO]$
**Molecular Formula**: $C_{12}H_{13}F_3N_2O_3S$
**Molar Mass**: 322.31
**Structure**:

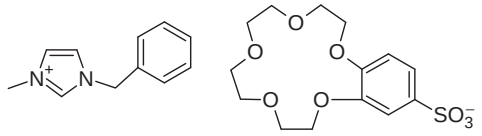


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 300.15 [132] |

### 227-422: 1-Benzyl-3-methylimidazolium (monobenzo-15-crown-5)-4′-sulphonate

**Abbreviation**: [PhCH$_2$MIm][Crs]
**Molecular Formula**: $C_{25}H_{32}N_2O_8S$
**Molar Mass**: 520.59
**Structure**:

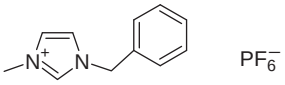


**Character**:
**Application**: [109]

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 254.15 | 523.15 |

### 227-51: 1-Benzyl-3-methylimidazolium hexafluorophosphate

**Abbreviation**: [PhCH$_2$MIm][PF$_6$]
**Molecular Formula**: $C_{11}H_{13}F_6N_2P$
**Molar Mass**: 318.2
**Structure**:

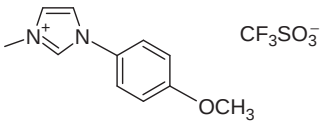


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 403.15 [44] |

### 228-43: 1-(4-Methoxyphenyl)-3-methylimidazolium trifluoromethanesulfonate

**Abbreviation**: [MPMIm][TfO]
**Molecular Formula**: $C_{12}H_{13}F_3N_2O_4S$
**Molar Mass**: 338.31
**Structure**:



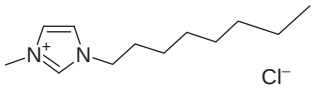
**Character**:
**Application**: [132]

| $T_m$ (K) |
|---|
| 318.15 |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.32 | 323.15 |

### 229-11: 1-Octyl-3-methylimidazolium chloride

**Abbreviation**: $[C_8MIm]Cl$
**Molecular Formula**: $C_{12}H_{23}ClN_2$
**Molar Mass**: 230.78
**Structure**:



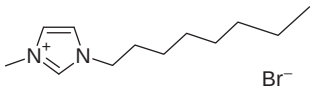

**Character**:
**Application**: Water content 890 ppm [83,84]

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 191.15 [30] | 186.15 [83, 84] | 516.15 [83, 84] |
| 285.41 [85] | 210.85 [85] | |
| 273.15 [12] | | |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $n$ | $T$ (K) | $\sigma$ (N/m) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1 [83, 84] | 298.15 | 337 [82] | 293.15 | 1.505 [83] | 298.15 | 0.0338 [83] | 298.15 |
| 1.0104 [133] | 298.15 | 337 [83, 84] | 298.15 | | | 0.0305 [30] | |
| 1 [12] | | 16000 [12] | 298.15 | | | | |

### 229-12: 1-Octyl-3-methylimidazolium bromide

**Abbreviation**: $[C_8MIm]Br$
**Molecular Formula**: $C_{12}H_{23}BrN_2$
**Molar Mass**: 275.23
**Structure**:



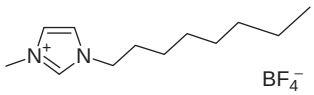

**Character**:
**Application**: [30]

| $T_g$ (K) |
|---|
| 224.45 |

| $\sigma$ (N/m) |
|---|
| 0.032 |

### 229-21: 1-Octyl-3-methylimidazolium tetrafluoroborate

**Abbreviation**: $[C_8MIm][BF_4]$
**Molecular Formula**: $C_{12}H_{23}BF_4N_2$
**Molar Mass**: 282.13
**Structure**:



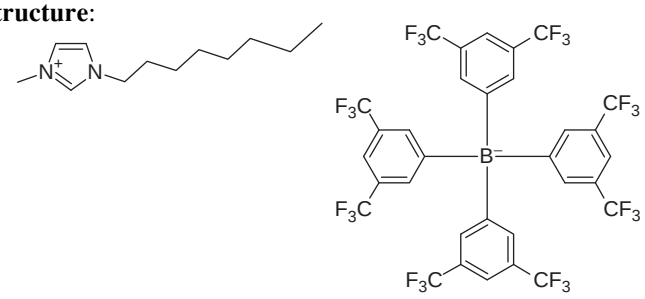

**Character**:
**Application**:

| $T_m$ (K) | $T_f$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|---|
| 193.15 [30] | 192.65 [3] | 192 [128] | 633.15 [3] |
| 194.15 [12] | | 194.65 [3] | |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $\sigma$ (N/m) |
|---|---|---|---|---|
| 1.08 [82] | 298.15 | 135 [82] | 293.15 | 0.0298 [30] |
| 1.11 [12] | 298.15 | 440 [12] | 298.15 | |

### 229-217: 1-Octyl-3-methylimidazolium tetrakis (3,5-bis(trifluoromethyl)phenyl)borate

**Abbreviation**: [$C_8$MIm][TFPB]
**Molecular Formula**: $C_{44}H_{35}BF_{24}N_2$
**Molar Mass**: 1058.53
**Structure**:

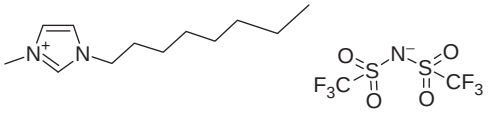


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 348.15 [98] |

### 229-31: 1-Octyl-3-methylimidazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [$C_8$MIm][$NTf_2$]
**Molecular Formula**: $C_{14}H_{23}F_6N_3O_4S_2$
**Molar Mass**: 475.47
**Structure**:



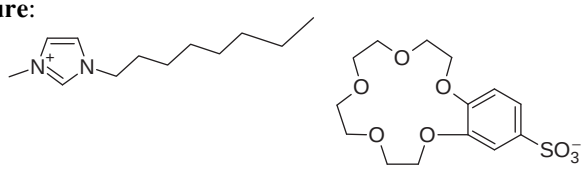
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 189 [128] |
| 189.15 [44] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.337 [10] | 298.15 | 119.3 [49] | 293.15 |
| 1.317 [47] | 298.15 | | |
| 1.32 [44] | 298.15 | | |

### 229-422: 1-Octyl-3-methylimidazolium (monobenzo-15-crown-5)-4′-sulphonate

**Abbreviation**: [$C_8$MIm][Crs]
**Molecular Formula**: $C_{26}H_{42}N_2O_8S$
**Molar Mass**: 542.68
**Structure**:

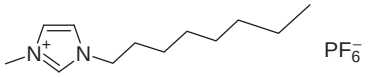


**Character**:
**Application**: [109]

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 262.15 | 521.15 |

### 229-51: 1-Octyl-3-methylimidazolium hexafluorophosphate

**Abbreviation**: $[C_8MIm][PF_6]$
**Molecular Formula**: $C_{12}H_{23}F_6N_2P$
**Molar Mass**: 340.29
**Structure**:



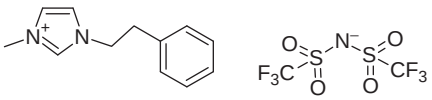
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 198.15 [42] | 191.15 [83] | 649.15 [83] |
| 203.15 [30] | 202.15 [41, 112] | 689.15 [42] |
| 233.15 [12] | | |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $\sigma$ (N/m) | $T$ (K) | $n$ | $T$ (K) |
|---|---|---|---|---|---|---|---|---|---|
| 1.19 [82, 113] | 298.15 | 1.2 [115] | | 857.4 [82] | 293.15 | 0.0365 [83] | 298.15 | 1.423 [83] | 298.15 |
| 1.22 [83] | 298.15 | 1.2367 [114] | | 710 [115] | 298.15 | 0.0328 [30] | | | |
| 1.237 [44, 134] | 298.15 | 1.2245 ± 0.0072 [4] | 298.15 | 682 [83] | 298.15 | | | | |
| 1.233 [47] | 298.15 | 1.4 [42] | 298.15 | 682-710 [111] | 298.15 | | | | |
| 1.20-1.23 [111] | 298.15 | 1.2 [12] | 298.15 | 810 [12] | 298.15 | | | | |

### 230-31: 1-Phenethyl-3-methylimidazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: $[PhCH_2CH_2MIm][NTf_2]$
**Molecular Formula**: $C_{14}H_{15}F_6N_3O_4S_2$
**Molar Mass**: 467.41
**Structure**:



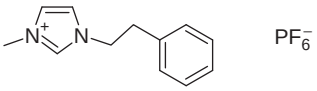
**Character**:
**Application**: [44]

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 310.15 | 214.15 |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\sigma$ (N/m) |
|---|---|---|
| 1.47 | 298.15 | 0.0421 |

### 230-51: 1-Phenethyl-3-methylimidazolium hexafluorophosphate

**Abbreviation**: $[PhCH_2CH_2MIm][PF_6]$
**Molecular Formula**: $C_{12}H_{15}F_6N_2P$
**Molar Mass**: 332.23
**Structure**:

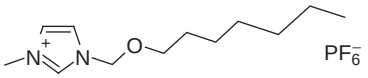


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 376.15 [44] |

### 231-51: 1-(1-Heptoxymethyl)-3-methylimidazolium hexafluorophosphate

**Abbreviation**: $[C_8OMIM][PF_6]$
**Molecular Formula**: $C_{12}H_{23}F_6N_2OP$
**Molar Mass**: 356.29
**Structure**:

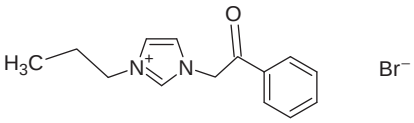


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 310.15-311.15 [135] |

### 232-12: 1-Phenylethanoyl-3-propylimidazolium bromide

**Abbreviation**: $[PhCOCH_2PIm]Br$
**Molecular Formula**: $C_{14}H_{17}BrN_2O$
**Molar Mass**: 309.2
**Structure**:

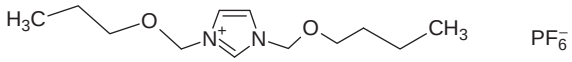


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 422.15 [9] |

### 233-51: 3-Propoxymethyl-1-butoxymethylimidazolium hexafluorophosphate

**Abbreviation**: $[(C_4OCH_2)(C_3OCH_2)Im][PF_6]$
**Molecular Formula**: $C_{12}H_{23}F_6N_2O_2P$
**Molar Mass**: 372.29
**Structure**:

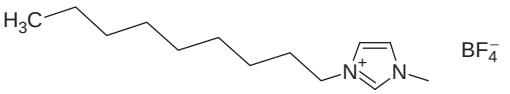


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 320.15-322.15 [135] |

### 234-21: 1-Nonyl-3-methylimidazolium tetrafluoroborate

**Abbreviation**: $[C_9MIm][BF_4]$
**Molecular Formula**: $C_{13}H_{25}BF_4N_2$
**Molar Mass**: 296.16
**Structure**:

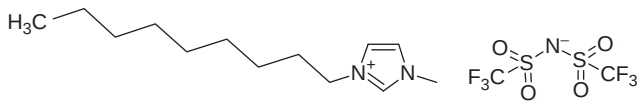


**Character**:
**Application**: [3]

| $T_f$ (K) | $T_g$ (K) |
|---|---|
| 193.15 | 195.95 |

### 234-31: 1-Nonyl-3-methylimidazolium bis ((trifluoromethyl)sulfonyl)imide

**Abbreviation**: $[C_9MIm][NTf_2]$
**Molecular Formula**: $C_{15}H_{25}F_6N_3O_4S_2$
**Molar Mass**: 489.5
**Structure**:



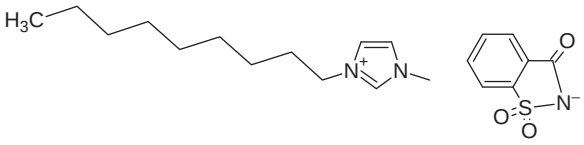
**Character**:
**Application**: [44]

| $T_g$ (K) |
|---|
| 190.15 |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.299 | 298.15 |

### 234-312: 1-Nonyl-3-methylimidazolium Saccharinate

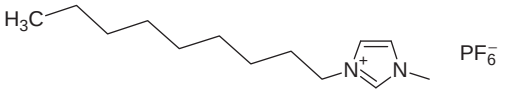
**Abbreviation**: $[C_9MIm][Sac]$
**Molecular Formula**: $C_{20}H_{29}N_3O_3S$
**Molar Mass**: 391.53
**Structure**:



**Character**: Liquid
**Application**: [16]

### 234-51: 1-Nonyl-3-methylimidazolium hexafluorophosphate

**Abbreviation**: $[C_9MIm][PF_6]$
**Molecular Formula**: $C_{13}H_{25}F_6N_2P$
**Molar Mass**: 354.31
**Structure**:



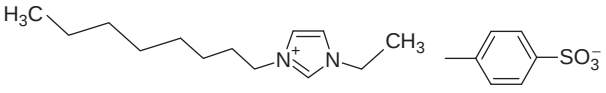
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 287.15 [44] | 207.15 [44] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.212 [44] | 298.15 |
| 1.202 [112] | |
| 1.202 [136] | |

### 235-47: 1-Octyl-3-ethylimidazolium tosylate

**Abbreviation**: $[C_2C_8Im][Tos]$
**Molecular Formula**: $C_{20}H_{32}N_2O_3S$
**Molar Mass**: 380.55
**Structure**:

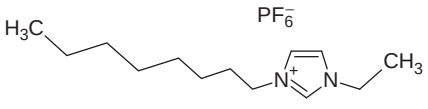


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 343.15 ± 2 [13] |

### 235-51: 1-Octyl-3-ethylimidazolium hexafluorophosphate

**Abbreviation**: $[C_2C_8Im][PF_6]$
**Molecular Formula**: $C_{13}H_{25}F_6N_2P$
**Molar Mass**: 354.31
**Structure**:



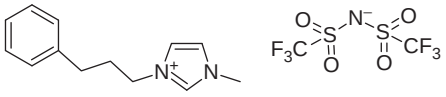
**Character**:
**Application**: [114]

| $T_m$ (K) |
|---|
| <223.15 |

| $\rho$ (g/cm$^3$) | $\eta_K$ (mm$^2$/s) | $T$ (K) | Friction coefficient |
|---|---|---|---|
| 1.2118 | 192.9 | 313.15 | 0.072 |
| | 17.7 | 373.15 | |

### 236-31: 1-Hydrocinnamyl-3-methylimidazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: $[Ph(CH_2)_3MIm][NTf_2]$
**Molecular Formula**: $C_{15}H_{17}F_6N_3O_4S_2$
**Molar Mass**: 481.43
**Structure**:



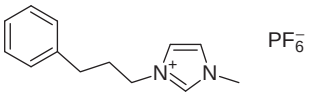
**Character**:
**Application**: [44]

| $T_m$ (K) |
|---|
| 321.15 |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\sigma$ (N/m) |
|---|---|---|
| 1.455 | 298.15 | 0.0435 |

### 236-51: 1-Hydrocinnamyl-3-methylimidazolium hexafluorophosphate

**Abbreviation**: $[Ph(CH_2)_3MIm][PF_6]$
**Molecular Formula**: $C_{13}H_{17}F_6N_2P$
**Molar Mass**: 346.26
**Structure**:



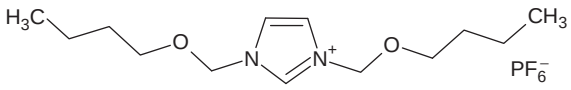
**Character**:
**Application**: [44]

| $T_m$ (K) |
|---|
| 325.15 |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\sigma$ (N/m) |
|---|---|---|
| 1.407 | 298.15 | 0.033 |

### 237-51: 1,3-Di(1-butoxymethyl)imidazolium hexafluorophosphate

**Abbreviation**: $[(C_4H_9OCH_2)_2Im][PF_6]$
**Molecular Formula**: $C_{13}H_{25}F_6N_2O_2P$
**Molar Mass**: 386.32
**Structure**:

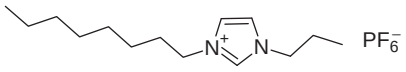


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 330.15 ± 1 [135] |

### 238-51: 1-Octyl-3-propylimidazolium hexafluorophosphate

**Abbreviation**: $[C_3C_8Im][PF_6]$
**Molecular Formula**: $C_{14}H_{27}F_6N_2P$
**Molar Mass**: 368.35
**Structure**:



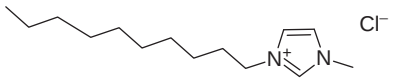
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 243.15 [114] |

| $\rho$ (g/cm$^3$) | $\eta_K$ (mm$^2$/s) | $T$ (K) | Friction coefficient |
|---|---|---|---|
| 1.1182 [114] | 258 | 313.15 | 0.067 [114] |
| | 19.8 | 373.15 | |

### 239-11: 1-Decyl-3-methylimidazolium chloride

**Abbreviation**: $[C_{10}MIm]Cl$
**Molecular Formula**: $C_{14}H_{27}ClN_2$
**Molar Mass**: 258.83
**Structure**:

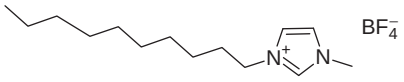


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 311.17 [85] |

### 239-21: 1-Decyl-3-methylimidazolium tetrafluoroborate

**Abbreviation**: $[C_{10}MIm][BF_4]$
**Molecular Formula**: $C_{14}H_{27}BF_4N_2$
**Molar Mass**: 310.19
**Structure**:



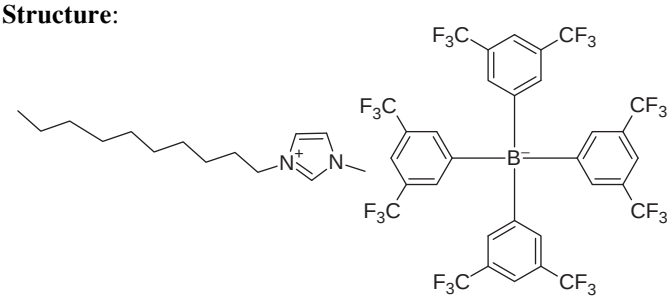
**Character**:
**Application**:

| $T_m$ (K) | $T_f$ (K) |
|---|---|
| 195.65 [42] | 248.45 [3] |
| 268.95 [3] | |
| 248.15 [12] | |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.04 [82, 113] | 298.15 | 846.3 [82] | 283.15 |
| 1.072 [12] | 298.15 | 416.6 [82] | 293.15 |
| | | 223.1 [82] | 303.15 |
| | | 930 [12] | 298.15 |

### 239-217: 1-Decyl-3-methylimidazolium tetrakis (3,5-bis(trifluoromethyl)phenyl)borate

**Abbreviation**: $[C_{10}MIm][TFPB]$
**Molecular Formula**: $C_{46}H_{39}BF_{24}N_2$
**Molar Mass**: 1086.59
**Structure**:

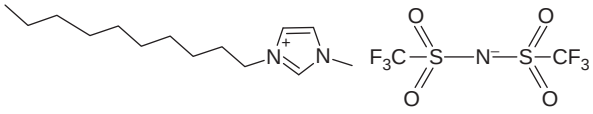


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 358.15 [98] |

### 239-31: 1-Decyl-3-methylimidazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: $[C_{10}MIm][NTf_2]$
**Molecular Formula**: $C_{16}H_{27}F_6N_3O_4S_2$
**Molar Mass**: 503.53
**Structure**:



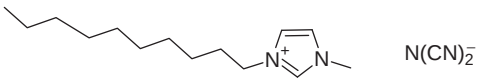
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 244.15 [44] | 190.15 [46, 44] | >573.15 [137] |
| 271.15 [44] | | |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.2746 [102] | 293.15 | 142 [102] | 293.15 |
| 1.271 [44] | 298.15 | 152.8 [49] | 293.15 |
| | | Non-Newtonian [137] | 293.15 |

### 239-34: 1-Decyl-3-methylimidazolium dicyanoamide

**Abbreviation**: $[C_{10}MIm][dca]$
**Molecular Formula**: $C_{16}H_{27}N_5$
**Molar Mass**: 289.42
**Structure**:



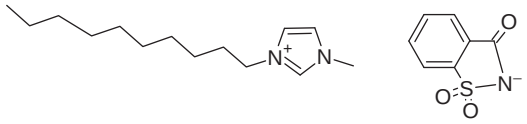
**Character**:
**Application**: [137]

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 250.39 | 543.15 |

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 76 | 293.15 |

### 239-312: 1-Decyl-3-methylimidazolium Saccharinate

**Abbreviation**: $[C_{10}MIm][Sac]$
**Molecular Formula**: $C_{21}H_{31}N_3O_3S$
**Molar Mass**: 405.55
**Structure**:



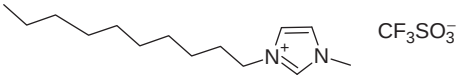
**Character**:
**Application**: [137]

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 203.87 | 524.15 |

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 884 | 293.15 |

### 239-43: 1-Decyl-3-methylimidazolium trifluoromethanesulfonate

**Abbreviation**: $[C_{10}MIm][TfO]$
**Molecular Formula**: $C_{15}H_{27}F_3N_2O_3S$
**Molar Mass**: 372.45
**Structure**:



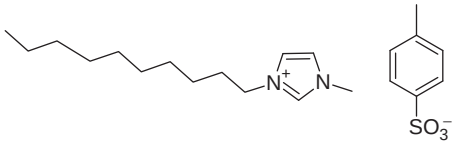
**Character**:
**Application**: [137]

| $T_d$ (K) |
|---|
| >573.15 |

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 194 | 293.15 |

### 239-47: 1-Decyl-3-methylimidazolium tosylate

**Abbreviation**: $[C_{10}MIm][Tos]$
**Molecular Formula**: $C_{21}H_{34}N_2O_3S$
**Molar Mass**: 394.57
**Structure**:

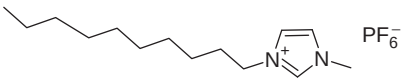


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 352.14 [137] | 551.15 [137] |

### 239-51: 1-Decyl-3-methylimidazolium hexafluorophosphate

**Abbreviation**: $[C_{10}MIm][PF_6]$
**Molecular Formula**: $C_{14}H_{27}F_6N_2P$
**Molar Mass**: 368.34
**Structure**:



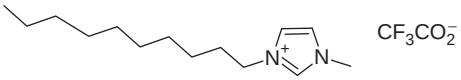
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 305.15 [44] | 202.15 [44] |
| 307.15 [42] | |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.14 [113] | 298.15 |

### 239-61: 1-Decyl-3-methylimidazolium trifluoroacetate

**Abbreviation**: $[C_{10}MIm][CF_3CO_2]$
**Molecular Formula**: $C_{16}H_{27}F_3N_2O_2$
**Molar Mass**: 336.39
**Structure**:



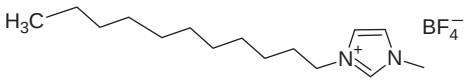

**Character**:
**Application**: [137]

| $T_d$ (K) |
|---|
| 473.15 |

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| Non-Newtonian | 293.15 |

### 243-21: 1-Undecyl-3-methylimidazolium tetrafluoroborate

**Abbreviation**: $[C_{11}MIm][BF_4]$
**Molecular Formula**: $C_{15}H_{29}BF_4N_2$
**Molar Mass**: 324.21
**Structure**:

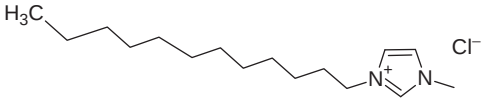



**Character**:
**Application**: [3]

| $T_m$ (K) | $T_f$ (K) |
|---|---|
| 294.55 | 270.65 |

### 246-11: 1-Dodecyl-3-methylimidazolium chloride

**Abbreviation**: $[C_{12}MIm]Cl$
**Molecular Formula**: $C_{16}H_{31}ClN_2$
**Molar Mass**: 286.88
**Structure**:

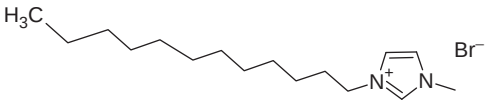



**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 369.78 [85, 107] |
| 270.35 [138] |

### 246-12: 1-Dodecyl-3-methylimidazolium bromide

**Abbreviation**: $[C_{12}MIm]Br$
**Molecular Formula**: $C_{16}H_{31}BrN_2$
**Molar Mass**: 331.34
**Structure**:

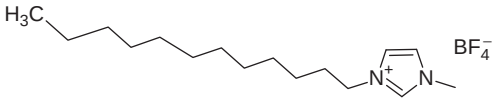



**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 267.85 [11] |

### 246-21: 1-Dodecyl-3-methylimidazolium tetrafluoroborate

**Abbreviation**: $[C_{12}MIm][BF_4]$
**Molecular Formula**: $C_{16}H_{31}BF_4N_2$
**Molar Mass**: 338.23
**Structure**:



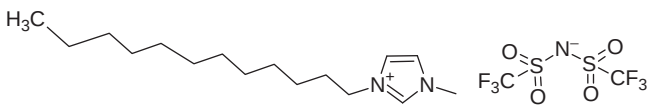
**Character**:
**Application**:

| $T_m$ (K) | $T_f$ (K) |
|---|---|
| 312.15 [30] | 280.55 [3] |
| 299.55 [3] | 310.15 [3] |
| 307.15 [139] | |

| $\sigma$ (N/m) | $Hc$ (kJ·mol$^{-1}$) |
|---|---|
| 0.0252 [30] | 23.7 |

### 246-31: 1-Dodecyl-3-methylimidazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: $[C_{12}MIm][NTf_2]$
**Molecular Formula**: $C_{18}H_{31}F_6N_3O_4S_2$
**Molar Mass**: 531.58
**Structure**:

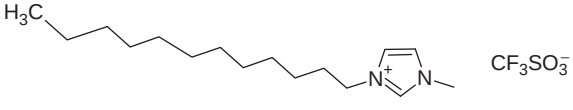


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 289.85 [138] |

### 246-43: 1-Dodecyl-3-methylimidazolium trifluoromethanesulfonate

**Abbreviation**: $[C_{12}MIm][TfO]$
**Molecular Formula**: $C_{17}H_{31}F_3N_2O_3S$
**Molar Mass**: 400.51
**Structure**:

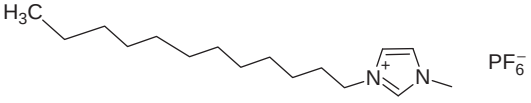


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 312.85 [138] |

### 246-51: 1-Dodecyl-3-methylimidazolium hexafluorophosphate

**Abbreviation**: $[C_{12}MIm][PF_6]$
**Molecular Formula**: $C_{16}H_{31}F_6N_2P$
**Molar Mass**: 396.4
**Structure**:

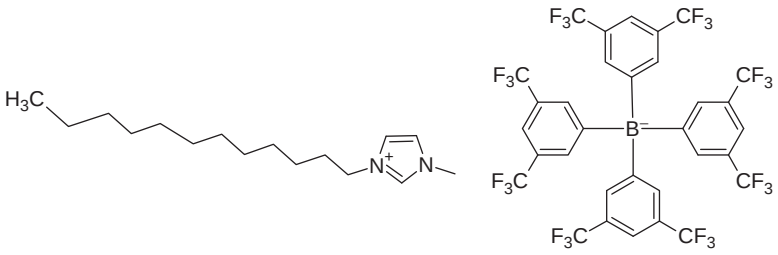


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 323.15 [30] |
| 333.15 [140,139] |

### 246-217: 1-Dodecyl-3-methylimidazolium tetrakis (3,5-bis(trifluoromethyl)phenyl)borate

**Abbreviation**: $[C_{12}MIm][TFPB]$
**Molecular Formula**: $C_{48}H_{43}BF_{24}N_2$
**Molar Mass**: 1114.64
**Structure**:

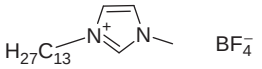


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 345.15 [98] |

### 249-21: 1-Trimdecyl-3-methylimidazolium tetrafluoroborate

**Abbreviation**: $[C_{13}MIm][BF_4]$
**Molecular Formula**: $C_{17}H_{33}BF_4N_2$
**Molar Mass**: 352.27
**Structure**:



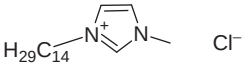
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 322.15 [3] |

| $Hc$ (kJ·mol$^{-1}$) |
|---|
| 24.1 |

### 251-11: 1-Tetradecyl-3-methylimidazolium chloride

**Abbreviation**: $[C_{14}MIm]Cl$
**Molecular Formula**: $C_{18}H_{35}ClN_2$
**Molar Mass**: 314.94
**Structure**:

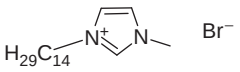


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 292.55 [138] |

### 251-12: 1-Tetradecyl-3-methylimidazolium bromide

**Abbreviation**: [$C_{14}$MIm]Br
**Molecular Formula**: $C_{18}H_{35}BrN_2$
**Molar Mass**: 359.39
**Structure**:

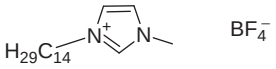


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 293.95 [138] | 545.65 [141] |
| 327.15 [141] | |

### 251-21: 1-Tetradecyl-3-methylimidazolium tetrafluoroborate

**Abbreviation**: [$C_{14}$MIm][$BF_4$]
**Molecular Formula**: $C_{18}H_{35}BF_4N_2$
**Molar Mass**: 366.29
**Structure**:



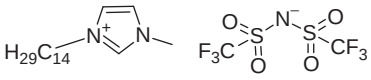
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 315.15 [3] |
| 311.15 [139] |

| $H_c$ (kJ·mol$^{-1}$) |
|---|
| 16.8 [3] |

### 251-31: 1-Tetradecyl-3-methylimidazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [$C_{14}$MIm][$NTf_2$]
**Molecular Formula**: $C_{20}H_{35}F_6N_3O_4S_2$
**Molar Mass**: 559.64
**Structure**:

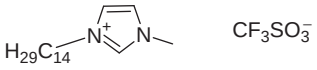


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 307.45 [138] |

### 251-43: 1-Tetradecyl-3-methylimidazolium trifluoromethanesulfonate

**Abbreviation**: [$C_{14}$MIm][TfO]
**Molecular Formula**: $C_{19}H_{35}F_3N_2O_3S$
**Molar Mass**: 428.56
**Structure**:

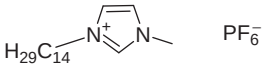


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 323.15 [138] |

### 251-51: 1-Tetradecyl-3-methylimidazolium hexafluorophosphate

**Abbreviation**: [$C_{14}$MIm][$PF_6$]
**Molecular Formula**: $C_{18}H_{35}F_6N_2P$
**Molar Mass**: 424.45
**Structure**:

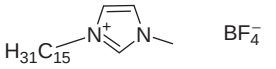


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 347.15 [140] |
| 346.15 [139] |

### 253-21: 1-Pentadecyl-3-methylimidazolium tetrafluoroborate

**Abbreviation**: [$C_{15}$MIm][$BF_4$]
**Molecular Formula**: $C_{19}H_{37}BF_4N_2$
**Molar Mass**: 380.32
**Structure**:



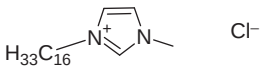
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 328.35 [3] |

| $H_c$ (kJ·mol$^{-1}$) |
|---|
| 23.2 [3] |

### 255-11: 1-Hexadecyl-3-methylimidazolium chloride

**Abbreviation**: $[C_{16}MIm]Cl$
**Molecular Formula**: $C_{20}H_{39}ClN_2$
**Molar Mass**: 343
**Structure**:

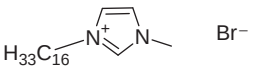


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 315.15 [138] |

### 255-12: 1-Hexadecyl-3-methylimidazolium bromide

**Abbreviation**: $[C_{16}MIm]Br$
**Molecular Formula**: $C_{20}H_{39}BrN_2$
**Molar Mass**: 387.45
**Structure**:

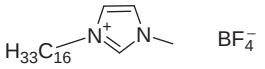


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 313.35 [138] |

### 255-21: 1-Hexadecyl-3-methylimidazolium tetrafluoroborate

**Abbreviation**: $[C_{16}MIm][BF_4]$
**Molecular Formula**: $C_{20}H_{39}BF_4N_2$
**Molar Mass**: 394.35
**Structure**:



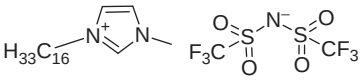
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 322.15 [3] |
| 319.15 [139] |

| $Hc$ (kJ·mol$^{-1}$) |
|---|
| 24.7 [3] |

### 255-31: 1-Hexadecyl-3-methylimidazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: $[C_{16}MIm][NTf_2]$
**Molecular Formula**: $C_{22}H_{39}F_6N_3O_4S_2$
**Molar Mass**: 587.69
**Structure**:

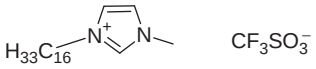


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 315.25 [138] |

### 255-43: 1-Hexadecyl-3-methylimidazolium trifluoromethanesulfonate

**Abbreviation**: $[C_{16}MIm][TfO]$
**Molecular Formula**: $C_{21}H_{39}F_3N_2O_3S$
**Molar Mass**: 456.61
**Structure**:

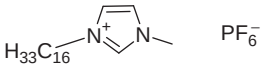


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 331.25 [138] |

### 255-51: 1-Hexadecyl-3-methylimidazolium hexafluorophosphate

**Abbreviation**: $[C_{16}MIm][PF_6]$
**Molecular Formula**: $C_{20}H_{39}F_6N_2P$
**Molar Mass**: 452.51
**Structure**:



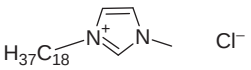
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 348.15 [140] |
| 348 [142] |
| 356.15 [139] |

| $K$ (S/m) | $T$ (K) |
|---|---|
| 0.002 [142] | 338.15 |
| 0.063 [142] | 352.15 |
| 0.26 [142] | 373.15 |
| 0.25 [142] | 393.15 |

### 259-11: 1-Octadecyl-3-methylimidazolium chloride

**Abbreviation**: $[C_{18}MIm]Cl$
**Molecular Formula**: $C_{22}H_{43}ClN_2$
**Molar Mass**: 371.05
**Structure**:

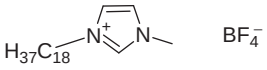


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 326.35 [138] |

### 259-21: 1-Octadecyl-3-methylimidazolium tetrafluoroborate

**Abbreviation**: $[C_{18}MIm][BF_4]$
**Molecular Formula**: $C_{22}H_{43}BF_4N_2$
**Molar Mass**: 422.4
**Structure**:

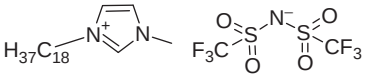


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 339.95 [3] |

### 259-31: 1-Octadecyl-3-methylimidazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: $[C_{18}MIm][NTf_2]$
**Molecular Formula**: $C_{24}H_{43}F_6N_3O_4S_2$
**Molar Mass**: 615.75
**Structure**:

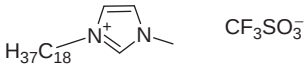


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 317.95 [138] |

### 259-43: 1-Octadecyl-3-methylimidazolium trifluoromethanesulfonate

**Abbreviation**: $[C_{18}MIm][TfO]$
**Molecular Formula**: $C_{23}H_{43}F_3N_2O_3S$
**Molar Mass**: 484.67
**Structure**:

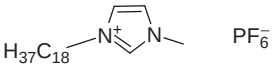


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 339.15 [138] |

### 259-51: 1-Octadecyl-3-methylimidazolium hexafluorophosphate

**Abbreviation**: $[C_{18}MIm][PF_6]$
**Molecular Formula**: $C_{22}H_{43}F_6N_2P$
**Molar Mass**: 480.56
**Structure**:

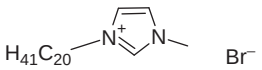


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 353.15 [140] |

### 260-12: 1-Cosyl-3-methylimidazolium bromide

**Abbreviation**: $[C_{20}MIm]Br$
**Molecular Formula**: $C_{24}H_{47}BrN_2$
**Molar Mass**: 443.55
**Structure**:

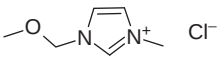


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 333.35 [138] |

### 2108-11: 1-Methoxymethyl-3-methylimidazolium chloride

**Abbreviation**: $[C_2OMIm]Cl$
**Molecular Formula**: $C_6H_{11}N_2OCl$
**Molar Mass**: 162.62
**Structure**:



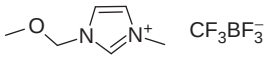
**Character**: Hydrophobic
**Application**: Water content <50 ppm [15], dissolve carbohydrates

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 290.15 | 484.15 |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) |
|---|---|---|---|---|
| 1.41 | 298.15 | 55 | 298.15 | 0.65 |

### 2108-223: 1-Methoxymethyl-3-methylimidazolium trifluoromethyltrifluoroborate

**Abbreviation**: $[C_2OMIm][CF_3BF_3]$
**Molecular Formula**: $C_7F_6H_{11}BN_2O$
**Molar Mass**: 263.98
**Structure**:



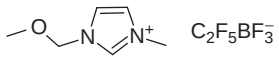
**Character**: Hydrophobic
**Application**: Water content <50 ppm [15]. Solvents for organic and biocatalytic reactions, electrolytes for electrochemical devices.

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 290.15 | 484.15 |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) |
|---|---|---|---|---|
| 1.41 | 298.15 | 55 | 298.15 | 0.65 |

### 2108-224: 1-Methoxymethyl-3-methylimidazolium pentafluoroethyltrifluoroborate

**Abbreviation**: $[C_2OMIm][C_2F_5BF_3]$
**Molecular Formula**: $C_8F_8H_{11}BN_2O$
**Molar Mass**: 313.98
**Structure**:



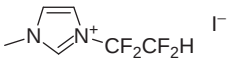
**Character**: Hydrophobic
**Application**: Water content <50 ppm [15]. Solvents for organic and biocatalytic reactions, electrolytes for electrochemical devices.

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 252.15 | 175.15 | 547.15 |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|
| 1.46 | 298.15 | 47 | 0.6 | 298.15 |

**2109-13: 1-Methyl-3-(1,1,2,2-tetrafluoroethyl) imidazolium iodine**

**Abbreviation**: $[C_1CF_2CF_2HIm]I$
**Molecular Formula**: $C_6H_7F_4N_2I$
**Molar Mass**: 310.03
**Structure**:

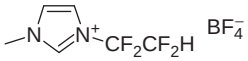


**Character**: Water stable
**Application**:

| $T_m$ (K) |
|---|
| 413.15-415.15 [143] |

**2109-21: 1-Methyl-3-(1,1,2,2-tetrafluoroethyl) imidazolium tetrafluoroborate**

**Abbreviation**: $[C_1CF_2CF_2HIm][BF_4]$
**Molecular Formula**: $C_6H_7F_8N_2B$
**Molar Mass**: 269.93
**Structure**:

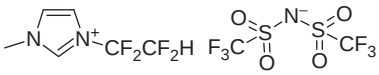


**Character**: Water stable
**Application**:

| $T_m$ (K) |
|---|
| 337.15 [143] |

**2109-31: 1-Methyl-3-(1,1,2,2-tetrafluoroethyl) imidazolium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: $[C_1CF_2CF_2HIm][NTf_2]$
**Molecular Formula**: $C_8H_7F_{10}N_3O_4S_2$
**Molar Mass**: 463.28
**Structure**:

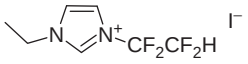


**Character**: Water stable
**Application**:

| $T_m$ (K) |
|---|
| 314.15-315.15 [143] |

**2110-13: 1-Ethyl-3-(1,1,2,2-tetrafluoroethyl)imidazolium iodine**

**Abbreviation**: $[C_2CF_2CF_2HIm]I$
**Molecular Formula**: $C_7H_9F_4N_2I$
**Molar Mass**: 324.06
**Structure**:

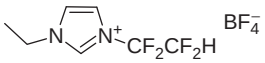


**Character**: Water stable
**Application**:

| $T_m$ (K) |
|---|
| 363.15-364.15 [143] |

**2110-21: 1-Ethyl-3-(1,1,2,2-tetrafluoroethyl)imidazolium tetrafluoroborate**

**Abbreviation**: $[C_2CF_2CF_2HIm][BF_4]$
**Molecular Formula**: $C_7H_9F_8N_2B$
**Molar Mass**: 283.96
**Structure**:

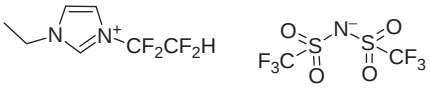


**Character**: Water stable
**Application**:

| $T_m$ (K) |
|---|
| 298.15 [143] |

**2110-31: 1-Ethyl-3-(1,1,2,2-tetrafluoroethyl)imidazolium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: $[C_2CF_2CF_2HIm][NTf_2]$
**Molecular Formula**: $C_9H_9F_{10}N_3O_4S_2$
**Molar Mass**: 477.3
**Structure**:

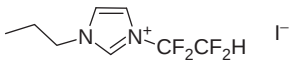


**Character**: Water stable
**Application**:

| $T_m$ (K) |
|---|
| 288.15-289.15 [143] |

### 2111-13: 1-Propyl-3-(1,1,2,2-tetrafluoroethyl)imidazolium iodine

**Abbreviation**: $[C_3CF_2CF_2HIm]I$
**Molecular Formula**: $C_8H_{11}F_4N_2I$
**Molar Mass**: 338.08
**Structure**:

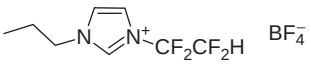


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 350.15-352.15 [143] |

### 2111-21: 1-Propyl-3-(1,1,2,2-tetrafluoroethyl)imidazolium tetrafluoroborate

**Abbreviation**: $[C_3CF_2CF_2HIm][BF_4]$
**Molecular Formula**: $C_8H_{11}F_8N_2B$
**Molar Mass**: 297.98
**Structure**:

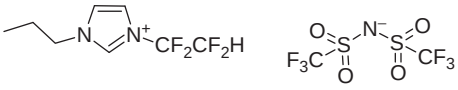


**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 223.15-243.15 [143] |

### 2111-31: 1-Propyl-3-(1,1,2,2-tetrafluoroethyl)imidazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: $[C_3CF_2CF_2HIm][NTf_2]$
**Molecular Formula**: $C_{10}H_{11}F_{10}N_3O_4S_2$
**Molar Mass**: 491.33
**Structure**:

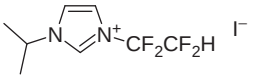


**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 210.15 [143] |

### 2112-13: 1-iso-Propyl-3-(1,1,2,2-tetrafluoroethyl) imidazolium iodine

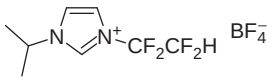
**Abbreviation**: $[i\text{-}C_3CF_2CF_2HIm]I$
**Molecular Formula**: $C_8H_{11}F_4N_2I$
**Molar Mass**: 338.08
**Structure**:



**Character**: Water stable
**Application**: [143]

### 2112-21: 1-iso-Propyl-3-(1,1,2,2-tetrafluoroethyl) imidazolium tetrafluoroborate

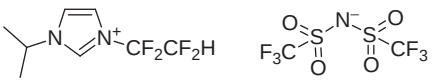
**Abbreviation**: $[i\text{-}C_3CF_2CF_2HIm][BF_4]$
**Molecular Formula**: $C_8H_{11}F_8N_2B$
**Molar Mass**: 297.98
**Structure**:



**Character**:
**Application**: [143]

### 2112-31: 1-iso-Propyl-3-(1,1,2,2-tetrafluoroethyl) imidazolium bis((trifluoromethyl)sulfonyl)imide

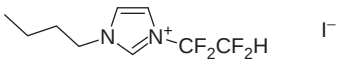
**Abbreviation**: $[i\text{-}C_3CF_2CF_2HIm][NTf_2]$
**Molecular Formula**: $C_{10}H_{11}F_{10}N_3O_4S_2$
**Molar Mass**: 491.33
**Structure**:



**Character**: Water stable
**Application**: [143]

**2113-13: 1-Butyl-3-(1,1,2,2-tetrafluoroethyl)imidazolium iodine**

**Abbreviation**: [*n*-$C_4CF_2CF_2HIm$]I
**Molecular Formula**: $C_9H_{13}F_4N_2I$
**Molar Mass**: 352.11
**Structure**:

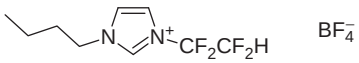


**Character**: Water stable
**Application**:

| $T_m$ (K) |
|---|
| 346.15-348.15 [143] |

**2113-21: 1-Butyl-3-(1,1,2,2-tetrafluoroethyl)imidazolium tetrafluoroborate**

**Abbreviation**: [*n*-$C_4CF_2CF_2HIm$][$BF_4$]
**Molecular Formula**: $C_9H_{13}F_8N_2B$
**Molar Mass**: 312.01
**Structure**:

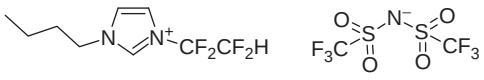


**Character**: Water stable
**Application**:

| $T_g$ (K) |
|---|
| 218.45 [143] |

**2113-31: 1-Butyl-3-(1,1,2,2-tetrafluoroethyl)imidazolium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: [*n*-$C_4CF_2CF_2HIm$][$NTf_2$]
**Molecular Formula**: $C_{11}H_{13}F_{10}N_3O_4S_2$
**Molar Mass**: 505.35
**Structure**:

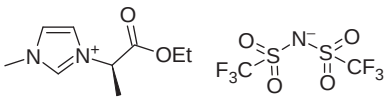


**Character**: Water stable
**Application**:

| $T_g$ (K) |
|---|
| 203.15-213.15 [143] |

**2114-31: 1-(1-(*R*)-Ethoxycarbonyl-ethyl)-3-methylimidazolium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: [Ch1-MIm][$NTf_2$]
**Molecular Formula**: $C_{11}H_{15}F_6N_3O_6S_2$
**Molar Mass**: 463.37
**Structure**:

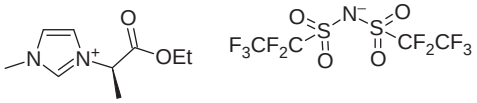


**Character**: Hydrophobic
**Application**: [144]

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 318.15 | 216.15 |

**2114-33: 1-(1-(*R*)-Ethoxycarbonyl-ethyl)-3-methylimidazolium bis((perfluoroethane)sulfonyl)imide**

**Abbreviation**: [Ch1-MIm][BETI]
**Molecular Formula**: $C_{13}H_{15}F_{10}N_3O_6S_2$
**Molar Mass**: 563.39
**Structure**:

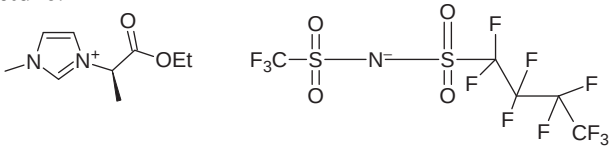


**Character**: Hydrophobic
**Application**:

| $T_g$ (K) |
|---|
| 217.15 [144] |

**2114-314: 1-(1-(*R*)-Ethoxycarbonyl-ethyl)-3-methylimidazolium N-(trifluoromethylsulfonyl)-nonafluoroethylsulfonamide**

**Abbreviation**: [Ch1-MIm][NNfTf]
**Molecular Formula**: $C_{14}H_{15}F_{12}N_3O_6S_2$
**Molar Mass**: 613.40
**Structure**:

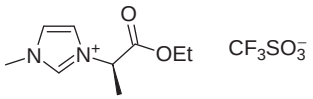


**Character**: Hydrophobic
**Application**:

| $T_g$ (K) |
|---|
| 219.15 [144] |

**2114-43: 1-(1-(*R*)-Ethoxycarbonyl-ethyl)-3-methylimidazolium trifluoromethanesulfonate**

**Abbreviation**: [Ch1-MIm][TfO]
**Molecular Formula**: $C_{10}H_{15}F_3N_2O_5S$
**Molar Mass**: 332.30
**Structure**:

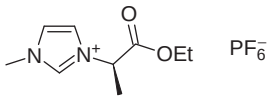


**Character**: Hydrophobic
**Application**: [144]

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 346.15 | 223.15 |

**2114-51: 1-(1-(*R*)-Ethoxycarbonyl-ethyl)-3-methylimidazolium hexafluorophosphate**

**Abbreviation**: [Ch1-MIm][$PF_6$]
**Molecular Formula**: $C_9H_{15}N_2O_2PF_6$
**Molar Mass**: 328.19
**Structure**:

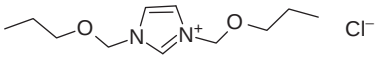


**Character**: Hydrophobic
**Application**:

| $T_g$ (K) |
|---|
| 215.15 [144] |

**2115-11: 1,3-Dipropyloxymethylimidazolium chloride**

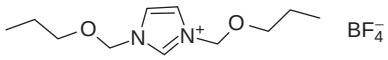
**Abbreviation**: [$(C_3Om)_2$Im]Cl
**Molecular Formula**: $C_{11}H_{21}N_2O_2Cl$
**Molar Mass**: 248.75
**Structure**:



**Character**: Antielectrostatic
**Application**: [145]

**2115-21: 1,3-Dipropyloxymethylimidazolium tetrafluoroborate**

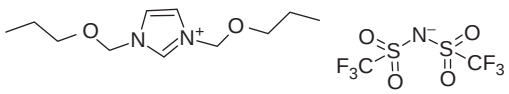
**Abbreviation**: [$(C_3Om)_2$Im][$BF_4$]
**Molecular Formula**: $C_{11}H_{21}N_2O_2BF_4$
**Molar Mass**: 300.1
**Structure**:



**Character**: Antielectrostatic
**Application**: [145]

**2115-31: 1,3-Dipropyloxymethylimidazolium bis((trifluoromethyl)sulfonyl)imides**

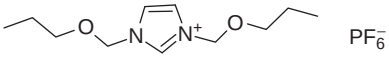
**Abbreviation**: [$(C_3Om)_2$Im][$NTf_2$]
**Molecular Formula**: $C_{13}H_{21}F_6N_3O_6S_2$
**Molar Mass**: 493.44
**Structure**:



**Character**: Antielectrostatic
**Application**: [145]

**2115-51: 1,3-Dipropyloxymethylimidazolium hexafluorophosphate**

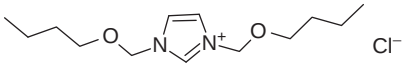
**Abbreviation**: [$(C_3Om)_2$Im][$PF_6$]
**Molecular Formula**: $C_{11}H_{21}N_2O_2PF_6$
**Molar Mass**: 358.26
**Structure**:



**Character**: Antielectrostatic
**Application**: [145]

**2116-11: 1,3-Dibutyloxymethylimidazolium chloride**

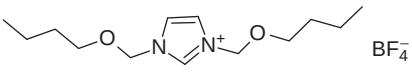
**Abbreviation**: [$(C_4Om)_2$Im]Cl
**Molecular Formula**: $C_{13}H_{25}N_2O_2Cl$
**Molar Mass**: 276.8
**Structure**:



**Character**: Antielectrostatic
**Application**: [145]

**2116-21: 1,3-Dibutyloxymethylimidazolium tetrafluoroborate**

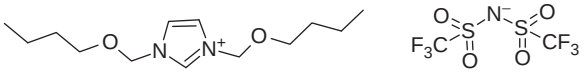
**Abbreviation**: [$(C_4Om)_2$Im][$BF_4$]
**Molecular Formula**: $C_{13}H_{25}N_2O_2BF_4$
**Molar Mass**: 328.15
**Structure**:



**Character**: Antielectrostatic
**Application**: [145]

**2116-31: 1,3-Dibutyloxymethylimidazolium bis((trifluoromethyl)sulfonyl)imide**

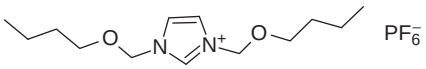
**Abbreviation**: $[(C_4Om)_2Im][NTf_2]$
**Molecular Formula**: $C_{15}H_{25}F_6N_3O_6S_2$
**Molar Mass**: 521.5
**Structure**:



**Character**: Antielectrostatic
**Application**: [145]

**2116-51: 1,3-Dibutyloxymethylimidazolium hexafluorophosphate**

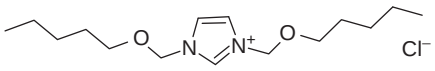
**Abbreviation**: $[(C_4Om)_2Im][PF_6]$
**Molecular Formula**: $C_{13}H_{25}N_2O_2PF_6$
**Molar Mass**: 386.31
**Structure**:



**Character**: Antielectrostatic
**Application**: [145]

**2117-11: 1,3-Dipentyloxymethylimidazolium chloride**

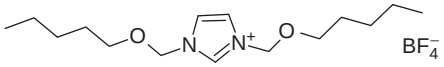
**Abbreviation**: $[(C_5Om)_2Im]Cl$
**Molecular Formula**: $C_{15}H_{29}N_2O_2Cl$
**Molar Mass**: 304.86
**Structure**:



**Character**: Antielectrostatic
**Application**: [145]

**2117-21: 1,3-Dipentyloxymethylimidazolium tetrafluoroborate**

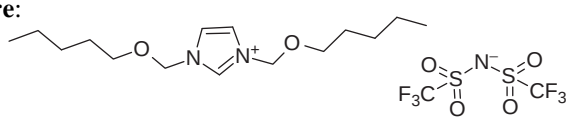
**Abbreviation**: $[(C_5Om)_2Im][BF_4]$
**Molecular Formula**: $C_{15}H_{29}N_2O_2BF_4$
**Molar Mass**: 356.21
**Structure**:



**Character**: Antielectrostatic
**Application**: [145]

**2117-31: 1,3-Dipentyloxymethylimidazolium bis((trifluoromethyl)sulfonyl)imide**

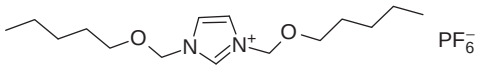
**Abbreviation**: $[(C_5Om)_2Im][NTf_2]$
**Molecular Formula**: $C_{17}H_{29}F_6N_3O_6S_2$
**Molar Mass**: 549.55
**Structure**:



**Character**: Antielectrostatic
**Application**: [145]

**2117-51: 1,3-Dipentyloxymethylimidazolium hexafluorophosphate**

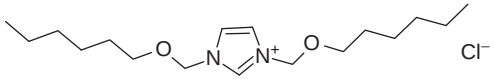
**Abbreviation**: $[(C_5Om)_2Im][PF_6]$
**Molecular Formula**: $C_{15}H_{29}N_2O_2PF_6$
**Molar Mass**: 414.37
**Structure**:



**Character**:
**Application**: [145]

**2118-11: 1,3-Dihexyloxymethylimidazolium chloride**

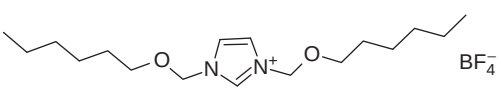
**Abbreviation**: $[(C_6Om)_2Im]Cl$
**Molecular Formula**: $C_{17}H_{33}N_2O_2Cl$
**Molar Mass**: 332.91
**Structure**:



**Character**: Antielectrostatic
**Application**: [145]

**2118-21: 1,3-Dihexyloxymethylimidazolium tetrafluoroborate**

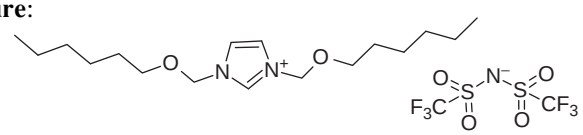
**Abbreviation**: $[(C_6Om)_2Im][BF_4]$
**Molecular Formula**: $C_{17}H_{33}N_2O_2BF_4$
**Molar Mass**: 384.26
**Structure**:



**Character**: Antielectrostatic
**Application**: [145]

**2118-31: 1,3-Dihexyloxymethylimidazolium bis((trifluoromethyl)sulfonyl)imide**

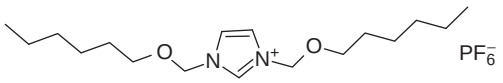
**Abbreviation**: $[(C_6Om)_2Im][NTf_2]$
**Molecular Formula**: $C_{19}H_{33}F_6N_3O_6S_2$
**Molar Mass**: 577.6
**Structure**:



**Character**: Antielectrostatic
**Application**: [145]

**2118-51: 1,3-Dihexyloxymethylimidazolium hexafluorophosphate**

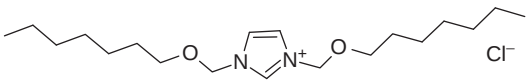
**Abbreviation**: $[(C_6Om)_2Im][PF_6]$
**Molecular Formula**: $C_{17}H_{33}N_2O_2PF_6$
**Molar Mass**: 442.42
**Structure**:



**Character**:
**Application**: [145]

**2119-11: 1,3-Diheptyloxymethylimidazolium chloride**

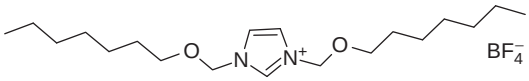
**Abbreviation**: $[(C_7Om)_2Im]Cl$
**Molecular Formula**: $C_{19}H_{37}N_2O_2Cl$
**Molar Mass**: 360.96
**Structure**:



**Character**: Antielectrostatic
**Application**: [145]

**2119-21: 1,3-Diheptyloxymethylimidazolium tetrafluoroborate**

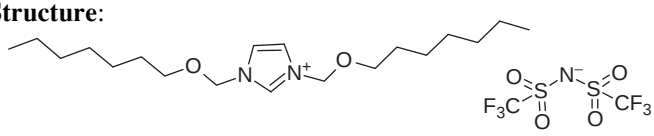
**Abbreviation**: $[(C_7Om)_2Im][BF_4]$
**Molecular Formula**: $C_{19}H_{37}N_2O_2BF_4$
**Molar Mass**: 412.31
**Structure**:



**Character**:
**Application**: [145]

**2119-31: 1,3-Diheptyloxymethylimidazolium bis((trifluoromethyl)sulfonyl)imide**

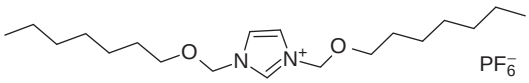
**Abbreviation**: $[(C_7Om)_2Im][NTf_2]$
**Molecular Formula**: $C_{21}H_{37}F_6N_3O_6S_2$
**Molar Mass**: 605.66
**Structure**:



**Character**: Antielectrostatic
**Application**: [145]

**2119-51: 1,3-Diheptyloxymethylimidazolium hexafluorophosphate**

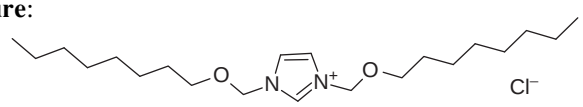
**Abbreviation**: $[(C_7Om)_2Im][PF_6]$
**Molecular Formula**: $C_{19}H_{37}N_2O_2PF_6$
**Molar Mass**: 470.47
**Structure**:



**Character**:
**Application**: [145]

**2120-11: 1,3-Dioctyloxymethylimidazolium chloride**

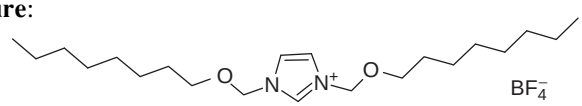
**Abbreviation**: $[(C_8Om)_2Im]Cl$
**Molecular Formula**: $C_{21}H_{41}N_2O_2Cl$
**Molar Mass**: 389.02
**Structure**:



**Character**: Antielectrostatic
**Application**: [145]

**2120-21: 1,3-Dioctyloxymethylimidazolium tetrafluoroborate**

Abbreviation: $[(C_8Om)_2Im][BF_4]$
**Molecular Formula**: $C_{21}H_{41}N_2O_2BF_4$
**Molar Mass**: 440.37
**Structure**:

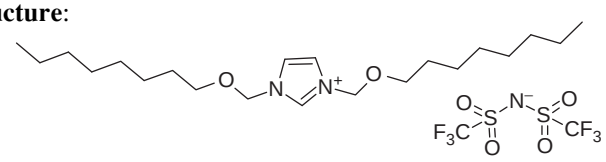


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 326.15-327.15 [145] |

### 2120-31: 1,3-Dioctyloxymethylimidazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: $[(C_8Om)_2Im][NTf_2]$
**Molecular Formula**: $C_{23}H_{41}F_6N_3O_6S_2$
**Molar Mass**: 633.71
**Structure**:



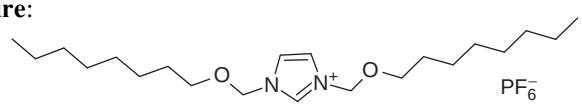
**Character**: Antielectrostatic
**Application**: [145]

| $T_g$ (K) |
|---|
| 231.15 |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.205 | 298.15 | 154 | 298.15 |

### 2120-51: 1,3-Dioctyloxymethylimidazolium hexafluorophosphate

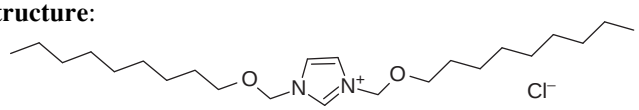
**Abbreviation**: $[(C_8Om)_2Im][PF_6]$
**Molecular Formula**: $C_{21}H_{41}N_2O_2PF_6$
**Molar Mass**: 498.53
**Structure**:



**Character**:
**Application**: [145]

### 2121-11: 1,3-Dinonyloxymethylimidazolium chloride

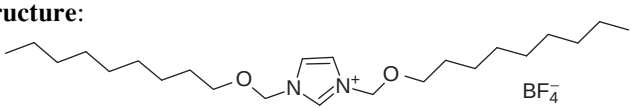
**Abbreviation**: $[(C_9Om)_2Im]Cl$
**Molecular Formula**: $C_{23}H_{45}N_2O_2Cl$
**Molar Mass**: 417.07
**Structure**:



**Character**: Antielectrostatic
**Application**: [145]

### 2121-21: 1,3-Dinonyloxymethylimidazolium tetrafluoroborate

**Abbreviation**: $[(C_9Om)_2Im][BF_4]$
**Molecular Formula**: $C_{23}H_{45}N_2O_2BF_4$
**Molar Mass**: 468.42
**Structure**:

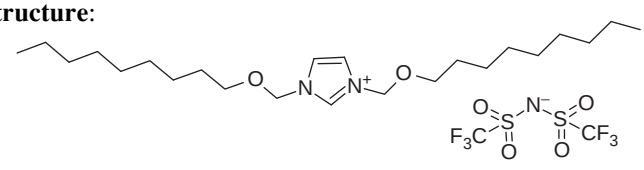


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 328.15-331.15 [145] |

### 2121-31: 1,3-Dinonyloxymethylimidazolium bis((trifluoromethyl)sulfonyl)imide

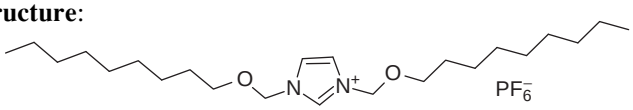
**Abbreviation**: $[(C_9Om)_2Im][NTf_2]$
**Molecular Formula**: $C_{25}H_{45}F_6N_3O_6S_2$
**Molar Mass**: 661.76
**Structure**:



**Character**: Antielectrostatic
**Application**: [145]

### 2121-51: 1,3-Dinonyloxymethylimidazolium hexafluorophosphate

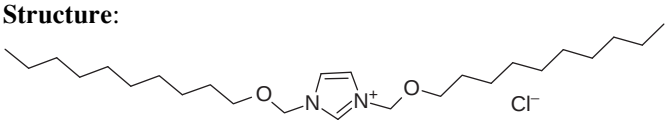
**Abbreviation**: $[(C_9Om)_2Im][PF_6]$
**Molecular Formula**: $C_{23}H_{45}N_2O_2PF_6$
**Molar Mass**: 526.58
**Structure**:



**Character**:
**Application**: [145]

### 2122-11: 1,3-Didecyloxymethylimidazolium chloride

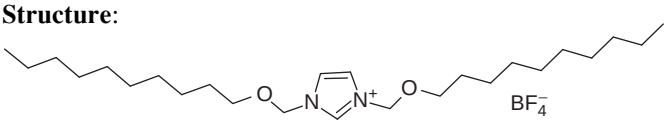
**Abbreviation**: $[(C_{10}Om)_2Im]Cl$
**Molecular Formula**: $C_{25}H_{49}N_2O_2Cl$
**Molar Mass**: 445.12
**Structure**:



**Character**: Antielectrostatic
**Application**: [145]

### 2122-21: 1,3-Didecyloxymethylimidazolium tetrafluoroborate

**Abbreviation**: $[(C_{10}Om)_2Im][BF_4]$
**Molecular Formula**: $C_{25}H_{49}N_2O_2BF_4$
**Molar Mass**: 496.47
**Structure**:

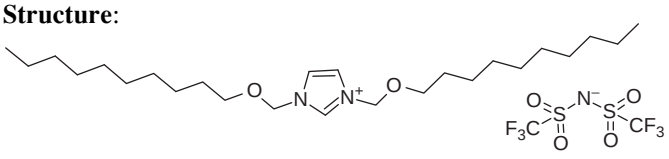


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 340.15-343.15 [145] |

### 2122-31: 1,3-Didecyloxymethylimidazolium bis((trifluoromethyl)sulfonyl)imide

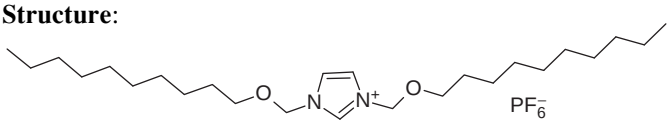
**Abbreviation**: $[(C_{10}Om)_2Im][NTf_2]$
**Molecular Formula**: $C_{27}H_{49}F_6N_3O_6S_2$
**Molar Mass**: 689.82
**Structure**:



**Character**:
**Application**: [145]

### 2122-51: 1,3-Didecyloxymethylimidazolium hexafluorophosphate

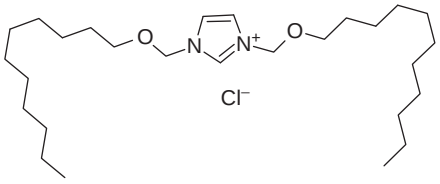
**Abbreviation**: $[(C_{10}Om)_2Im][PF_6]$
**Molecular Formula**: $C_{25}H_{49}N_2O_2PF_6$
**Molar Mass**: 554.63
**Structure**:



**Character**:
**Application**: [145]

### 2123-11: 1,3-Diundecyloxymethylimidazolium chloride

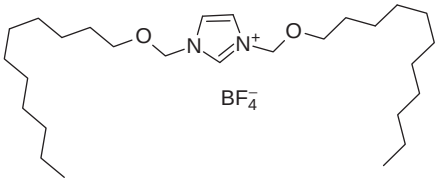
**Abbreviation**: $[(C_{11}Om)_2Im]Cl$
**Molecular Formula**: $C_{27}H_{53}N_2O_2Cl$
**Molar Mass**: 473.17
**Structure**:



**Character**: Antielectrostatic
**Application**: [145]

### 2123-21: 1,3-Diundecyloxymethylimidazolium tetrafluoroborate

**Abbreviation**: $[(C_{11}Om)_2Im][BF_4]$
**Molecular Formula**: $C_{27}H_{53}N_2O_2BF_4$
**Molar Mass**: 524.53
**Structure**:

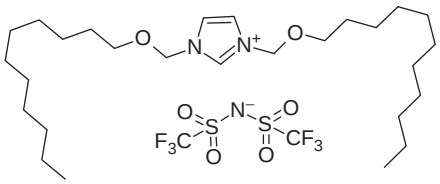


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 343.15-345.15 [145] |

### 2123-31: 1,3-Diundecyloxymethylimidazolium bis((trifluoromethyl)sulfonyl)imide

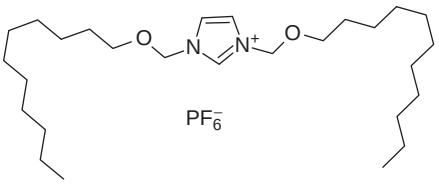
**Abbreviation**: $[(C_{11}Om)_2Im][NTf_2]$
**Molecular Formula**: $C_{29}H_{53}F_6N_3O_6S_2$
**Molar Mass**: 717.87
**Structure**:



**Character**:
**Application**: [145]

### 2123-51: 1,3-Diundecyloxymethylimidazolium hexafluorophosphate

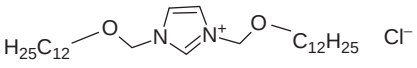
**Abbreviation**: $[(C_{11}Om)_2Im][PF_6]$
**Molecular Formula**: $C_{27}H_{53}N_2O_2PF_6$
**Molar Mass**: 582.69
**Structure**:



**Character**:
**Application**: [145]

### 2124-11: 1,3-Didodecyoxymethylimidazolium chloride

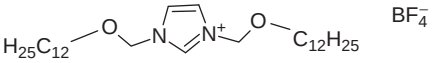
**Abbreviation**: $[(C_{12}Om)_2Im]Cl$
**Molecular Formula**: $C_{29}H_{57}N_2O_2Cl$
**Molar Mass**: 501.23
**Structure**:



**Character**: Antielectrostatic
**Application**: [145]

### 2124-21: 1,3-Didodecyoxymethylimidazolium tetrafluoroborate

**Abbreviation**: $[(C_{12}Om)_2Im][BF_4]$
**Molecular Formula**: $C_{29}H_{57}N_2O_2BF_4$
**Molar Mass**: 552.58
**Structure**:

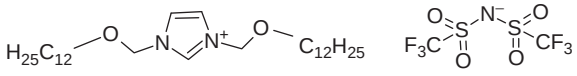


**Character**:
**Application**: [145]

| $T_m$ (K) |
|---|
| 351.15-353.15 |

### 2124-31: 1,3-Didodecyoxymethylimidazolium bis((trifluoromethyl)sulfonyl)imide

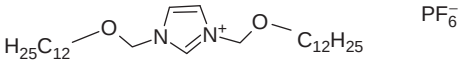
**Abbreviation**: $[(C_{12}Om)_2Im][NTf_2]$
**Molecular Formula**: $C_{31}H_{57}F_6N_3O_6S_2$
**Molar Mass**: 745.92
**Structure**:



**Character**:
**Application**: [145]

### 2124-51: 1,3-Didodecyoxymethylimidazolium hexafluorophosphate

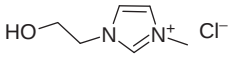
**Abbreviation**: $[(C_{12}Om)_2Im][PF_6]$
**Molecular Formula**: $C_{29}H_{57}N_2O_2PF_6$
**Molar Mass**: 610.74
**Structure**:



**Character**:
**Application**: [145]

### 2125-11: 1-(2-Hydroxyethyl)-3-methylimidazolium chloride

**Abbreviation**: [HEMIm]Cl
**Molecular Formula**: $C_6H_{11}N_2OCl$
**Molar Mass**: 162.62
**Structure**:

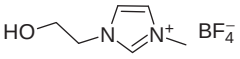


**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 333.95 ± 2 [146] | 162.15 [82] |

### 2125-21: 1-(2-Hydroxyethyl)-3-methylimidazolium tetrafluoroborate

**Abbreviation**: [HEMIm][$BF_4$]
**Molecular Formula**: $C_6H_{11}N_2OBF_4$
**Molar Mass**: 213.97
**Structure**:



**Character**:
**Application**: Water content 266 ppm [146]

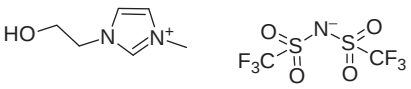
| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 200.15 ± 2 [146]<br>189.15 [82] | 653.15 ± 2 [146] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$(S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.33 [82] | 298.15 | 90.9 [82] | 293.15 | 0.46 [146] | 298.15 |

| Electrochemical Window (V) | Cathode limit (V) | Anodic limit (V) | $T$ (K) |
|---|---|---|---|
| 6.4 [146] | −3.4 | 3 | RT |

### 2125-31: 1-(2-Hydroxyethyl)-3-methylimidazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [HEMIm][$NTf_2$]
**Molecular Formula**: $C_8H_{11}F_6N_3O_5S_2$
**Molar Mass**: 407.31
**Structure**:



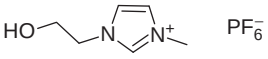
**Character**:
**Application**: Water content 54 ppm [146]

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 196.65 ± 2 [146]<br>194.15 [46] | 693.15 ± 2 [146] |

| $K$ (S/m) | $T$ (K) | Electrochemical Window (V) | Cathode limit (V) | Anodic limit (V) | $T$ (K) |
|---|---|---|---|---|---|
| 0.28 [146] | 298.15 | 6.2 [146] | −3.2 | 3 | RT |

### 2125-51: 1-(2-Hydroxyethyl)-3-methylimidazolium hexafluorophosphate

**Abbreviation**: [HEMIm][$PF_6$]
**Molecular Formula**: $C_6H_{11}N_2OPF_6$
**Molar Mass**: 272.13
**Structure**:



**Character**:
**Application**: Water content 183 ppm [146]

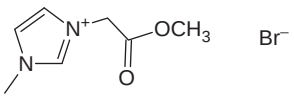
| $T_m$ (K) | $T_d$ (K) | $T_g$ (K) |
|---|---|---|
| 296.15 ± 2 [146] | 583.15 ± 2 [146] | 201.15 [82] |

| Electrochemical window (V) | Cathode limit (V) | Anodic limit (V) | $T$ (K) |
|---|---|---|---|
| 5.4 [146] | −2.5 | 2.9 | RT |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.48 [82] | 298.15 | 148.8 [82] | 293.15 | 0.21 [146] | 298.15 |

### 2126-12: Methyl 1-methylimidazolium-3-acetate bromide

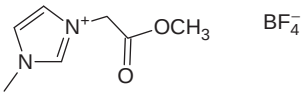
**Abbreviation**: [MEMIm]Br
**Molecular Formula**: $C_7H_{11}N_2O_2Br$
**Molar Mass**: 235.08
**Structure**:



**Character**: Biogradable ionic liquid
**Application**: [147]

### 2126-21: Methyl 1-methylimidazolium-3-acetate tetrafluoroborate

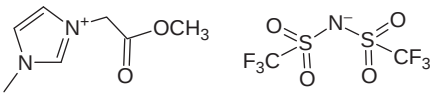
**Abbreviation**: [MEMIm][$BF_4$]
**Molecular Formula**: $C_7H_{11}N_2O_2BF_4$
**Molar Mass**: 241.98
**Structure**:



**Character**: Biogradable ionic liquid
**Application**: [147]

### 2126-31: Methyl 1-methylimidazolium-3-acetate bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [MEMIm][TFSI]
**Molecular Formula**: $C_9H_{11}F_6N_3O_6S_2$
**Molar Mass**: 435.32
**Structure**:

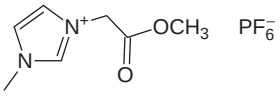


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 230.65 [148] | 613.15 [148] |

### 2126-51: Methyl 1-methylimidazolium-3-acetate hexafluorophosphate

**Abbreviation**: [MEMIm][$PF_6$]
**Molecular Formula**: $C_7H_{11}N_2O_2PF_6$
**Molar Mass**: 300.14
**Structure**:

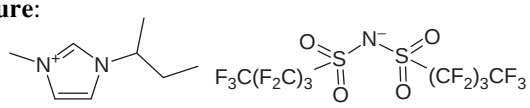


**Character**: Biogradable ionic liquid
**Application**:

| $T_m$ (K) |
|---|
| 349.15-351.15 [147] |

### 2127-310: 1-sec-Butyl-3-methylimidazolium bis (nonafluorobutane-1-sulfonyl)imide

**Abbreviation**: [Sec-$C_4$MIm][$NNf_2$]
**Molecular Formula**: $C_{16}H_{15}F_{18}N_3O_4S_2$
**Molar Mass**: 719.41
**Structure**:

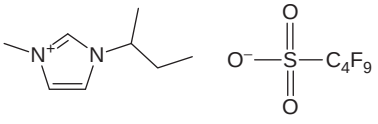


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| <277.15 [58] |

### 2127-45: 1-sec-Butyl-3-methylimidazolium perfluorobutylsulfonate

**Abbreviation**: [Sec-$C_4$MIm][NfO]
**Molecular Formula**: $C_{12}H_{15}F_9N_2SO_3$
**Molar Mass**: 438.31
**Structure**:

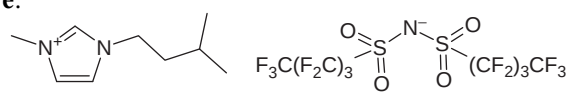


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 315.15-316.15 [58] | 553.15 [58] |

**2128-310: 1-(3-Methyl-butyl)-3-methylimidazolium bis(nonafluorobutane-1-sulfonyl)imide**

**Abbreviation**: [*i*-amyl-mim][$NNf_2$]
**Molecular Formula**: $C_{17}H_{17}F_{18}N_3O_4S_2$
**Molar Mass**: 733.44
**Structure**:

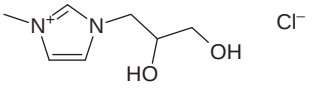


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 312.15-313.15 [58] | 553.15 [58] |

**2129-11: 1-(2′,3′-Dihydroxypropyl)-3-methylimidazolium chloride**

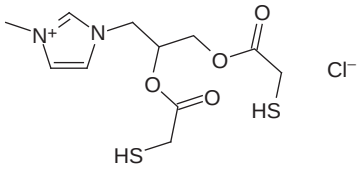
**Abbreviation**: [$C_3(OH)_2$mim]Cl
**Molecular Formula**: $C_7H_{13}N_2O_2Cl$
**Molar Mass**: 192.64
**Structure**:



**Character**:
**Application**: [149]

**2130-11: 1-(2′,3′-Dimercaptoacetoxypropyl)-3-methylimidazolium chloride**

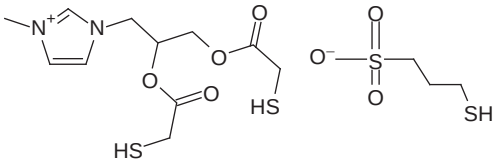
**Abbreviation**: [$C_3(OCOCH_2SH)_2$mim]Cl
**Molecular Formula**: $C_{11}H_{17}N_2O_4S_2Cl$
**Molar Mass**: 340.85
**Structure**:



**Character**:
**Application**: [149]

**2130-49: 1-(2′,3′-Dimercaptoacetoxypropyl)-3-methylimidazolium 3″-mercapto-1″-propanesulfonic acid**

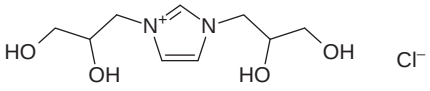
**Abbreviation**: [$C_3(OCOCH_2SH)_2$mim][$SO_3(CH_2)_3SH$]
**Molecular Formula**: $C_{14}H_{24}N_2O_7S_4$
**Molar Mass**: 460.61
**Structure**:



**Character**:
**Application**: [149]

**2131-11: 1,3-Di(2′,3′-dihydroxypropyl) imidazolium chloride**

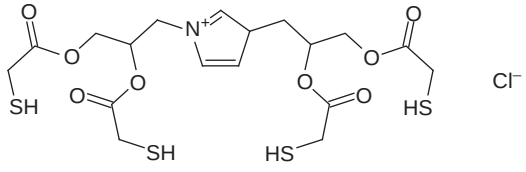
**Abbreviation**: [[$C_3(OH)_2$]$_2$im]Cl
**Molecular Formula**: $C_9H_{17}N_2O_4Cl$
**Molar Mass**: 252.69
**Structure**:



**Character**:
**Application**: [149]

**2132-11: 1,3-Di(2′,3′-dimercaptoacetoxypropyl) imidazolium chloride**

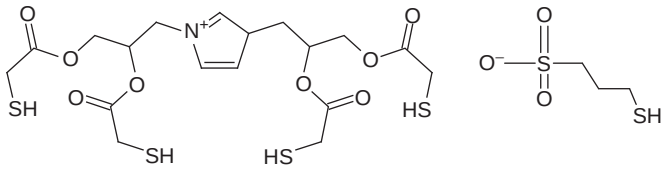
**Abbreviation**: [[$C_3(OCOCH_2SH)_2$]$_2$im]Cl
**Molecular Formula**: $C_{17}H_{25}N_2O_8S_4Cl$
**Molar Mass**: 549.10
**Structure**:



**Character**:
**Application**: [149]

### 2132-49: 1,3-Di(2′,3′-dimercaptoacetoxypropyl) imidazolium 3″-mercapto-1″-propanesulfonic acid

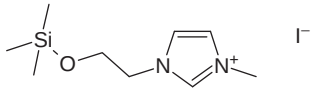
**Abbreviation**: $[[C_3(COCH_2SH)_2im][SO_3(CH_2)_3SH]$
**Molecular Formula**: $C_{20}H_{32}N_2O_{11}S_6$
**Molar Mass**: 668.86
**Structure**:



**Character**:
**Application**: [149]

### 2133-13: 1-Trimethylsilyl-2-(oxoethyl-*N*-methylimidazolium) iodine

**Abbreviation**: $[Me_3SiOCH_2CH_2ImMe]I$
**Molecular Formula**: $C_9H_{19}N_2OSiI$
**Molar Mass**: 326.25
**Structure**:

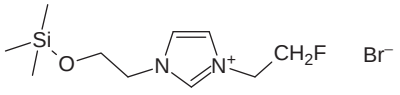


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 342.15 [150] | 456.15 [150] |

### 2134-12: 1-Trimethylsilyl-2-(oxoethyl-*N*-fluoroethylimidazolium) bromide

**Abbreviation**: $[Me_3SiOCH_2CH_2ImCH_2CH_2F]Br$
**Molecular Formula**: $C_{10}H_{20}N_2OSiFBr$
**Molar Mass**: 311.27
**Structure**:

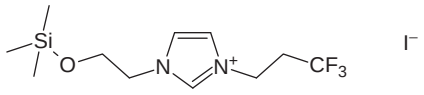


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 399.15 [150] | 483.15 [150] |

### 2135-13: 1-Trimethylsilyl-2-(oxoethyl-*N*-3′,3′,3′-trifluoropropylimidazolium) iodine

**Abbreviation**: $[Me_3SiOCH_2CH_2ImCH_2CH_2CF_3]I$
**Molecular Formula**: $C_{11}H_{20}N_2OSiF_3I$
**Molar Mass**: 408.27
**Structure**:



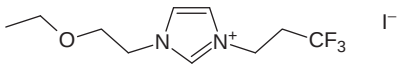
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 406.15 [150] | 232.15 [150] | 513.15 [150] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.55 [150] | 298.15 |

### 2136-13: 1-(2-Oxobutyl)-3-(3′,3′,3′-trifluoropropyl) imidazolium iodine

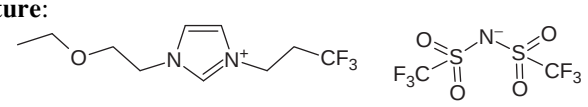
**Abbreviation**: $[CF_3\text{-}CH_2CH_2ImCH_2CH_2OCH_2CH_3]I$
**Molecular Formula**: $C_{10}H_{16}N_2OF_3I$
**Molar Mass**: 364.15
**Structure**:



**Character**:
**Application**: [150]

### 2136-31: 1-(2-Oxobutyl)-3-(3′,3′,3′-trifluoropropyl) imidazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: $[CF_3\text{-}CH_2CH_2ImCH_2CH_2OCH_2CH_3][NTf_2]$
**Molecular Formula**: $C_{12}H_{16}F_9N_3O_5S_2$
**Molar Mass**: 517.39
**Structure**:



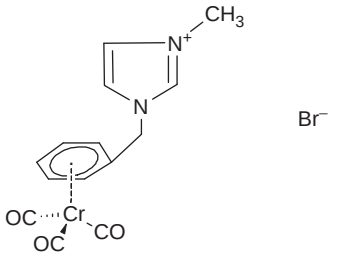
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 401.15 [150] | 234.15 [150] | 501.15 [150] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.52 [150] | 298.15 |

### 2137-12: 1-[1-(phenyl-chromium tricarbonyl)methyl]-3-methylimidazolium bromide

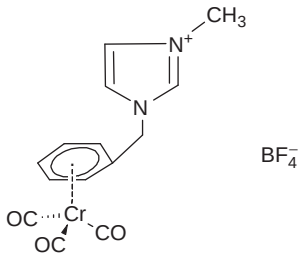
**Abbreviation**: $[Cr(CO)_3(\eta^6\text{-}C_6H_5CH_2MIM)]Br$
**Molecular Formula**: $C_{14}H_{13}N_2CrO_3Br$
**Molar Mass**: 389.16
**Structure**:



**Character**:
**Application**: [151]

### 2137-21: 1-[1-(Phenyl-chromium tricarbonyl)methyl]-3-methylimidazolium tetrafluoroborate

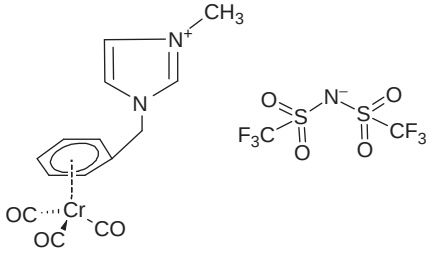
**Abbreviation**: $[Cr(CO)_3(\eta^6\text{-}C_6H_5CH_2MIM)][BF_4]$
**Molecular Formula**: $C_{14}H_{13}N_2CrO_3BF_4$
**Molar Mass**: 396.07
**Structure**:



**Character**:
**Application**: [151]

### 2137-31: 1-[1-(Phenyl-chromium tricarbonyl)methyl]-3-methylimidazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: $[Cr(CO)_3(\eta^6\text{-}C_6H_5CH_2MIM)][NTf_2]$
**Molecular Formula**: $C_{16}H_{13}F_6N_3CrO_7S_2$
**Molar Mass**: 589.41
**Structure**:

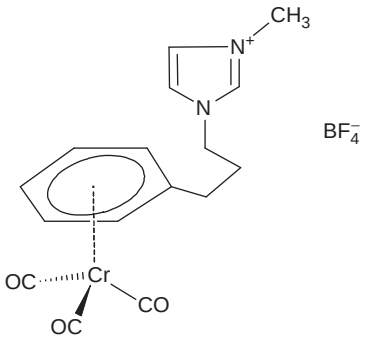


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 311.15 [151] |

### 2138-21: 1-[1-(Phenyl-chromium tricarbonyl)propyl]-3-methylimidazolium tetrafluoroborate

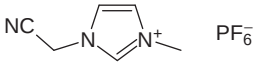
**Abbreviation**: $[Cr(CO)_3(\eta^6\text{-}C_6H_5(CH_2)_3MIM)][BF_4]$
**Molecular Formula**: $C_{16}H_{17}N_2CrO_3BF_4$
**Molar Mass**: 424.12
**Structure**:



**Character**:
**Application**: [151]

### 2143-51: 1-Methylnitrile-3-methylimidazolium hexafluorophosphate

**Abbreviation**: $[C_1CNmim][PF_6]$
**Molecular Formula**: $C_6H_8N_3PF_6$
**Molar Mass**: 267.11
**Structure**:

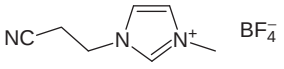


**Character**:
**Application**: Solvent and ligand for catalyzed reactions

| $T_m$ (K) |
|---|
| 351.15 [152] |

### 2144-21: 1-Ethylnitrile-3-methylimidazolium tetrafluoroborate

**Abbreviation**: $[C_1CNmim][BF_4]$
**Molecular Formula**: $C_7H_{10}N_3BF_4$
**Molar Mass**: 222.98
**Structure**:



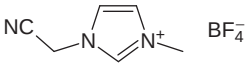
**Character**:
**Application**: Solvent and ligand for catalyzed reactions

| $T_m$ (K) |
|---|
| 293.15 [152] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 2.15 [152] | 293.15 | 65.5 [152] | 298.15 |

### 2143-21: 1-Methylnitrile-3-methylimidazolium tetrafluoroborate

**Abbreviation**: $[C_1CNmim][BF_4]$
**Molecular Formula**: $C_6H_8N_3BF_4$
**Molar Mass**: 208.95
**Structure**:

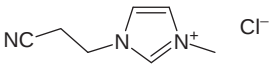


**Character**:
**Application**: Solvent and ligand for catalyzed reactions

| $T_m$ (K) |
|---|
| 308.15 [152] |

### 2144-11: 1-Ethylnitrile-3-methylimidazolium chloride

**Abbreviation**: $[C_2CNmim]Cl$
**Molecular Formula**: $C_7H_{10}N_3Cl$
**Molar Mass**: 171.63
**Structure**:

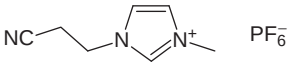


**Character**:
**Application**: Solvent and ligand for catalyzed reactions

| $T_m$ (K) |
|---|
| 323.15 [152] |

### 2144-51: 1-Ethylnitrile-3-methylimidazolium hexafluorophosphate

**Abbreviation**: $[C_2CNmim][PF_6]$
**Molecular Formula**: $C_7H_{10}N_3PF_6$
**Molar Mass**: 281.14
**Structure**:

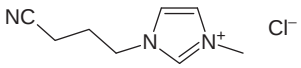


**Character**:
**Application**: Solvent and ligand for catalyzed reactions

| $T_m$ (K) |
|---|
| 308.15 [152] |

### 2145-11: 1-Propylnitrile-3-methylimidazolium chloride

**Abbreviation**: $[C_3CNmim]Cl$
**Molecular Formula**: $C_8H_{12}N_3Cl$
**Molar Mass**: 185.65
**Structure**:

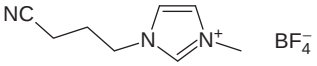



**Character**:
**Application**: Solvent and ligand for catalyzed reactions

| $T_m$ (K) |
|---|
| 353.15 [152] |

### 2145-21: 1-Propylnitrile-3-methylimidazolium tetrafluoroborate

**Abbreviation**: $[C_3CNmim][BF_4]$
**Molecular Formula**: $C_8H_{12}N_3BF_4$
**Molar Mass**: 237.01
**Structure**:



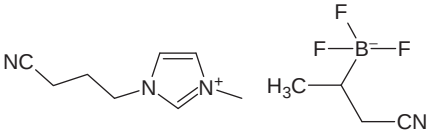

**Character**:
**Application**: Solvent and ligand for catalyzed reactions

| $T_m$ (K) |
|---|
| 201.25 [152] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.87 [152] | 293.15 | 230 [152] | 298.15 |

### 2145-227: 1-Propylnitrile-3-methylimidazolium 3-(trifluoroborate)-butylnitrile

**Abbreviation**: $[C_3CNmim][CH_3CH(BF_3)CH_2CN]$
**Molecular Formula**: $C_{12}H_{18}BF_3N_4$
**Molar Mass**: 286.10
**Structure**:



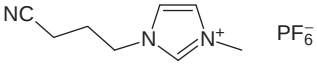

**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 196.55 [100] |

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 107 [100] | 293.15 |

### 2145-51: 1-Propylnitrile-3-methylimidazolium hexafluorophosphate

**Abbreviation**: $[C_3CNmim][PF_6]$
**Molecular Formula**: $C_8H_{12}N_3PF_6$
**Molar Mass**: 295.17
**Structure**:

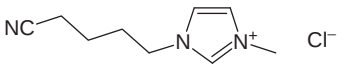



**Character**:
**Application**: Solvent and ligand for catalyzed reactions

| $T_m$ (K) |
|---|
| 348.15 [152] |

### 2146-11: 1-Butylnitrile-3-methylimidazolium chloride

**Abbreviation**: $[C_4CNmim]Cl$
**Molecular Formula**: $C_9H_{14}N_3Cl$
**Molar Mass**: 199.68
**Structure**:



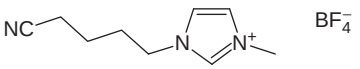

**Character**:
**Application**: Solvent and ligand for catalyzed reactions

| $T_m$ (K) |
|---|
| 305.15 [152] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.61 [152] | 293.15 | 5222 [152] | 298.15 |

### 2146-21: 1-Butylnitrile-3-methylimidazolium tetrafluoroborate

**Abbreviation**: $[C_4CNmim][BF_4]$
**Molecular Formula**: $C_9H_{14}N_3BF_4$
**Molar Mass**: 251.03
**Structure**:



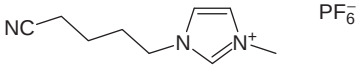

**Character**:
**Application**: Solvent and ligand for catalyzed reactions

| $T_m$ (K) |
|---|
| 201.25 [152] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.71 [152] | 293.15 | 552.9 [152] | 298.15 |

### 2146-51: 1-Butylnitrile-3-methylimidazolium hexafluorophosphate

**Abbreviation**: $[C_4CNmim][PF_6]$
**Molecular Formula**: $C_9H_{14}N_3PF_6$
**Molar Mass**: 309.19
**Structure**:



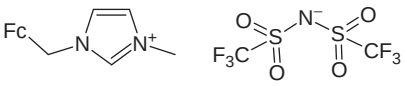

**Character**:
**Application**: Solvent and ligand for catalyzed reactions

| $T_m$ (K) |
|---|
| 212.85 [152] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.99 [152] | 293.15 | 2181 [152] | 298.15 |

### 2147-31: 1-(Ferrocenylmethyl)-3-methylimidazolium bis ((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [FcC1mim][$NTf_2$]
**Molecular Formula**: $C_{17}H_{17}F_6FeN_3O_4S_2$
**Molar Mass**: 561.30
**Structure**:



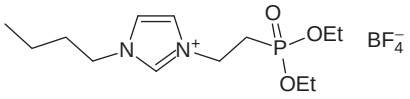

**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 240.95 [153] | 521.15 [153] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.68 [153] | 297.15 |

**2149-21: 1-butyl-3-[2-(diethoxyphosphinyl) ethyl]-1H-imidazolium tetrafluoroborate**

**Abbreviation**: [DPEBIM][$BF_4$]
**Molecular Formula**: $C_{13}H_{26}N_2O_3PBF_4$
**Molar Mass**: 376.14
**Structure**:



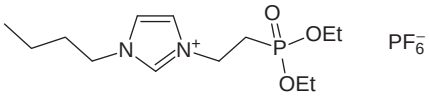
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 192.65 [154] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.2141 [154] | 298.15 |

**2149-51: 1-butyl-3-[2-(diethoxyphosphinyl) ethyl]-1H-imidazolium hexafluorophosphate**

**Abbreviation**: [DPEBIM][$PF_6$]
**Molecular Formula**: $C_{13}H_{26}N_2O_3P_2F_6$
**Molar Mass**: 434.30
**Structure**:



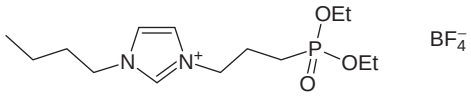
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 222.95 [154] | 217.45 [154] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.353 [154] | 298.15 |

**2150-21: 1-butyl-3-[3-(diethoxyphosphinyl) propyl]-1H-imidazolium tetrafluoroborate**

**Abbreviation**: [DPPBIM][$BF_4$]
**Molecular Formula**: $C_{14}H_{28}N_2O_3PBF_4$
**Molar Mass**: 390.16
**Structure**:



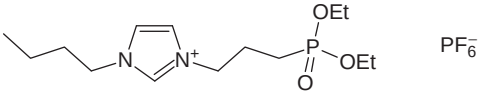
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 208.85 [154] | 205.95 [154] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.2089 [154] | 298.15 |

**2150-51: 1-butyl-3-[3-(diethoxyphosphinyl) propyl]-1H-imidazolium hexafluorophosphate**

**Abbreviation**: [DPPBIM][$PF_6$]
**Molecular Formula**: $C_{14}H_{28}N_2O_3P_2F_6$
**Molar Mass**: 448.32
**Structure**:



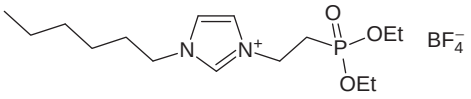
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 220.65 [154] | 214.45 [154] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.307 [154] | 298.15 |

### 2151-21: 1-Hexyl-3-[2-(diethoxyphosphinyl) ethyl]-1H-imidazolium tetrafluoroborate

**Abbreviation**: [DPEHIM][$BF_4$]
**Molecular Formula**: $C_{15}H_{30}N_2O_3PBF_4$
**Molar Mass**: 404.19
**Structure**:



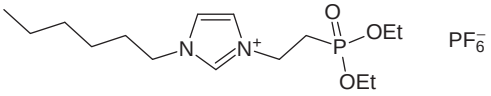

**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 190.55 [154] | 189.85 [154] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.1507 [154] | 298.15 |

### 2151-51: 1-Hexyl-3-[2-(diethoxyphosphinyl) ethyl]-1H-imidazolium hexafluorophosphate

**Abbreviation**: [DPEHIM][$PF_6$]
**Molecular Formula**: $C_{15}H_{30}N_2O_3P_2F_6$
**Molar Mass**: 462.35
**Structure**:



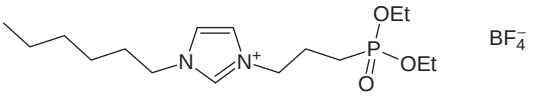

**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 210.85 [154] | 204.35 [154] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.2778 [154] | 298.15 |

### 2152-21: 1-Hexyl-3-[3-(diethoxyphosphinyl) propyl]-1H-imidazolium tetrafluoroborate

**Abbreviation**: [DPPHIM][$BF_4$]
**Molecular Formula**: $C_{16}H_{32}N_2O_3PBF_4$
**Molar Mass**: 418.22
**Structure**:



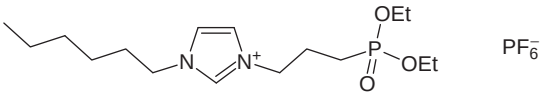

**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 197.65 [154] | 195.05 [154] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.1726 [154] | 298.15 |

### 2152-51: 1-Hexyl-3-[3-(diethoxyphosphinyl) propyl]-1H-imidazolium hexafluorophosphate

**Abbreviation**: [DPPHIM][$PF_6$]
**Molecular Formula**: $C_{16}H_{32}N_2O_3P_2F_6$
**Molar Mass**: 476.37
**Structure**:



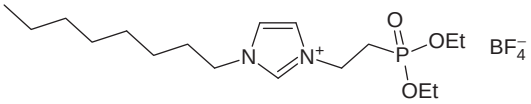

**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 206.95 [154] | 205.85 [154] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.265 [154] | 298.15 |

**2153-21: 1-Octyl-3-[2-(diethoxyphosphinyl) ethyl]-1H-imidazolium tetrafluoroborate**

**Abbreviation**: [DPEOIM][$BF_4$]
**Molecular Formula**: $C_{17}H_{34}N_2O_3PBF_4$
**Molar Mass**: 432.24
**Structure**:



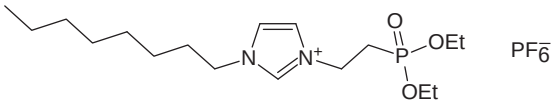
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 193.35 [154] | 188.35 [154] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.1214 [154] | 298.15 |

**2153-51: 1-Octyl-3-[2-(diethoxyphosphinyl) ethyl]-1H-imidazolium hexafluorophosphate**

**Abbreviation**: [DPEOIM][$PF_6$]
**Molecular Formula**: $C_{17}H_{34}N_2O_3P_2F_6$
**Molar Mass**: 490.40
**Structure**:



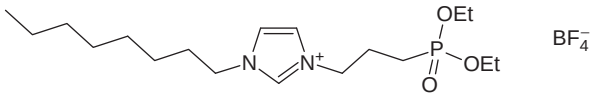
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 208.95 [154] | 199.95 [154] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.2212 [154] | 298.15 |

**2154-21: 1-Octyl-3-[3-(diethoxyphosphinyl) propyl]-1H-imidazolium tetrafluoroborate**

**Abbreviation**: [DPPOIM][$BF_4$]
**Molecular Formula**: $C_{18}H_{36}N_2O_3PBF_4$
**Molar Mass**: 446.27
**Structure**:



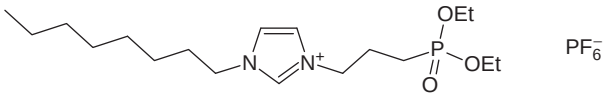
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 208.65 [154] | 201.45 [154] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.1424 [154] | 298.15 |

**2154-51: 1-Octyl-3-[3-(diethoxyphosphinyl) propyl]-1H-imidazolium hexafluorophosphate**

**Abbreviation**: [DPPOIM][$PF_6$]
**Molecular Formula**: $C_{18}H_{36}N_2O_3P_2F_6$
**Molar Mass**: 504.43
**Structure**:



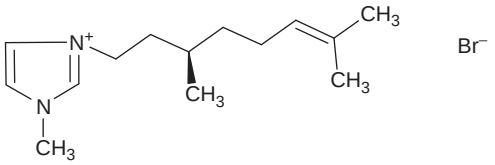
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 180.65 [154] | 177.05 [154] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.2277 [154] | 298.15 |

### 2155-12: 1-Methyl-3-[(3*R*)-3,7-dimethyloct-6-enyl]-1H-imidazolium bromide

**Abbreviation**: [CitronellylMIm]Br
**Molecular Formula**: $C_{14}H_{25}N_2Br$
**Molar Mass**: 301.27
**Structure**:



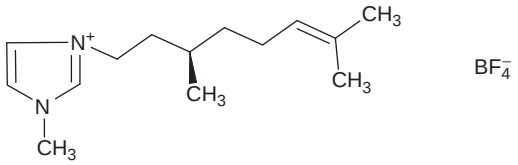
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 216.15 [155] |

| α | Concentration | $T$ (K) | Solvent |
|---|---|---|---|
| −1.4 [155] | 1 | 295.15 | $CHCl_3$ |

### 2155-21: 1-Methyl-3-[(3*R*)-3,7-dimethyloct-6-enyl]-1H-imidazolium tetrafluoroborate

**Abbreviation**: [CitronellylMIm][$BF_4$]
**Molecular Formula**: $C_{14}H_{25}N_2BF_4$
**Molar Mass**: 308.17
**Structure**:



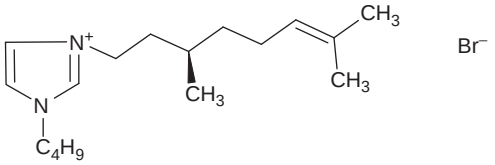
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 200.15 [155] |

| α | Concentration | $T$ (K) | Solvent |
|---|---|---|---|
| −1.2 [155] | 1 | 295.15 | $CHCl_3$ |

### 2156-12: 1-Butyl-3-[(3*R*)-3,7-dimethyloct-6-enyl]-1H-imidazolium bromide

**Abbreviation**: [CitronellylC$_4$Im]Br
**Molecular Formula**: $C_{17}H_{31}N_2Br$
**Molar Mass**: 343.35
**Structure**:



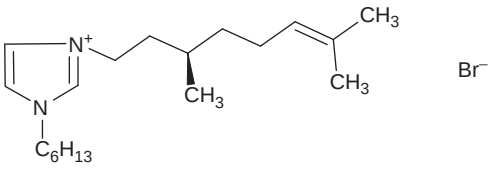
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 221.15 [155] |

| α | Concentration | $T$ (K) | Solvent |
|---|---|---|---|
| −2.2 [155] | 1 | 295.15 | $CHCl_3$ |

### 2157-12: 1-Hexyl-3-[(3*R*)-3,7-dimethyloct-6-enyl]-1H-imidazolium bromide

**Abbreviation**: [CitronellylC$_6$Im]Br
**Molecular Formula**: $C_{19}H_{35}N_2Br$
**Molar Mass**: 371.40
**Structure**:

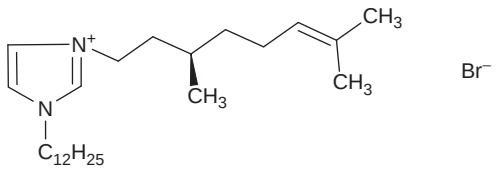


**Character**:

| α | Concentration | $T$ (K) | Solvent |
|---|---|---|---|
| −1.1 [155] | 1 | 295.15 | $CHCl_3$ |

**2158-12: 1-Dodecyl-3-[(3*R*)-3,7-dimethyloct-6-enyl]-1H-imidazolium bromide**

**Abbreviation**: [CitronellylC$_{12}$Im]Br
**Molecular Formula**: $C_{25}H_{47}N_2Br$
**Molar Mass**: 455.56
**Structure**:



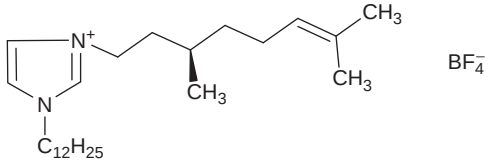

**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 203.15 [155] |

| α | Concentration | $T$ (K) | Solvent |
|---|---|---|---|
| −1 [155] | 1 | 295.15 | $CHCl_3$ |

**2158-21: 1-Dodecyl-3-[(3*R*)-3,7-dimethyloct-6-enyl]-1H-imidazolium tetrafluoroborate**

**Abbreviation**: [CitronellylC$_{12}$Im][$BF_4$]
**Molecular Formula**: $C_{25}H_{47}N_2BF_4$
**Molar Mass**: 462.46
**Structure**:

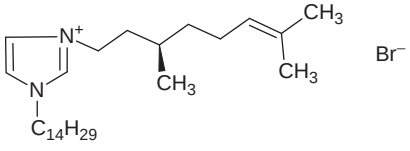



**Character**:
**Application**:

| α | Concentration | $T$ (K) | Solvent |
|---|---|---|---|
| −1 [155] | 1 | 295.15 | $CHCl_3$ |

**2159-12: 1-Tetradecyl-3-[(3*R*)-3,7-dimethyloct-6-enyl]-1H-imidazolium bromide**

**Abbreviation**: [CitronellylC$_{14}$Im]Br
**Molecular Formula**: $C_{27}H_{51}N_2Br$
**Molar Mass**: 483.61
**Structure**:

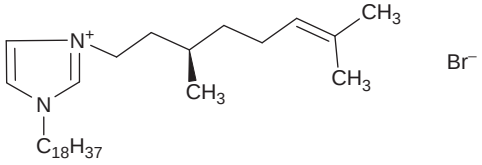



**Character**:
**Application**:

| α | Concentration | $T$ (K) | Solvent |
|---|---|---|---|
| −0.9 [155] | 1 | 295.15 | $CHCl_3$ |

**2160-12: 1-Octadecyl-3-[(3*R*)-3,7-dimethyloct-6-enyl]-1H-imidazolium bromide**

**Abbreviation**: [CitronellylC$_{18}$Im]Br
**Molecular Formula**: $C_{31}H_{59}N_2Br$
**Molar Mass**: 539.72
**Structure**:

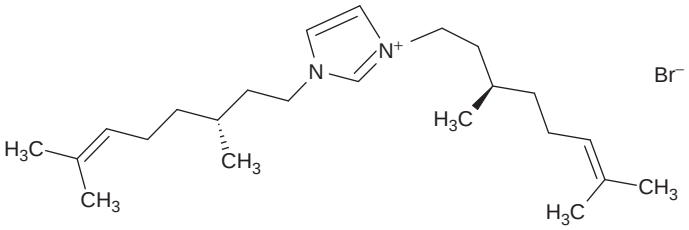



**Character**:
**Application**:

| α | Concentration | $T$ (K) | Solvent |
|---|---|---|---|
| −0.4 [155] | 1 | 295.15 | $CHCl_3$ |

### 2161-12: 1,3-Bis[(3*R*)-3,7-dimethyloct-6-enyl]-1H-imidazolium bromide

**Abbreviation**: [(Citronellyl)$_2$Im]Br
**Molecular Formula**: $C_{23}H_{41}N_2Br$
**Molar Mass**: 425.49
**Structure**:




**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 217.15 [155] |

### 2162-31: 1-$SF_5(CF_2)_2(CH_2)_2$-3-methylimidazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [$SF_5(CF_2)_2(CH_2)_2$MIm][$NTf_2$]
**Molecular Formula**: $C_{10}H_{10}F_{15}N_3O_4S_3$
**Molar Mass**: 617.37
**Structure**:

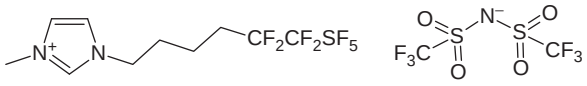

**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 217.65 [156] |

| $\rho$ (g/cm$^3$) |
|---|
| 2 [156] |

### 2163-31: 1-$SF_5(CF_2)_2(CH_2)_4$-3-methylimidazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: $[SF_5(CF_2)_2(CH_2)_4MIm][NTf_2]$
**Molecular Formula**: $C_{12}H_{14}F_{15}N_3O_4S_3$
**Molar Mass**: 645.43
**Structure**:



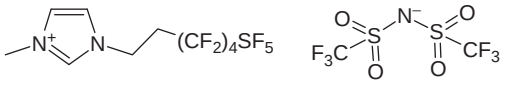
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 216.45 [156] |

| $\rho$ (g/cm$^3$) |
|---|
| 2.01 [156] |

### 2164-31: 1-$SF_5(CF_2)_4(CH_2)_2$-3-methylimidazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: $[SF_5(CF_2)_4(CH_2)_2MIm][NTf_2]$
**Molecular Formula**: $C_{12}H_{10}F_{19}N_3O_4S_3$
**Molar Mass**: 717.39
**Structure**:



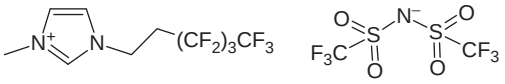
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 223.15 [156] |

| $\rho$ (g/cm$^3$) |
|---|
| 1.97 [156] |

### 2165-31: 1-(3,4,5,6-Perfluorohexyl)-3-methylimidazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [perfluoro-hmim][TFSI]
**Molecular Formula**: $C_{12}H_{10}F_{15}N_3O_4S_2$
**Molar Mass**: 609.33
**Structure**:

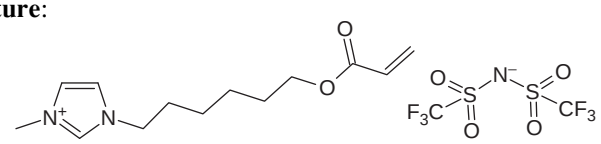


**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 217 [128] |

### 2166-31: 1-(Hexyl acrylate)-3-methylimidazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [AcrylateC$_6$MIm][TFSI]
**Molecular Formula**: $C_{15}H_{21}F_6N_3O_6S_2$
**Molar Mass**: 517.47
**Structure**:



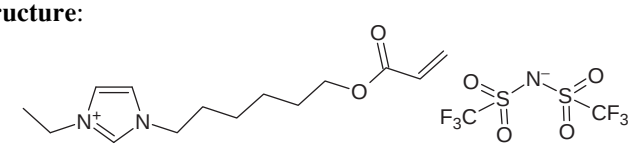
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 198.15 [157] |

| $K$ (S/m) | $T$ (K) |
|---|---|
| 0.12 [157] | 303.15 |

### 2167-31: 1-(Hexyl acrylate)-3-ethylimidazolium bis ((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [Acrylate$C_6$EIm][TFSI]
**Molecular Formula**: $C_{16}H_{23}F_6N_3O_6S_2$
**Molar Mass**: 531.49
**Structure**:



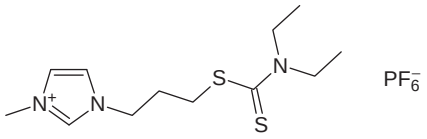
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 192.15 [157] |

| $K$ (S/m) | $T$ (K) |
|---|---|
| 0.11 [157] | 303.15 |

### 2169-51: 3-Methyl-1-[3-N,N-diethyldithiocarbamatepropyl]-imidazolium hexafluorophosphate

**Abbreviation**: [M$Et_2$TioCPrIm][$PF_6$]
**Molecular Formula**: $C_{12}H_{22}N_3S_2PF_6$
**Molar Mass**: 417.42
**Structure**:

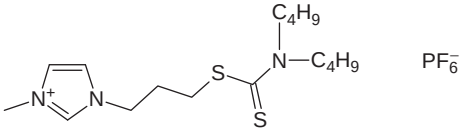


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| yellow oil [158] |

### 2170-51: 3-Methyl-1-[3-N,N-dibutyldithiocarbamatepropyl]-imidazolium hexafluorophosphate

**Abbreviation**: [M$Bu_2$TioCPrIm][$PF_6$]
**Molecular Formula**: $C_{16}H_{30}N_3S_2PF_6$
**Molar Mass**: 473.52
**Structure**:

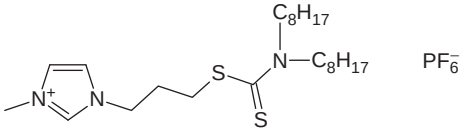


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| yellow oil [158] |

### 2171-51: 3-Methyl-1-[3-N,N-dioctyldithiocarbamate-propyl]-imidazolium hexafluorophosphate

**Abbreviation**: [M$Oct_2$TioCPrIm][$PF_6$]
**Molecular Formula**: $C_{24}H_{46}N_3S_2PF_6$
**Molar Mass**: 585.74
**Structure**:

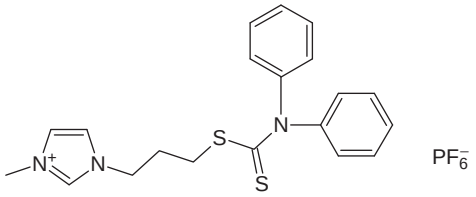


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| yellow oil [158] |

**2172-51: 3-Methyl-1-[3-N,N-diphenyldithiocarbamate-propyl]-imidazolium hexafluorophosphate**

**Abbreviation**: [$Mph_2$TioCPrIm][$PF_6$]
**Molecular Formula**: $C_{20}H_{22}N_3S_2PF_6$
**Molar Mass**: 513.50
**Structure**:

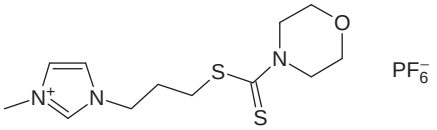


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 326.15-327.15 [158] |

**2173-51: 3-Methyl-1-[3-morpholinedithiocarbamate-propyl]-imidazolium hexafluorophosphate**

**Abbreviation**: [MMorTioCPrIm][$PF_6$]
**Molecular Formula**: $C_{12}H_{20}N_3OS_2PF_6$
**Molar Mass**: 431.40
**Structure**:



**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 323.15-325.15 [158] |

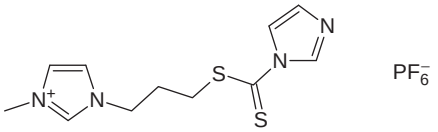
**2174-51: 3-Methyl-1-[3-pyridinedithiocarbamate-propyl]-imidazolium hexafluorophosphate**

**Abbreviation**: [MPyTioCPrIm][$PF_6$]
**Molecular Formula**: $C_{13}H_{17}N_3S_2PF_6$
**Molar Mass**: 424.39
**Structure**:
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 409.15-411.15 [158] |

**2175-51: 3-Methyl-1-[3-imidazoledithiocarbamate-propyl]-imidazolium hexafluorophosphate**

**Abbreviation**: [MIMTioCPrIm][$PF_6$]
**Molecular Formula**: $C_{11}H_{15}N_4S_2PF_6$
**Molar Mass**: 412.36
**Structure**:

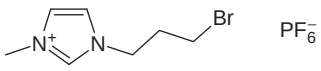


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 397.15-398.15 [158] |

**2176-51: 3-Methyl-1-(3-bromopropyl)-imidazolium hexafluorophosphate**

**Abbreviation**: [$BrC_3$MIm][$PF_6$]
**Molecular Formula**: $C_7H_{12}N_2BrPF_6$
**Molar Mass**: 349.05
**Structure**:

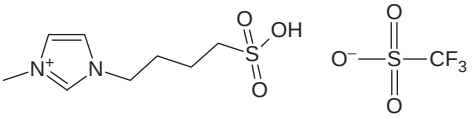


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 318.15-319.15 [158] |

**2177-43: 1-(4-Sulfonylbutyl)-3-methylimidazolium trifluoromethanesulfonate**

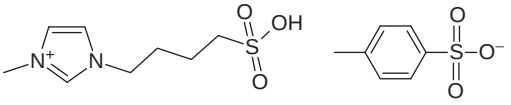
**Abbreviation**: [$HSO_3(CH_2)_4$MIm][TfO]
**Molecular Formula**: $C_9H_{15}F_3N_2O_6S_2$
**Molar Mass**: 368.35
**Structure**:



**Character**:
**Application**: Media and catalyst in acid-catalyzed reactions [159]

### 2177-47: 1-(4-Sulfonylbutyl)-3-methylimidazolium Tosylate

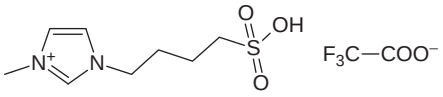
**Abbreviation**: $[HSO_3(CH_2)_4MIm][TOS]$
**Molecular Formula**: $C_{15}H_{22}N_2O_6S_2$
**Molar Mass**: 390.48
**Structure**:



**Character**:
**Application**: [159]

### 2177-61: 1-(4-Sulfonylbutyl)-3-methylimidazolium trifluoroacetate

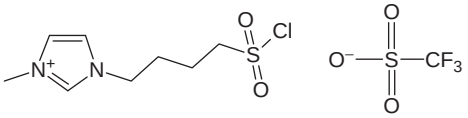
**Abbreviation**: $[HSO_3(CH_2)_4MIm][TA]$
**Molecular Formula**: $C_{10}H_{15}F_3N_2O_5S$
**Molar Mass**: 332.30
**Structure**:



**Character**:
**Application**: Media and catalyst in acid-catalyzed reactions [159]

### 2178-43: 1-(4-Chlorosulfonylbutyl)-3-methylimidazolium trifluoromethanesulfonate

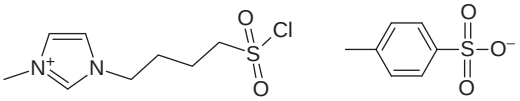
**Abbreviation**: $[ClO_2S(CH_2)_4MIm][TfO]$
**Molecular Formula**: $C_9H_{14}F_3N_2O_5S_2Cl$
**Molar Mass**: 386.80
**Structure**:



**Character**:
**Application**: Media and catalyst in acid-catalyzed reactions [159]

### 2178-47: 1-(4-Chlorosulfonylbutyl)-3-methylimidazolium Tosylate

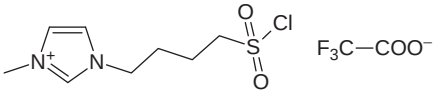
**Abbreviation**: $[ClO_2S(CH_2)_4MIm][TOS]$
**Molecular Formula**: $C_{15}H_{21}N_2O_5S_2Cl$
**Molar Mass**: 408.92
**Structure**:



**Character**:
**Application**: Media and catalyst in acid-catalyzed reactions [159]

### 2178-61: 1-(4-Chlorosulfonylbutyl)-3-methylimidazolium trifluoroacetate

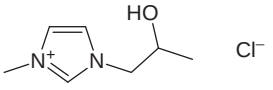
**Abbreviation**: $[ClO_2S(CH_2)_4MIm][TA]$
**Molecular Formula**: $C_{10}H_{14}N_2O_4SClF_3$
**Molar Mass**: 350.74
**Structure**:



**Character**:
**Application**: Media and catalyst in acid-catalyzed reactions [159]

### 2179-11: 1-(2-Hydroxypropyl)-3-methylimidazolium chloride

**Abbreviation**: $[CH_3CH(OH)CH_2MIm]Cl$
**Molecular Formula**: $C_7H_{13}N_2OCl$
**Molar Mass**: 176.64
**Structure**:



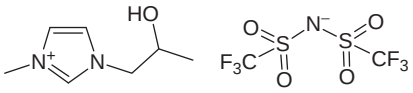
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 204.25 [160] | 573.15 [160] |

| $\rho$ (g/cm$^3$) | $\eta_D$ (cp) | $T$ (K) | Water content (<100 wt%, 100 ppm) |
|---|---|---|---|
| 1.15 [160] | 1856 [160] | 298.15 | 5.29 (wt%) [160] |

### 2179-31: 1-(2-Hydroxypropyl)-3-methylimidazolium bis ((trifluoromethyl)sulfonyl)imide

**Abbreviation**: $[CH_3CH(OH)CH_2MIm][TFSI]$
**Molecular Formula**: $C_9H_{13}F_6N_3O_5S_2$
**Molar Mass**: 421.34
**Structure**:



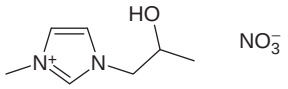
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 205.55 [160] | 698.15 [160] |

| $\rho$ (g/cm$^3$) | $\eta_D$ (cp) | $T$ (K) | Water content (<100 wt%, 100 ppm) |
|---|---|---|---|
| 1.57 [160] | 342 [160] | 298.15 | 0.95 (wt%) [160] |

### 2179-39: 1-(2-Hydroxypropyl)-3-methylimidazolium nitrate

**Abbreviation**: $[CH_3CH(OH)CH_2MIm][NO_3]$
**Molecular Formula**: $C_7H_{13}N_3O_4$
**Molar Mass**: 203.20
**Structure**:



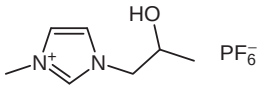
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 193.85 [160] | 593.15 [160] |

| $\rho$ (g/cm$^3$) | $\eta_D$ (cp) | $T$ (K) | Water content (<100 wt%, 100 ppm) |
|---|---|---|---|
| 1.17 [160] | 502 [160] | 298.15 | 0.11 (wt%) [160] |

### 2179-51: 1-(2-Hydroxypropyl)-3-methylimidazolium hexafluorophosphate

**Abbreviation**: $[CH_3CH(OH)CH_2MIm][PF_6]$
**Molecular Formula**: $C_7H_{13}N_2OPF_6$
**Molar Mass**: 286.16
**Structure**:



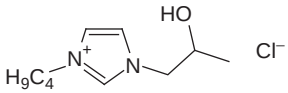
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 184.75 [160] | 598.15 [160] |

| $\rho$ (g/cm$^3$) | $\eta_D$ (cp) | $T$ (K) | Water content (<100 wt%, 100 ppm) |
|---|---|---|---|
| 1.11 [160] | 319 [160] | 298.15 | 2.22 (wt%) [160] |

### 2180-11: 1-(2-Hydroxypropyl)-3-butylimidazolium chloride

**Abbreviation**: $[CH_3CH(OH)CH_2BIm]Cl$
**Molecular Formula**: $C_{10}H_{19}ClN_2O$
**Molar Mass**: 218.72
**Structure**:

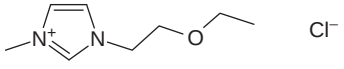


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 409.65 [160] | 523.15 [160] |

### 2181-11: 1-(Ethoxyethyl)-3-methylimidazolium chloride

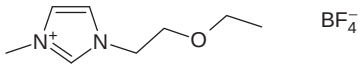
**Abbreviation**: [EOEMIm]Cl
**Molecular Formula**: $C_8H_{15}N_2OCl$
**Molar Mass**: 190.67
**Structure**:



**Character**:
**Application**: Dissolve carbohydrates [81]

### 2181-21: 1-(Ethoxyethyl)-3-methylimidazolium tetrafluoroborate

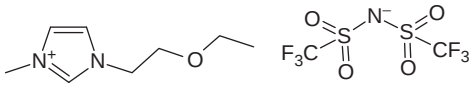
**Abbreviation**: $[EOEMIm][BF_4]$
**Molecular Formula**: $C_8H_{15}N_2OBF_4$
**Molar Mass**: 242.02
**Structure**:



**Character**:
**Application**: Dissolve carbohydrates [81]

**2181-31: 1-(Ethoxyethyl)-3-methylimidazolium bis((trifluoromethyl)sulfonyl)imide**

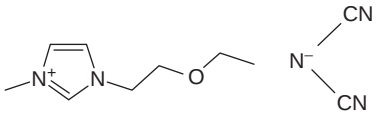
**Abbreviation**: [EOEMIm][TFSI]
**Molecular Formula**: $C_{10}H_{15}F_6N_3O_5S_2$
**Molar Mass**: 435.36
**Structure**:



**Character**:
**Application**: Dissolve carbohydrates [81]

**2181-34: 1-(Ethoxyethyl)-3-methylimidazolium dicyanoamide**

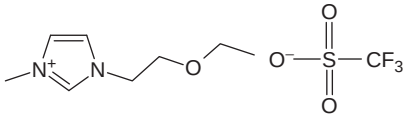
**Abbreviation**: [EOEMIm][dca]
**Molecular Formula**: $C_{10}H_{15}N_5O$
**Molar Mass**: 221.26
**Structure**:



**Character**:
**Application**: Dissolve carbohydrates [81]

**2181-43: 1-(Ethoxyethyl)-3-methylimidazolium trifluoromethanesulfonate**

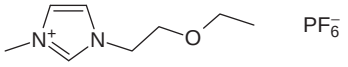
**Abbreviation**: [EOEMIm][TfO]
**Molecular Formula**: $C_9H_{15}F_3N_2O_4S$
**Molar Mass**: 304.29
**Structure**:



**Character**:
**Application**: Dissolve carbohydrates [81]

**2181-51: 1-(Ethoxyethyl)-3-methylimidazolium hexafluorophosphate**

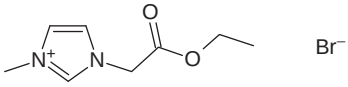
**Abbreviation**: [EOEMIm][$PF_6$]
**Molecular Formula**: $C_8H_{15}N_2OPF_6$
**Molar Mass**: 300.18
**Structure**:



**Character**:
**Application**: Dissolve carbohydrates [81]

**2182-12: 3-Methyl-1-(ethoxycarbonylmethyl)imidazolium bromide**

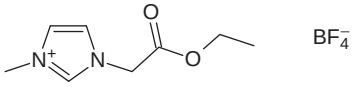
**Abbreviation**: [$EtOCOCH_2MIm$]Br
**Molecular Formula**: $C_8H_{13}N_2O_2Br$
**Molar Mass**: 249.11
**Structure**:



**Character**: Biogradable ionic liquid
**Application**: [147]

**2182-21: 3-Methyl-1-(ethoxycarbonylmethyl)imidazolium tetrafluoroborate**

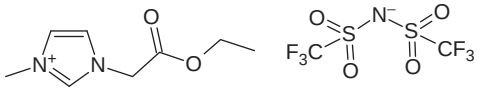
**Abbreviation**: [$EtOCOCH_2MIm$][$BF_4$]
**Molecular Formula**: $C_8H_{13}N_2O_2BF_4$
**Molar Mass**: 256.01
**Structure**:



**Character**: Biogradable ionic liquid
**Application**: [147]

**2182-31: 3-Methyl-1-(ethoxycarbonylmethyl)imidazolium bis((trifluoromethyl)sulfonyl)imide**

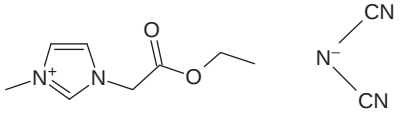
**Abbreviation**: [$EtOCOCH_2MIm$][$NTf_2$]
**Molecular Formula**: $C_{10}H_{13}F_6N_3O_6S_2$
**Molar Mass**: 449.35
**Structure**:



**Character**: Biogradable ionic liquid
**Application**: [147]

**2182-34: 3-Methyl-1-(ethoxycarbonylmethyl)imidazolium dicyanoamide**

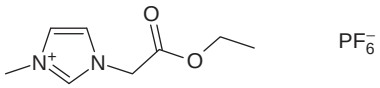
**Abbreviation**: [$EtOCOCH_2MIm$][dca]
**Molecular Formula**: $C_{10}H_{13}N_5O_2$
**Molar Mass**: 235.24
**Structure**:



**Character**: Biogradable ionic liquid
**Application**:

**2182-51: 3-Methyl-1-(ethoxycarbonylmethyl)imidazolium hexafluorophosphate**

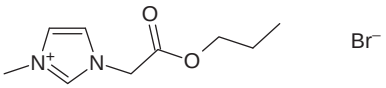
**Abbreviation**: [EtOCOCH$_2$MIm][PF$_6$]
**Molecular Formula**: $C_8H_{13}N_2O_2PF_6$
**Molar Mass**: 314.17
**Structure**:



**Character**:
**Application**: [147]

**2183-12: 3-Methyl-1-(propoxycarbonylmethyl) imidazolium bromide**

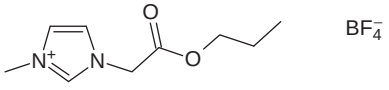
**Abbreviation**: [PrOCOCH$_2$MIm]Br
**Molecular Formula**: $C_9H_{15}N_2O_2Br$
**Molar Mass**: 263.13
**Structure**:



**Character**: Biogradable ionic liquid
**Application**: [147]

**2183-21: 3-Methyl-1-(propoxycarbonylmethyl) imidazolium tetrafluoroborate**

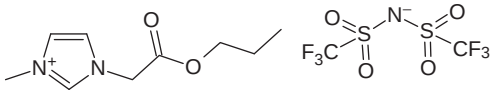
**Abbreviation**: [PrOCOCH$_2$MIm][BF$_4$]
**Molecular Formula**: $C_9H_{15}N_2O_2BF_4$
**Molar Mass**: 270.03
**Structure**:



**Character**:
**Application**: [147]

**2183-31: 3-Methyl-1-(propoxycarbonylmethyl) imidazolium bis((trifluoromethyl)sulfonyl)imide**

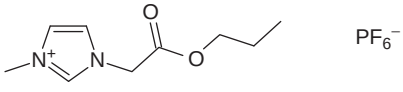
**Abbreviation**: [PrOCOCH$_2$MIm][NTf$_2$]
**Molecular Formula**: $C_{11}H_{15}F_6N_3O_6S_2$
**Molar Mass**: 463.38
**Structure**:



**Character**: Biogradable ionic liquid
**Application**: [147]

**2183-51: 3-Methyl-1-(propoxycarbonylmethyl) imidazolium hexafluorophosphate**

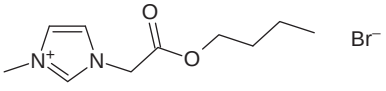
**Abbreviation**: [PrOCOCH$_2$MIm][PF$_6$]
**Molecular Formula**: $C_9H_{15}N_2O_2PF_6$
**Molar Mass**: 328.19
**Structure**:



**Character**:
**Application**: [147]

**2184-12: 3-Methyl-1-(butoxycarbonylmethyl)imidazolium bromide**

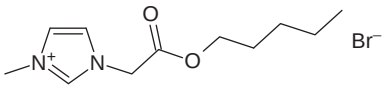
**Abbreviation**: [BuOCOCH$_2$MIm]Br
**Molecular Formula**: $C_{10}H_{17}N_2O_2Br$
**Molar Mass**: 277.16
**Structure**:



**Character**: Biogradable ionic liquid
**Application**: [147]

**2185-12: 3-Methyl-1-(pentoxycarbonylmethyl) imidazolium bromide**

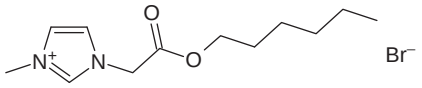
**Abbreviation**: [PenOCOCH$_2$MIm]Br
**Molecular Formula**: $C_{11}H_{19}N_2O_2Br$
**Molar Mass**: 291.18
**Structure**:



**Character**:
**Application**: [147]

**2186-12: 3-Methyl-1-(hexoxycarbonylmethyl)imidazolium bromide**

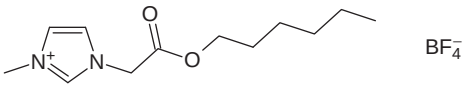
**Abbreviation**: [HexOCOCH$_2$MIm]Br
**Molecular Formula**: $C_{12}H_{21}N_2O_2Br$
**Molar Mass**: 305.21
**Structure**:



**Character**: Biogradable ionic liquid
**Application**: [147]

**2186-21: 3-Methyl-1-(hexoxycarbonylmethyl)imidazolium tetrafluoroborate**

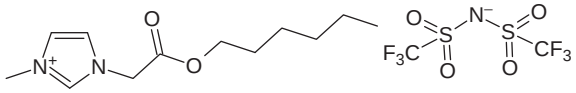
**Abbreviation**: [HexOCOCH$_2$MIm][BF$_4$]
**Molecular Formula**: $C_{12}H_{21}N_2O_2BF_4$
**Molar Mass**: 312.11
**Structure**:



**Character**:
**Application**: [147]

**2186-31: 3-Methyl-1-(hexoxycarbonylmethyl)imidazolium bis((trifluoromethyl)sulfonyl)imide**

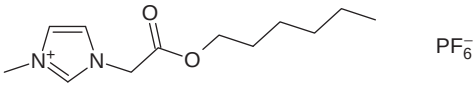
**Abbreviation**: [HexOCOCH$_2$MIm][NTf$_2$]
**Molecular Formula**: $C_{14}H_{21}F_6N_3O_6S_2$
**Molar Mass**: 505.46
**Structure**:



**Character**: Biogradable ionic liquid
**Application**: [147]

**2186-51: 3-Methyl-1-(hexoxycarbonylmethyl)imidazolium hexafluorophosphate**

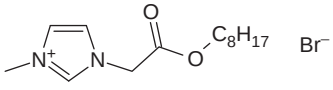
**Abbreviation**: [HexOCOCH$_2$MIm][PF$_6$]
**Molecular Formula**: $C_{12}H_{21}N_2O_2PF_6$
**Molar Mass**: 370.27
**Structure**:



**Character**:
**Application**: [147]

**2187-12: 3-Methyl-1-(octoxycarbonylmethyl)imidazolium bromide**

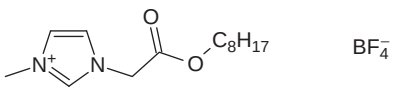
**Abbreviation**: [OctOCOCH$_2$MIm]Br
**Molecular Formula**: $C_{14}H_{25}N_2O_2Br$
**Molar Mass**: 333.26
**Structure**:



**Character**:
**Application**: Biogradable ionic liquid [147]

**2187-21: 3-Methyl-1-(octoxycarbonylmethyl)imidazolium tetrafluoroborate**

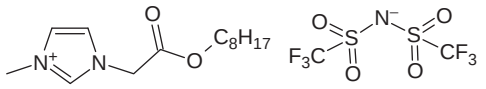
**Abbreviation**: [OctOCOCH$_2$MIm][BF$_4$]
**Molecular Formula**: $C_{14}H_{25}N_2O_2BF_4$
**Molar Mass**: 340.17
**Structure**:



**Character**:
**Application**: [147]

**2187-31: 3-Methyl-1-(octoxycarbonylmethyl)imidazolium bis((trifluoromethyl)sulfonyl)imide**

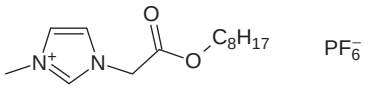
**Abbreviation**: [OctOCOCH$_2$MIm][NTf$_2$]
**Molecular Formula**: $C_{16}H_{25}F_6N_3O_6S_2$
**Molar Mass**: 533.51
**Structure**:



**Character**: Biogradable ionic liquid
**Application**: [147]

**2187-51: 3-Methyl-1-(octoxycarbonylmethyl)imidazolium hexafluorophosphate**

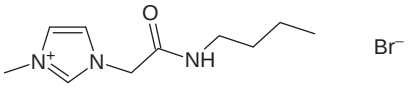
**Abbreviation**: [OctOCOCH$_2$MIm][PF$_6$]
**Molecular Formula**: $C_{14}H_{25}N_2O_2PF_6$
**Molar Mass**: 398.32
**Structure**:



**Character**:
**Application**: [147]

**2188-12: 3-Methyl-1-(*N*-butylcarbamoylmethyl) imidazolium bromide**

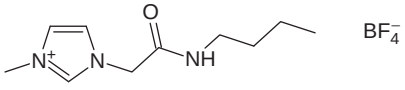
**Abbreviation**: [BuNHCOCH$_2$MIm]Br
**Molecular Formula**: $C_{10}H_{18}N_3OBr$
**Molar Mass**: 276.17
**Structure**:



**Character**: Biogradable ionic liquid
**Application**: [147]

**2188-21: 3-Methyl-1-(*N*-butylcarbamoylmethyl) imidazolium tetrafluoroborate**

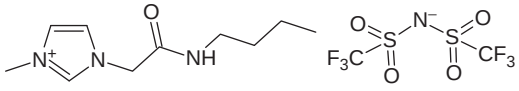
**Abbreviation**: [BuNHCOCH$_2$MIm][BF$_4$]
**Molecular Formula**: $C_{10}H_{18}N_3OBF_4$
**Molar Mass**: 283.07
**Structure**:



**Character**:
**Application**: [147]

**2188-31: 3-Methyl-1-(*N*-butylcarbamoylmethyl) imidazolium bis((trifluoromethyl)sulfonyl)imide**

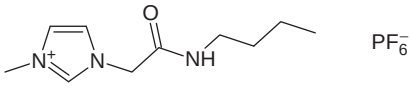
**Abbreviation**: [BuNHCOCH$_2$MIm][NTf$_2$]
**Molecular Formula**: $C_{12}H_{18}F_6N_4O_5S_2$
**Molar Mass**: 476.42
**Structure**:



**Character**: Biogradable ionic liquid
**Application**: [147]

**2188-51: 3-Methyl-1-(*N*-butylcarbamoylmethyl) imidazolium hexafluorophosphate**

**Abbreviation**: [BuNHCOCH$_2$MIm][PF$_6$]
**Molecular Formula**: $C_{10}H_{18}N_3OPF_6$
**Molar Mass**: 341.23
**Structure**:

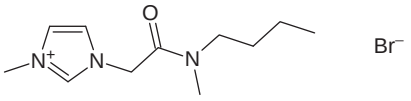


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 337.15-339.15 [147] |

**2189-12: 3-Methyl-1-(*N*-butyl-*N*-methylcarbamoylmethyl) imidazolium bromide**

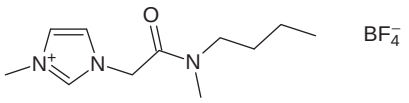
**Abbreviation**: [BuNMeCOCH$_2$MIm]Br
**Molecular Formula**: $C_{11}H_{20}N_3OBr$
**Molar Mass**: 290.29
**Structure**:



**Character**: Biogradable ionic liquid
**Application**: [147]

**2189-21: 3-Methyl-1-(*N*-butyl-*N*-methylcarbamoylmethyl) imidazolium tetrafluoroborate**

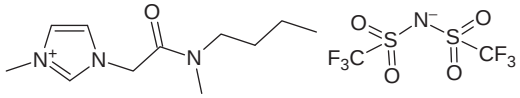
**Abbreviation**: [BuNMeCOCH$_2$MIm][BF$_4$]
**Molecular Formula**: $C_{11}H_{20}N_3OBF_4$
**Molar Mass**: 297.10
**Structure**:



**Character**:
**Application**: [147]

**2189-31: 3-Methyl-1-(*N*-butyl-*N*-methylcarbamoylmethyl) imidazolium bis((trifluoromethyl)sulfonyl)imide**

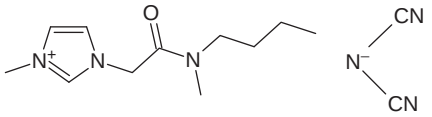
**Abbreviation**: [BuNMeCOCh$_2$MIm][NTf$_2$]
**Molecular Formula**: $C_{13}H_{20}F_6N_4O_5S_2$
**Molar Mass**: 490.44
**Structure**:



**Character**: Biogradable ionic liquid
**Application**: [147]

**2189-34: 3-Methyl-1-(*N*-butyl-*N*-methylcarbamoylmethyl) imidazolium dicyanoamide**

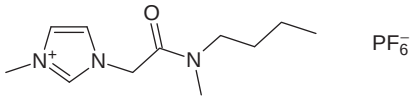
**Abbreviation**: [BuNMeCOCh$_2$MIm][dca]
**Molecular Formula**: $C_{13}H_{20}N_6O$
**Molar Mass**: 276.34
**Structure**:



**Character**:
**Application**: [147]

**2189-51: 3-Methyl-1-(*N*-butyl-*N*-methylcarbamoylmethyl) imidazolium hexafluorophosphate**

**Abbreviation**: [BuNMeCOCh$_2$MIm][PF$_6$]
**Molecular Formula**: $C_{11}H_{20}N_3OPF_6$
**Molar Mass**: 355.26
**Structure**:

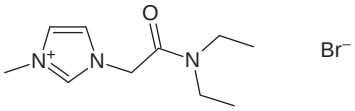


**Character**: Biogradable ionic liquid
**Application**:

| $T_m$ (K) |
|---|
| 335.15-337.15 [147] |

**2190-12: 3-Methyl-1-(*N*,*N*-diethylcarbamoylmethyl) imidazolium bromide**

**Abbreviation**: [Et$_2$NCOCH$_2$MIm]Br
**Molecular Formula**: $C_{10}H_{18}N_3OBr$
**Molar Mass**: 276.17
**Structure**:

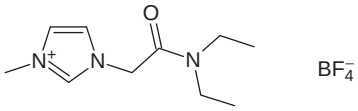


**Character**: Biogradable ionic liquid
**Application**:

| $T_m$ (K) |
|---|
| 339.15-341.15 [147] |

**2190-21: 3-Methyl-1-(*N*,*N*-diethylcarbamoylmethyl) imidazolium tetrafluoroborate**

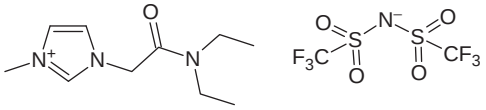
**Abbreviation**: [Et$_2$NCOCH$_2$MIm][BF$_4$]
**Molecular Formula**: $C_{10}H_{18}N_3OBF_4$
**Molar Mass**: 283.07
**Structure**:



**Character**:
**Application**: [147]

**2190-31: 3-Methyl-1-(*N*,*N*-diethylcarbamoylmethyl) imidazolium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: $[Et_2NCOCH_2MIm][NTf_2]$
**Molecular Formula**: $C_{12}H_{18}F_6N_4O_5S_2$
**Molar Mass**: 476.42
**Structure**:

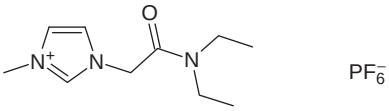


**Character**: Biogradable ionic liquid
**Application**:

| $T_m$ (K) |
|---|
| 316.15-318.15 [147] |

**2190-51: 3-Methyl-1-(*N*,*N*-diethylcarbamoylmethyl) imidazolium hexafluorophosphate**

**Abbreviation**: $[Et_2NCOCH_2MIm][PF_6]$
**Molecular Formula**: $C_{10}H_{18}N_3OPF_6$
**Molar Mass**: 341.23
**Structure**:

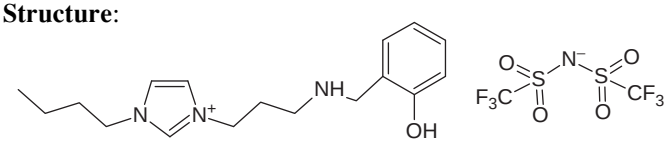


**Character**: Biogradable ionic liquid
**Application**:

| $T_m$ (K) |
|---|
| 337.15-339.15 [147] |

**2191-31: 1-Butyl-3-[3-(2-hydroxybenzylamino)propyl]-3H-imidazolium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: [PAMPBIm][TFSI]
**Molecular Formula**: $C_{19}H_{26}F_6N_4O_5S_2$
**Molar Mass**: 568.56
**Structure**:



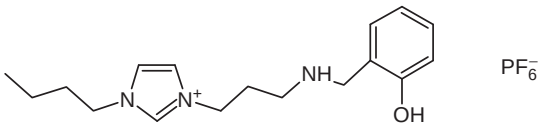
**Character**:
**Application**: Americium-extraction

| $T_g$ (K) |
|---|
| 229.15 [161] |

| $\eta_D$ (cp) |
|---|
| 2070 [161] |

**2191-51: 1-Butyl-3-[3-(2-hydroxybenzylamino)propyl]-3H-imidazolium hexafluorophosphate**

**Abbreviation**: $[PAMPBIm][PF_6]$
**Molecular Formula**: $C_{17}H_{26}N_3OPF_6$
**Molar Mass**: 433.37
**Structure**:



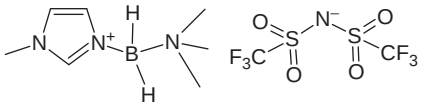
**Character**:
**Application**: Americium-extraction

| $T_g$ (K) |
|---|
| 234.15 [161] |

| $\eta_D$ (cp) |
|---|
| 257000 [161] |

**2192-31: (*N*-methyl-imidazole)(trimethylamine)$BH_2$ bis ((trifluoromethyl)sulfonyl)imide**

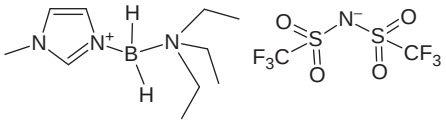
**Abbreviation**: $[Me_3NBH_2MIm][TFSI]$
**Molecular Formula**: $C_9H_{17}F_6N_4BO_4S_2$
**Molar Mass**: 434.19
**Structure**:



**Character**: Hydrophobic
**Application**: [162]

**2193-31: (*N*-methyl-imidazole)(triethylamine)$BH_2$ bis((trifluoromethyl)sulfonyl)imide**

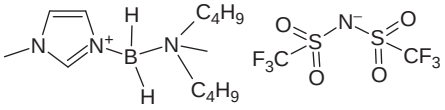
**Abbreviation**: $[Et_3NBH_2MIm][TFSI]$
**Molecular Formula**: $C_{12}H_{23}F_6N_4BO_4S_2$
**Molar Mass**: 476.27
**Structure**:



**Character**: Hydrophobic
**Application**: [162]

**2194-31: (*N*-methyl-imidazole)(methyldibutylamine)$BH_2$ bis((trifluoromethyl)sulfonyl)imide**

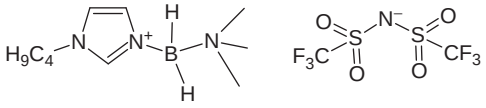
**Abbreviation**: $[(n\text{-}Bu)_2MeNBH_2MIm][TFSI]$
**Molecular Formula**: $C_{15}H_{29}F_6N_4BO_4S_2$
**Molar Mass**: 518.35
**Structure**:



**Character**: Hydrophobic
**Application**: [162]

**2195-31: (*N*-butyl-imidazole)(trimethylamine)$BH_2$ bis((trifluoromethyl)sulfonyl)imide**

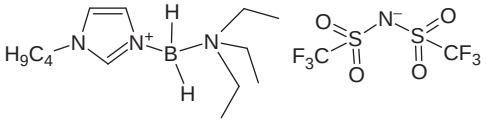
**Abbreviation**: $[ME_3NBH_2BIm][TFSI]$
**Molecular Formula**: $C_{12}H_{23}F_6N_4BO_4S_2$
**Molar Mass**: 476.27
**Structure**:



**Character**: Hydrophobic
**Application**: [160]

**2196-31: (*N*-butyl-imidazole)(triethylamine)$BH_2$ bis((trifluoromethyl)sulfonyl)imide**

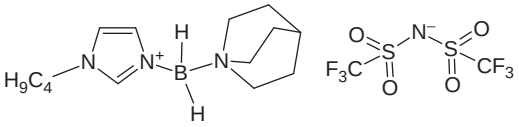
**Abbreviation**: $[Et_2NBH_2BIm][TFSI]$
**Molecular Formula**: $C_{15}H_{29}F_6N_4BO_4S_2$
**Molar Mass**: 518.35
**Structure**:



**Character**: Hydrophobic
**Application**: [162]

**2197-31: (*n*-Butyl-imidazole)(quinuclidine)$BH_2$ bis ((trifluoromethyl)sulfonyl)imide**

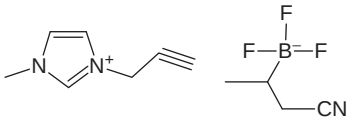
**Abbreviation**: $[QuBH_2BIm][TFSI]$
**Molecular Formula**: $C_{16}H_{25}F_6N_4BO_4S_2$
**Molar Mass**: 526.33
**Structure**:



**Character**: Hydrophobic
**Application**: [162]

### 2198-227: 1-Methyl-3-propargylimidazolium 3-(trifluoroborate)-butylnitrile

**Abbreviation**: [CC≡Cmim][$CH_3CH(BF_3)CH_2CN$]
**Molecular Formula**: $C_{11}H_{15}BF_3N_3$
**Molar Mass**: 257.06
**Structure**:



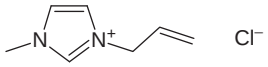
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 192.75 [100] |

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 175 [100] | 293.15 |

### 2199-11: 1-Methyl-3-allylimidazolium chloride

**Abbreviation**: [CC=Cmim]Cl
**Molecular Formula**: $C_7H_{11}N_2Cl$
**Molar Mass**: 158.63
**Structure**:

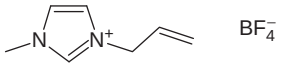


**Character**:
**Application**: Solvent for cellulose

| $\eta_D$ (cp) | $T$ (K) | $\eta_D$ (cp) [87] | $T$ (K) | $n$ |
|---|---|---|---|---|
| 685 [163] | 303.15 | 1150 | 303 | 1.5465 [163] |
| | | 310 | 318 | |
| | | 92 | 338 | |
| | | 36 | 357 | |
| | | 17 | 377 | |
| | | 15 | 394 | |

### 2199-21: 1-Methyl-3-allylimidazolium tetrafluoroborate

**Abbreviation**: [CC=Cmim][$BF_4$]
**Molecular Formula**: $C_7H_{11}N_2BF_4$
**Molar Mass**: 209.98
**Structure**:



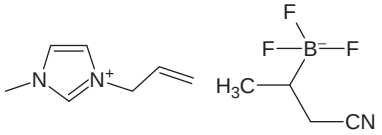
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 192.05 [100] |

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 6110 [100] | 293.15 |

### 2199-227: 1-Methyl-3-allylimidazolium 3-(trifluoroborate)-butylnitrile

**Abbreviation**: [CC=Cmim][$CH_3CH(BF_3)CH_2CN$]
**Molecular Formula**: $C_{11}H_{17}BF_3N_3$
**Molar Mass**: 259.08
**Structure**:



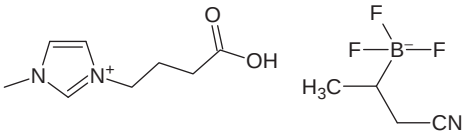
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 183.95 [100] |

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 25 [100] | 293.15 |

### 2200-227: 1-Methyl-3-propylcarboxylimidazolium 3-(trifluoroborate)-butylnitrile

**Abbreviation**: $[C_3COOHmim][CH_3CH(BF_3)CH_2CN]$
**Molecular Formula**: $C_{12}H_{19}BF_3N_3O_2$
**Molar Mass**: 305.10
**Structure**:



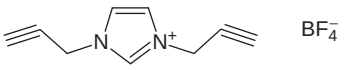
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 214.55 [100] |

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 3047 [100] | 293.15 |

### 2201-21: 1,3-Dipropargylimidazolium tetrafluoroborate

**Abbreviation**: $[DiCC{\equiv}Cim][BF_4]$
**Molecular Formula**: $C_9H_9BF_4N_2$
**Molar Mass**: 231.99
**Structure**:

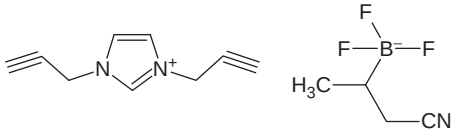


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 340.15 [164] |

### 2201-227: 1,3-Dipropargylimidazolium 3-(trifluoroborate)-butylnitrile

**Abbreviation**: $[DiCC{\equiv}Cim][CH_3CH(BF_3)CH_2CN]$
**Molecular Formula**: $C_{13}H_{15}BF_3N_3$
**Molar Mass**: 281.08
**Structure**:



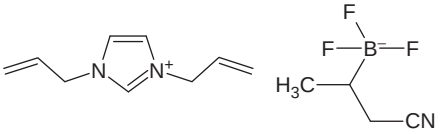
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 218.05 [100] |

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 1797 [100] | 293.15 |

### 2202-227: 1,3-Diallylimidazolium 3-(trifluoroborate)-butylnitrile

**Abbreviation**: $[DiCC{=}Cim][CH_3CH(BF_3)CH_2CN]$
**Molecular Formula**: $C_{13}H_{19}BF_3N_3$
**Molar Mass**: 285.12
**Structure**:



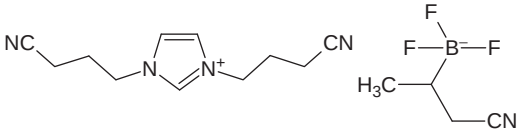
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 185.85 [100] |

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 56 [100] | 293.15 |

**2203-227: 1.3-Dibutylnitrileimidazolium 3-(trifluoroborate)-butylnitrile**

**Abbreviation**: $[(C_3CN)_2Im][CH_3CH(BF_3)CH_2CN]$
**Molecular Formula**: $C_{15}H_{21}BF_3N_5$
**Molar Mass**: 339.17
**Structure**:



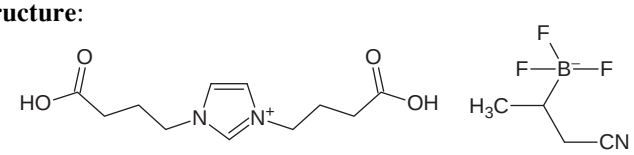
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 203.35 [100] |

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 402 [100] | 293.15 |

**2204-227: 1,3-Dipropylcarboxylimidazolium 3-(trifluoroborate)-butylnitrile**

**Abbreviation**: $[(C_3COOH)_2im][CH_3CH(BF_3)CH_2CN]$
**Molecular Formula**: $C_{15}H_{23}BF_3N_3O_4$
**Molar Mass**: 377.17
**Structure**:

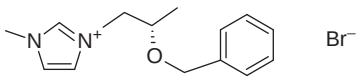


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 311.15 [100] |

**2205-12: 1-[2-benzoxylpropyl]-3-methylimidazolium bromide**

**Abbreviation**: [BzO-PMIm]Br
**Molecular Formula**: $C_{14}H_{19}BrN_2O$
**Molar Mass**: 311.22
**Structure**:



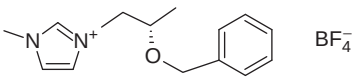
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 330.15-331.15 [165] |

| $\alpha$ | Concentration | $T$ (K) | Solvent |
|---|---|---|---|
| 29.5 [165] | 2 | 293.15 | Ethanol |

**2205-21: 1-[2-benzoxylpropyl]-3-methylimidazolium tetrafluoroborate**

**Abbreviation**: $[BzO-PMIm][BF_4]$
**Molecular Formula**: $C_{14}H_{19}BF_4N_2O$
**Molar Mass**: 318.12
**Structure**:



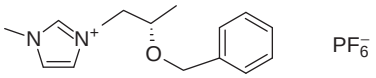
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 314.15-315.15 [165] |

| $\alpha$ | Concentration | $T$ (K) | Solvent |
|---|---|---|---|
| 19.9 [165] | 2 | 293.15 | Ethanol |

**2205-51: 1-[2-benzoxylpropyl]-3-methylimidazolium hexafluorophosphate**

**Abbreviation**: [BzO-PMIm][$PF_6$]
**Molecular Formula**: $C_{14}H_{19}F_6N_2OP$
**Molar Mass**: 376.28
**Structure**:

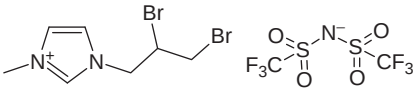


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 365.15-366.15 [165] |

**2208-31: 1-(2,3-Dibromopropyl)-3-methylimidazolium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: [$CH_2BrCHBrCH_2MIm$][$NTf_2$]
**Molecular Formula**: $C_9H_{11}Br_2F_6N_3O_4S_2$
**Molar Mass**: 563.13
**Structure**:



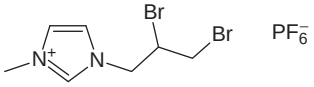
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 221.15 [166] | 541.15 [166] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.95 [166] | 298.15 | 95.3 [166] | 333.15 |

**2208-51: 1-(2,3-Dibromopropyl)-3-methylimidazolium hexafluorophosphate**

**Abbreviation**: [$CH_2BrCHBrCH_2MIm$][$PF_6$]
**Molecular Formula**: $C_7H_{11}Br_2F_6N_2P$
**Molar Mass**: 427.95
**Structure**:

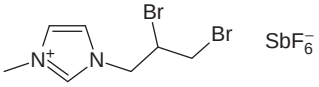


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 343.85 [166] | 536.15 [166] |

**2208-86: 1-(2,3-Dibromopropyl)-3-methylimidazolium hexafluoroantimonate**

**Abbreviation**: [$CH_2BrCHBrCH_2MIm$][$SbF_6$]
**Molecular Formula**: $C_7H_{11}Br_2F_6N_2Sb$
**Molar Mass**: 518.73
**Structure**:

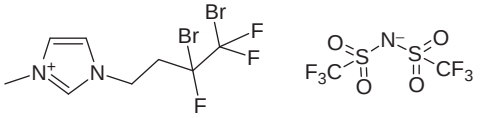


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 337.55 [166] | 562.15 [166] |

### 2209-31: 1-(3,4-Dibromo-3,4,4-trifluorobutyl)-3-methylimidazolium bis(trifluoromethanesulfonyl)amide

**Abbreviation**: $[CBrF_2CHBrF(CH_2)_2MIm][NTf_2]$
**Molecular Formula**: $C_{10}H_{10}Br_2F_9N_3O_4S_2$
**Molar Mass**: 631.13
**Structure**:



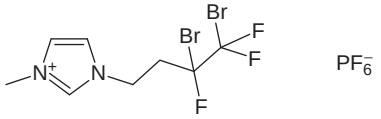
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 218.15 [166] | 557.15 [166] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 2.11 [166] | 298.15 | 89.5 [166] | 333.15 |

### 2209-51: 1-(3,4-Dibromo-3,4,4-trifluorobutyl)-3-methylimidazolium hexafluorophosphate

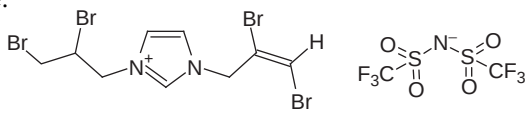
**Abbreviation**: $[CBrF_2CHBrF(CH_2)_2MIm][PF_6]$
**Molecular Formula**: $C_8H_{10}Br_2F_9N_2P$
**Molar Mass**: 495.95
**Structure**:



**Character**:
**Application**: [166]

### 2210-31: 1-(*trans*-2,3-Dibromoallyl)-3-(2′,3′-dibromopropyl)imidazolium bis(trifluoromethanesulfonyl)amide

**Abbreviation**: $[(CBrH{=}CBrCH_2)Im(CH_2BrCHBrCH_2)][NTf_2]$
**Molecular Formula**: $C_{11}H_{11}Br_4F_6N_3O_4S_2$
**Molar Mass**: 746.96
**Structure**:



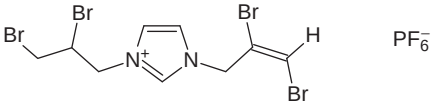
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 238.15 [166] | 531.15 [166] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 2.30 [166] | 298.15 | 311.0 [166] | 333.15 |

### 2210-51: 1-(*trans*-2,3-Dibromoallyl)-3-(2′,3′-dibromopropyl)imidazolium hexafluorophosphate

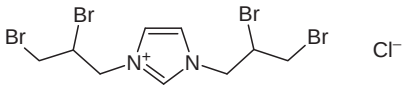
**Abbreviation**: $[(CBrH{=}CBrCH_2)Im(CH_2BrCHBrCH_2)][PF_6]$
**Molecular Formula**: $C_9H_{11}Br_4F_6N_2P$
**Molar Mass**: 611.78
**Structure**:



**Character**:
**Application**: [166]

### 2211-11: 1,3-Di(2,3-dibromopropyl)imidazolium chloride

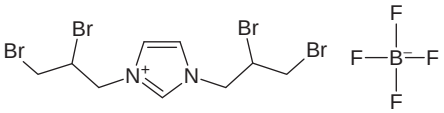
**Abbreviation**: $[(CH_2BrCHBrCH_2)_2Im]Cl$
**Molecular Formula**: $C_9H_{13}Br_4N_2Cl$
**Molar Mass**: 504.28
**Structure**:



**Character**:
**Application**: [166]

### 2211-21: 1,3-Di(2,3-dibromopropyl)imidazolium tetrafluoroborate

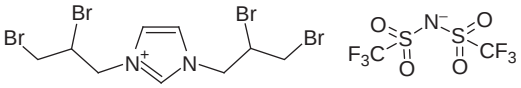
**Abbreviation**: $[(CH_2BrCHBrCH_2)_2Im][BF_4]$
**Molecular Formula**: $C_9H_{13}Br_4N_2BF_4$
**Molar Mass**: 555.63
**Structure**:



**Character**:
**Application**: [166]

### 2211-31: 1,3-Di(2,3-dibromopropyl)imidazolium bis (trifluoromethanesulfonyl)amide

**Abbreviation**: $[(CH_2BrCHBrCH_2)_2Im][NTf_2]$
**Molecular Formula**: $C_{11}H_{13}Br_4F_6N_3O_4S_2$
**Molar Mass**: 748.97
**Structure**:



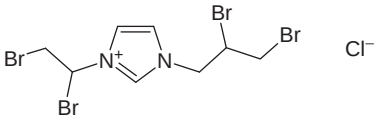
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 239.15 [166] | 523.15 [166] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 2.22 [166] | 298.15 | 1071 [166] | 333.15 |

### 2212-11: 1-(1,2-Dibromoethyl)-3-(2′,3′-dibromopropyl) imidazolium chloride

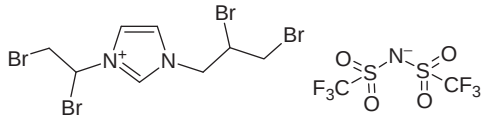
**Abbreviation**: $[(CH_2BrCHBrCH_2)Im(CH_2BrCHBr)]Cl$
**Molecular Formula**: $C_8H_{11}Br_4N_2Cl$
**Molar Mass**: 490.25
**Structure**:



**Character**:
**Application**: [166]

**2212-31: 1-(1,2-Dibromoethyl)-3-(2′,3′-dibromopropyl) imidazolium bis(trifluoromethanesulfonyl)amide**

**Abbreviation**: $[(CH_2BrCHBrCH_2)Im(CH_2BrCHBr)][NTf_2]$
**Molecular Formula**: $C_{10}H_{11}Br_4F_6N_3O_4S_2$
**Molar Mass**: 734.95
**Structure**:



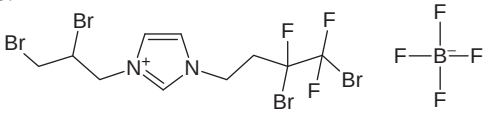
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 249.15 [166] | 519.15 [166] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 2.25 [166] | 298.15 | 1245 [166] | 333.15 |

**2213-21: 1-(2,3-Dibromopropyl)-3-(3′,4′-dibromo-3′,4′,4′-trifluorobutyl)-3-imidazolium tetrafluoroborate**

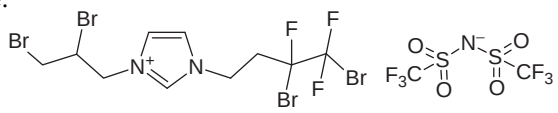
**Abbreviation**: $[(CF_2BrCBrFCH_2CH_2)Im(CH_2BrCHBrCH_2)][BF_4]$
**Molecular Formula**: $C_{10}H_{12}Br_4F_7N_2B$
**Molar Mass**: 623.63
**Structure**:



**Character**:
**Application**: [166]

**2213-31:1-(2,3-Dibromopropyl)-3-(3′,4′-dibromo-3′,4′,4′-trifluorobutyl)-3-imidazolium bis(trifluoromethanesulfonyl)amide**

**Abbreviation**: $[(CF_2BrCBrFCH_2CH_2)Im(CH_2BrCHBrCH_2)][NTf_2]$
**Molecular Formula**: $C_{12}H_{12}Br_4F_9N_3O_4S_2$
**Molar Mass**: 816.97
**Structure**:



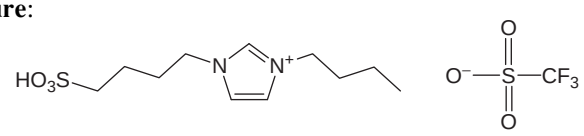
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 241.15 [166] | 546.15 [166] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 2.35 [166] | 298.15 | 1106 [166] | 333.15 |

**2214-43: 1-(4-Sulfonylbutyl)-3-butylimidazolium trifluoromethanesulfonate**

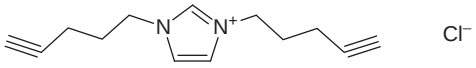
**Abbreviation**: $[(SO_3H(CH_2)_4)BIm][TfO]$
**Molecular Formula**: $C_{12}H_{21}F_3N_2O_6S_2$
**Molar Mass**: 410.43
**Structure**:



**Character**:
**Application**: [167]

### 2215-11: 1,3-Divaleryleneimidazolium cloride

**Abbreviation**: [(CH≡C(CH$_2$)$_3$)$_2$Im]Cl
**Molecular Formula**: C$_{13}$H$_{17}$N$_2$Cl
**Molar Mass**: 236.74
**Structure**:

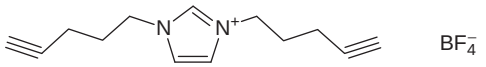


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 338.15 [164] |

### 2215-21: 1,3-Divaleryleneimidazolium tetrafluoroborate

**Abbreviation**: [(CH≡C(CH$_2$)$_3$)$_2$Im] [BF$_4$]
**Molecular Formula**: C$_{13}$H$_{17}$BF$_4$N$_2$
**Molar Mass**: 288.09
**Structure**:

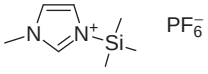


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 250.15 [164] |

### 2221-51: 1-Butyl-3-trimethylsilylimidazolium hexafluorophosphate

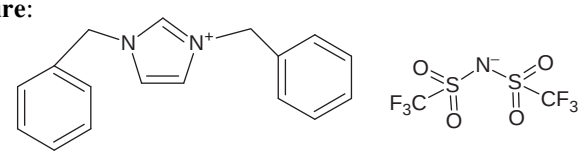
**Abbreviation**: [C$_4$tmsim][PF$_6$]
**Molecular Formula**: C$_7$H$_{15}$N$_2$PSiF$_6$
**Molar Mass**: 300.26
**Structure**:



**Character**:
**Application**:

### 2223-31: 1,3-Dibenzylimidazolium bis((trifluoromethyl) sulfonyl)imide

**Abbreviation**: [BzImBz][NTf$_2$]
**Molecular Formula**: C$_{19}$H$_{17}$F$_6$N$_3$OS$_2$
**Molar Mass**: 529.48
**Structure**:



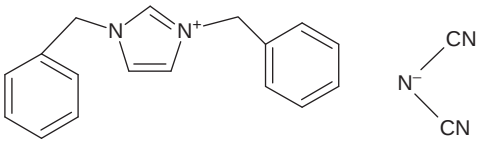
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 222.91 [137] | >573.15 [137] |

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| non-newtonian [137] | 293.15 |

### 2223-34: 1,3-Dibenzylimidazolium dicyanoamide

**Abbreviation**: [BzImBz][dca]
**Molecular Formula**: $C_{19}H_{17}N_5$
**Molar Mass**: 315.37
**Structure**:



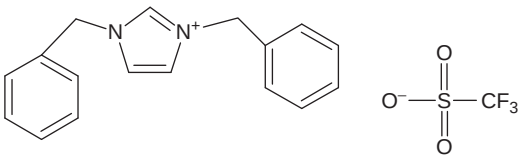
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 227.72 [137] | 525.15 [137] |

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 202 [137] | 293.15 |

### 2223-43: 1,3-Dibenzylimidazolium trifluoromethanesulfonate

**Abbreviation**: [BzImBz][TfO]
**Molecular Formula**: $C_{18}H_{17}F_3N_2O_3S$
**Molar Mass**: 398.40
**Structure**:

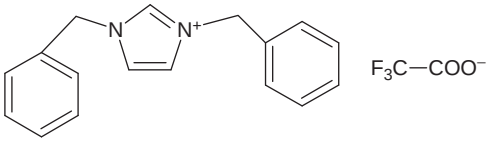


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 346.5 [137] | >573.15 [137] |

### 2223-61: 1,3-Dibenzylimidazolium trifluoroacetate

**Abbreviation**: [BzImBz][$CF_3CO_2$]
**Molecular Formula**: $C_{19}H_{17}F_3N_2O_2$
**Molar Mass**: 362.34
**Structure**:

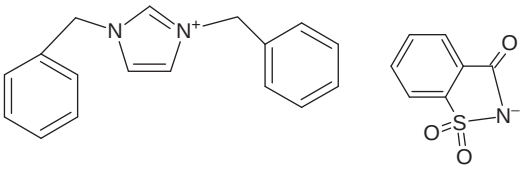


**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 235.99 [137] | 453.15 [137] |

### 2223-312: 1,3-Dibenzylimidazolium Saccharinate

**Abbreviation**: [BzImBz][Sac]
**Molecular Formula**: $C_{24}H_{21}N_3O_3S$
**Molar Mass**: 431.51
**Structure**:

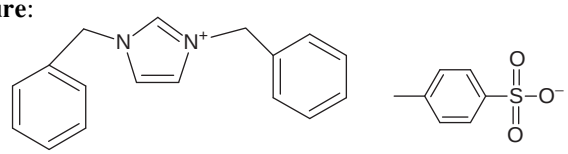


**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 263.5 [137] | 516.15 [137] |

### 2223-47: 1,3-Dibenzylimidazolium Tosylate

**Abbreviation**: [BzImBz][Tos]
**Molecular Formula**: $C_{24}H_{24}N_2O_3S$
**Molar Mass**: 420.52
**Structure**:

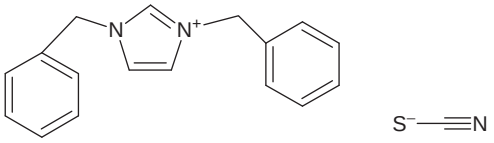


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 386.69 [137] | >573.15 [137] |

**2223-1503: 1,3-Dibenzylimidazolium thiocyanate**

**Abbreviation**: [BzImBz][SCN]
**Molecular Formula**: $C_{18}H_{17}N_3S$
**Molar Mass**: 307.41
**Structure**:



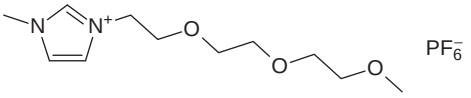
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 232.28 [137] | 436.15 [137] |

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 625 [137] | 293.15 |

**2224-51: 1-Triethylene glycol monomethyl ether-3-methylimidazolium hexafluorophosphate**

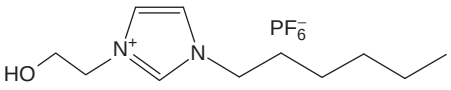
**Abbreviation**: $[C_7O_3MIm][PF_6]$
**Molecular Formula**: $C_{11}H_{21}F_6N_2O_3P$
**Molar Mass**: 374.26
**Structure**:



**Character**:
**Application**: [169]

**2226-51: 1-Hydroxyethyl-3-hexylimidazolium hexafluorophosphate**

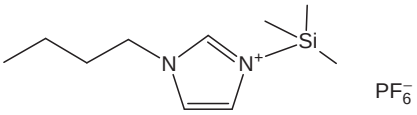
**Abbreviation**: [HEHIm][$PF_6$]
**Molecular Formula**: $C_{11}H_{21}N_2OPF_6$
**Molar Mass**: 342.26
**Structure**:



**Character**:
**Application**: [170]

**2227-51: 1-Butyl-3-trimethylsilylimidazolium hexafluorophosphate**

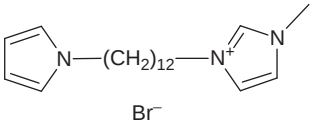
**Abbreviation**: [Btmsim][$PF_6$]
**Molecular Formula**: $C_{10}H_{21}F_6N_2PSi$
**Molar Mass**: 342.34
**Structure**:



**Character**:
**Application**: [171]

**2228-12: 1-[12-(*N*-Pyrrolyl)dodecyl]-3-methylimidazolium bromide**

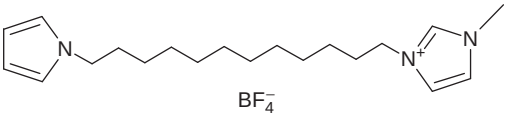
**Abbreviation**: [(N-Py$C_{12}$)MIm]Br
**Molecular Formula**: $C_{20}H_{34}N_3Br$
**Molar Mass**: 396.41
**Structure**:



**Character**:
**Application**: [172]

**2228-21: 1-[12-(*N*-Pyrrolyl)dodecyl]-3-methylimidazolium tetrafluoroborate**

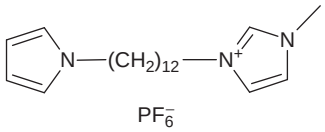
**Abbreviation**: [(N-Py$C_{12}$)MIm][$BF_4$]
**Molecular Formula**: $C_{20}H_{34}N_3BF_4$
**Molar Mass**: 403.31
**Structure**:



**Character**:
**Application**: [172]

**2228-51: 1-[12-(N-Pyrrolyl)dodecyl]-3-methylimidazolium hexafluophosphate**

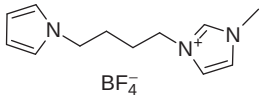
**Abbreviation**: [(N-PyC$_{12}$)MIm][PF$_6$]
**Molecular Formula**: $C_{20}H_{34}N_3PF_6$
**Molar Mass**: 461.47
**Structure**:



**Character**:
**Application**: [172]

**2229-21: 1-[4-(N-Pyrrolyl)butyl]-3-methylimidazolium tetrafluoroborate**

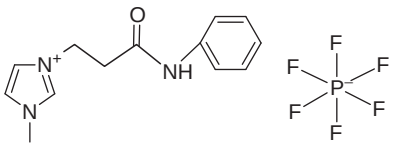
**Abbreviation**: [(N-PyC$_4$)MIm][BF$_4$]
**Molecular Formula**: $C_{12}H_{18}N_3BF_4$
**Molar Mass**: 291.10
**Structure**:



**Character**:
**Application**: [172]

**2230-51: 3-[2-(Anilinocarbonyl)ethyl]-1-methyl-1H-imidazolium hexafluoridophosphate**

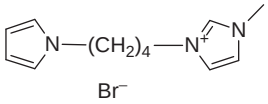
**Abbreviation**: [(PhNHCOC$_2$)MIm][PF$_6$]
**Molecular Formula**: $C_{13}H_{16}F_6N_3OP$
**Molar Mass**: 375.25
**Structure**:



**Character**:
**Application**: [173]

**2229-12: 1-[4-(*N*-Pyrrolyl)butyl]-3-methylimidazolium bromide**

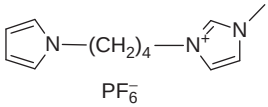
**Abbreviation**: [(N-PyC$_4$)MIm]Br
**Molecular Formula**: $C_{12}H_{18}N_3Br$
**Molar Mass**: 284.19
**Structure**:



**Character**:
**Application**: [172]

**2229-51: 1-[4-(N-Pyrrolyl)butyl]-3-methylimidazolium hexafluorophosphate**

**Abbreviation**: [(N-PyC$_4$)MIm][PF$_6$]
**Molecular Formula**: $C_{12}H_{18}N_3PF_6$
**Molar Mass**: 349.26
**Structure**:



**Character**:
**Application**: [172]

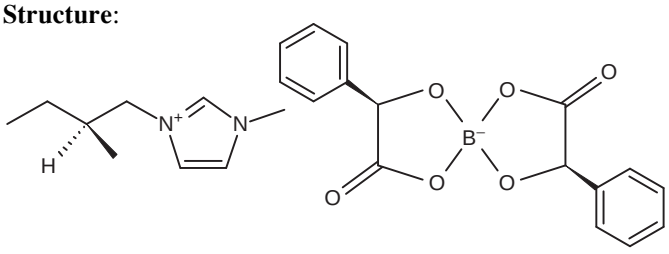
**2231-43: 1-Diethylsulfonyl-3-methylimidazolium trifluromethanesulfonate**

**Abbreviation**: [desmim][TfO]
**Molecular Formula**:
**Molar Mass**: 352.1
**Structure**:
**Character**:
**Application**:

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.5420 [48] | 303.15 |

**2232-237: l-Methyl-3-[(2*S*)-2-methylbutyl]imidazolium (T-4)-bis[(*αR*)-*α*-(hydroxy-κO)benzeneacetato-κO]borate**

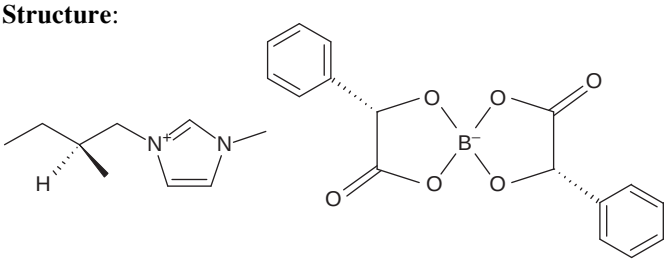
**Abbreviation**: [S-2-Me-BMIm][BRMB]
**Molecular Formula**: $C_{25}H_{29}BN_2O_6$
**Molar Mass**: 464.32
**Structure**:



**Character**:
**Application**: [39]

**2232-238: l-Methyl-3-[(2*S*)-2-methylbutyl]imidazolium (T-4)-bis[(*αS*)-*α*-(hydroxy-κO)benzeneacetato-κO]borate**

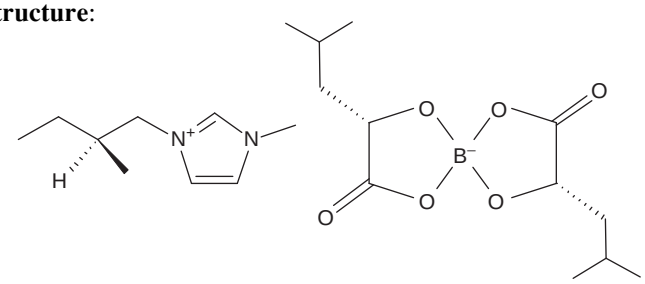
**Abbreviation**: [S-2-Me-BMIm][BSMB]
**Molecular Formula**: $C_{25}H_{29}BN_2O_6$
**Molar Mass**: 464.32
**Structure**:



**Character**:
**Application**: [39]

**2232-239: l-Methyl-3-[(2*S*)-2-methylbutyl]imidazolium (T-4)-bis[(2*S*)-2-(hydroxy-κO)-4-methyl-pentanoato-κO] borate**

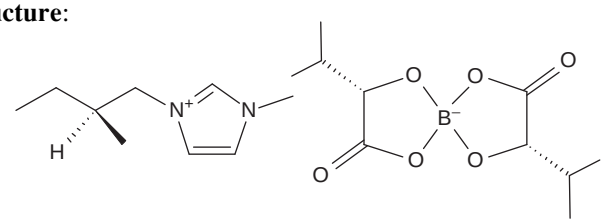
**Abbreviation**: [S-2-Me-BMIm][BLHcB]
**Molecular Formula**: $C_{21}H_{37}BN_2O_6$
**Molar Mass**: 424.34
**Structure**:



**Character**:
**Application**: [39]

**2232-240: l-Methyl-3-[(2*S*)-2-methylbutyl]imidazolium (T-4)-bis[(2*S*)-2-(hydroxy-κO)-3-methyl-butanoato-κO] borate**

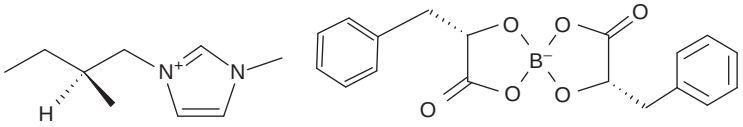
**Abbreviation**: [S-2-Me-BMIm][BLHvB]
**Molecular Formula**: $C_{19}H_{33}BN_2O_6$
**Molar Mass**: 396.29
**Structure**:



**Character**:
**Application**: [39]

**2232-241: l-Methyl-3-[(2*S*)-2-methylbutyl]imidazolium (T-4)-bis[(α*S*)-α-(hydroxy-κO)benzenepropanoato-κO] borate**

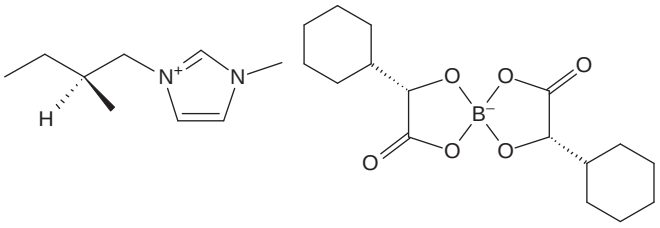
**Abbreviation**: [S-2-Me-BMIm][BLPLB]
**Molecular Formula**: $C_{27}H_{33}BN_2O_6$
**Molar Mass**: 492.37
**Structure**:



**Character**:
**Application**: [39]

**2232-242: l-Methyl-3-[(2*S*)-2-methylbutyl]imidazolium (T-4)-bis[(α*S*)-α-(hydroxy-κO)cyclohexaneacetato-κO] borate**

**Abbreviation**: [S-2-Me-BMIm][BRHMB]
**Molecular Formula**: $C_{25}H_{41}BN_2O_6$
**Molar Mass**: 476.41
**Structure**:

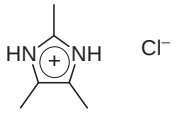


**Character**:
**Application**: [39]

## 2.3. Tri-alkyl imidazolium

### 31-11: 2,4,5-Trimethylimidazolium chloride

**Abbreviation**: [M2,4,5IM]Cl
**Molecular Formula**: $C_6H_{11}ClN_2$
**Molar Mass**: 146.62
**Structure**:

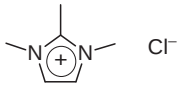



**Character**:
**Application**: [17]

| $T_m$ (K) | $T_f$ (K) | $T_d$ (K) |
|---|---|---|
| 467.15 | 441.15 | 526.15 |

### 32-11: 1,2,3-Trimethylimidazolium chloride

**Abbreviation**: [M1,2,3IM]Cl
**Molecular Formula**: $C_6H_{11}ClN_2$
**Molar Mass**: 146.62
**Structure**:

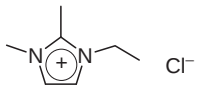



**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 462.15 [8] |

### 33-11: 1,2-Dimethyl-3-ethylimidazolium chloride

**Abbreviation**: [M1,2E3IM]Cl
**Molecular Formula**: $C_7H_{13}ClN_2$
**Molar Mass**: 160.65
**Structure**:

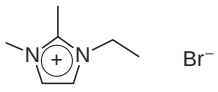



**Character**:
**Application**:

| $T_m$ (K) | $T_f$ (K) | $T_d$ (K) |
|---|---|---|
| 461.15 [17] | 376.15 [17] | 563.15, 560.15 [17] |

### 33-12: 1,2-Dimethyl-3-ethylimidazolium bromide

**Abbreviation**: [M1,2E3IM]Br
**Molecular Formula**: $C_7H_{13}BrN_2$
**Molar Mass**: 205.1
**Structure**:

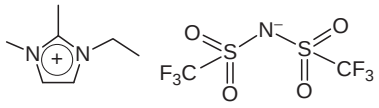



**Character**:
**Application**:

| $T_m$ (K) | $T_f$ (K) | $T_d$ (K) |
|---|---|---|
| 414.15 [17] | 365.15 [17] | 595.15 [17] |

### 33-31: 1,2-Dimethyl-3-ethylimidazolium bis ((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [M1,2E3IM][TFSI]
**Molecular Formula**: $C_9H_{13}F_6N_3O_4S_2$
**Molar Mass**: 405.34
**Structure**:



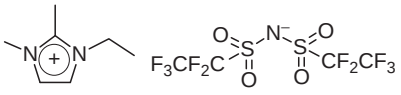

**Character**:
**Application**:

| $T_m$ (K) | $T_f$ (K) | $T_d$ (K) |
|---|---|---|
| 300.15 [17]<br>293 [11] | 255.15 [17] | 729.15 [17] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.495 [11] | 295.15 | 88 [11] | 293.15 | 0.32 [11] | 293.15 |

### 33-33: 1,2-Dimethyl-3-ethylimidazolium bis((perfluoroethane)sulfonyl)imide

**Abbreviation**: [M1,2E3IM][BETI]
**Molecular Formula**: $C_{11}H_{13}F_{10}N_3O_4S_2$
**Molar Mass**: 505.36
**Structure**:

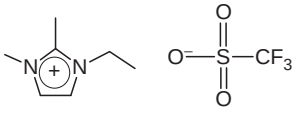



**Character**:
**Application**:

| $T_m$ (K) | $T_f$ (K) | $T_d$ (K) |
|---|---|---|
| 298.15 [17] | 248.15 [17] | 693.15 [17] |

### 33-43: 1,2-Dimethyl-3-ethylimidazolium trifluoromethanesulfonate

**Abbreviation**: [M1,2E3IM][TfO]
**Molecular Formula**: $C_8H_{13}F_3N_2O_3S$
**Molar Mass**: 274.26
**Structure**:

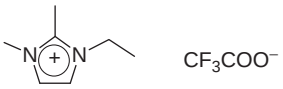


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 382.15 [11] |

### 33-61: 1,2-Dimethyl-3-ethylimidazolium trifluoroacetate

**Abbreviation**: [M1,2E3IM][TA]
**Molecular Formula**: $C_9H_{13}F_3N_2O_2$
**Molar Mass**: 238.21
**Structure**:

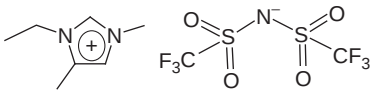


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 332.15 [11] |

### 34-31: 1-Ethyl-3,5-dimethylimidazolium bis ((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [E1M3,5IM][TFSI]
**Molecular Formula**: $C_9H_{13}F_6N_3O_4S_2$
**Molar Mass**: 405.34
**Structure**:



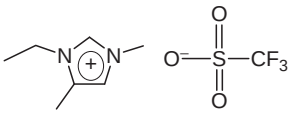
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 270 [11] |
| 234.15 [12] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) | $n$ | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1.47 [11] | 295.15 | 37 [11] | 293.15 | 0.66 [11] | 293.15 | 1.4275 [12] | 298.15 |
| 1.47 [12] | 298.15 | 37 [12] | 298.15 | | | | |

### 34-43: 1-Ethyl-3,5-dimethylimidazolium trifluoromethanesulfonate

**Abbreviation**: [E1M3,5IM][TfO]
**Molecular Formula**: $C_8H_{13}F_3N_2O_3S$
**Molar Mass**: 274.26
**Structure**:



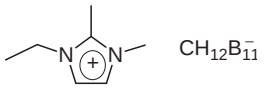
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 279 [11] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | K(S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.334 [11] | 295.15 | 51 [11] | 293.15 | 0.64 [11] | 293.15 |

### 35-22: 1-Ethyl-2,3-dimethylimidazolium 1-carbon icosahedral

**Abbreviation**: [EDMIM][CB11]
**Molecular Formula**: $C_8H_{25}B_{11}N_2$
**Molar Mass**: 268.22
**Structure**:



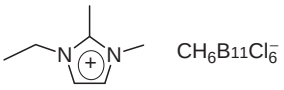

**Character**:
**Application**:

| $T_m$ (K) | $T_f$ (K) |
|---|---|
| 429.15 [174] | 428.15 [174] |

| $\rho$ (g/cm$^3$) |
|---|
| 1.072 [174] |

### 35-23: 1-Ethyl-2,3-dimethylimidazolium hexachloride-1-carbon icosahedral

**Abbreviation**: [EDMIM][CB11Cl]
**Molecular Formula**: $C_8H_{19}B_{11}Cl_6N_2$
**Molar Mass**: 474.89
**Structure**:



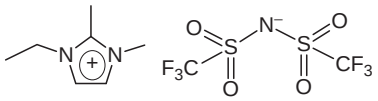

**Character**:
**Application**:

| $T_m$ (K) | $T_f$ (K) |
|---|---|
| 410.15 [174] | 399.15 [174] |

| $\rho$ (g/cm$^3$) |
|---|
| 1.439 [174] |

### 35-31: 2,3-Dimethyl-1-ethylimidazolium bis (trifluoromethylsulfonyl)imide

**Abbreviation**: [EDMIM][NTf$_2$]
**Molecular Formula**: $C_9H_{13}F_6N_3O_4S_2$
**Molar Mass**: 405.34
**Structure**:



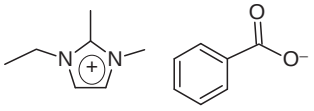

**Character**:
**Application**:

| $T_m$ (K) | $T_f$ (K) |
|---|---|
| 298.15 [40] | 248.15 [40] |
| 293.15 [12] | |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $n$ | $T$ (K) | $C_p$ (J·mol$^{-1}$·K$^{-1}$) | $T$ (K) |
|---|---|---|---|---|---|---|---|---|---|
| 1.4913 ± 0.000 [40] | 296.15 ± 0.1 | 1.4572 ± 0.001 [40] | 333.65 ± 0.4 | 88 [12] | 298.15 | 1.4305 [12] | 298.15 | 498.8 ± 2.6% [40] | 323.15 |
| 1.4855 ± 0.000 [40] | 303.75 ± 0.1 | 1.513 [11] | 295 | | | | | 492.7 ± 2.6% [40] | 298.15 |
| 1.4769 ± 0.000 [40] | 313.55 ± 0.1 | 1.495 [12] | 298.15 | | | | | | |
| 1.4680 ± 0.000 [40] | 323.35 ± 0.1 | | | | | | | | |

### 35-64:1-Ethyl-2,3-dimethylimidazolium benzoate

**Abbreviation**: [Em2Im][ba]
**Molecular Formula**: $C_{14}H_{18}N_2O_2$
**Molar Mass**: 246.31
**Structure**:

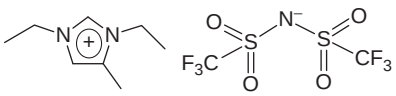


**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 288.91 [121] | 207.77 [121] | 542.15 [121] |

### 36-31: 1,3-diethyl-5-methylimidazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [E1,3M5IM][TFSI]
**Molecular Formula**: $C_{10}H_{15}F_6N_3O_4S_2$
**Molar Mass**: 419.37
**Structure**:



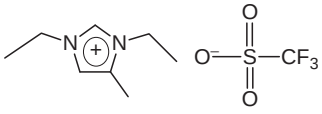
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 251 [11] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.432 [11] | 295.15 | 36 [11] | 293.15 |

### 36-43: 1,3-diethyl-5-methylimidazolium trifluoromethanesulfonate

**Abbreviation**: [E1,3M5IM][TfO]
**Molecular Formula**: $C_9H_{15}F_3N_2O_3S$
**Molar Mass**: 288.29
**Structure**:

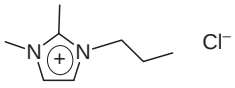


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 308.15 [11] |

### 37-11: 1,2-diethyl-3-propylimidazolium chloride

**Abbreviation**: [DMPIM]Cl
**Molecular Formula**: $C_8H_{15}ClN_2$
**Molar Mass**: 174.67
**Structure**:

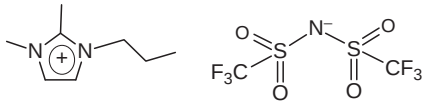


**Character**:
**Application**:

| $T_m$ (K) | $T_f$ (K) | $T_d$ (K) |
|---|---|---|
| 411.15 [17] | 316 [17] | 557.15 [17] |
| | | 559.15 [17] |

### 37-31: 1,2-Dimethyl-3-propylimidazolium bis ((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [DMPIM][TFSI]
**Molecular Formula**: $C_{10}H_{15}F_6N_3O_4S_2$
**Molar Mass**: 419.37
**Structure**:



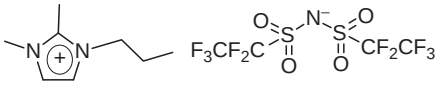
**Character**:
**Application**:

| $T_m$ (K) | $T_f$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|---|
| 284.44 ± 0.01 [19] | 143.15 [26] | 191.15 [17] | 730.19 ± 0.06 [19] |
| 288.15 [17, 12] | | 192 [26] | 735.15 [17] |
| 192.15 [26] | | | |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.46 [12] | 298.15 | 90.05 ± 0.51 [19] | 298.15 | 0.252 [134] | 298.15 |
| 1.4205 ± 0.0001 [19] | 333.15 | 41 [12] | 298.15 | 0.3 [26] | 299.15 ± 1 |
| | | 60 [26] | 299.15 ± 1 | | |

### 37-33: 1,2-dimethyl-3-propylimidazolium bis((perfluoroethane)sulfonyl)imide

**Abbreviation**: [DMPIM][BETI]
**Molecular Formula**: $C_{12}H_{15}F_{10}N_3O_4S_2$
**Molar Mass**: 519.38
**Structure**:

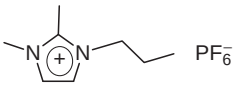


**Character**:
**Application**:

| $T_m$ (K) | $T_f$ (K) |
|---|---|
| 307.15 [17] | 247.15 [17] |

### 37-51: 1,2-dimethyl-3-propylimidazolium hexafluorophosphate

**Abbreviation**: [DMPIM][$PF_6$]
**Molecular Formula**: $C_8H_{15}F_6N_2P$
**Molar Mass**: 284.18
**Structure**:



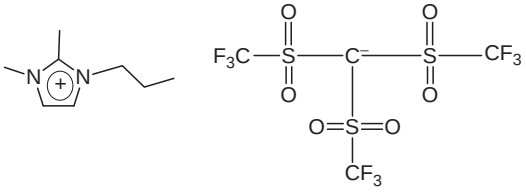
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 351.15 [17, 26] | 672.15 [17] |

| $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 34 [26] | 373.15 | 0.05 [26] | 308.15 |

### 37-71: 1,2-dimethyl-3-propylimidazolium tris(trifluoromethylsulfonyl)methide

**Abbreviation**: [DMPIM][Me]
**Molecular Formula**: $C_{12}H_{15}F_9N_2O_6S_3$
**Molar Mass**: 550.44
**Structure**:

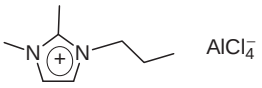


**Character**:
**Application**:

| $K$ (S/m) | $T$ (K) |
|---|---|
| 0.046 [134] | 298.15 |

### 37-81: 1,2-dimethyl-3-propylimidazolium tetrachloroaluminate

**Abbreviation**: [DMPIM][$AlCl_4$]
**Molecular Formula**: $C_8H_{15}Cl_4N_2Al$
**Molar Mass**: 308.01
**Structure**:

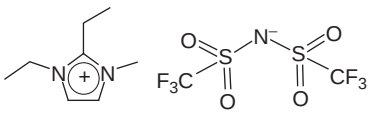


**Character**:
**Application**:

| $K$ (S/m) | $T$ (K) |
|---|---|
| 0.71 [134] | 298.15 |

### 38-31: 1,2-diethyl-3-methylimidazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [E1,2M3IM][TFSI]
**Molecular Formula**: $C_{10}H_{15}F_6N_3O_4S_2$
**Molar Mass**: 419.37
**Structure**:

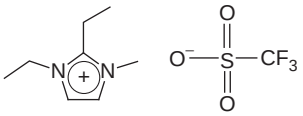


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 301.15 [11] |

### 38-43: 1,2-diethyl-3-methylimidazolium trifluoromethanesulfonate

**Abbreviation**: [E1,2M3IM][TfO]
**Molecular Formula**: $C_9H_{15}F_3N_2O_3S$
**Molar Mass**: 288.29
**Structure**:

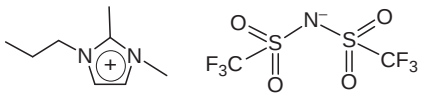


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 386.15 [11] |

### 39-31: 1-Propyl-2,3-dimethylimidazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [P1M2,3IM][TFSI]
**Molecular Formula**: $C_{10}H_{15}F_6N_3O_4S_2$
**Molar Mass**: 419.37
**Structure**:



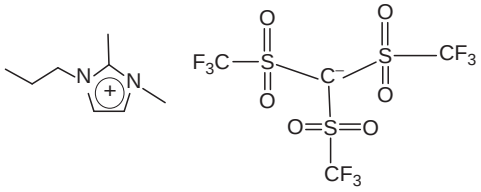
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 191.15 [40] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) | $C_p$(J·mol$^{-1}$·K$^{-1}$) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1.4567 ± 0.003 [40] | 295.15 ± 1.4 | 1.4386 ± 0.004 [40] | 324.35 ± 0.9 | 0.252 [134] | 298.15 | 554.5±4.3% [40] | 298.15 |
| 1.4542 ± 0.002 [40] | 304.25 ± 0.2 | 1.4275 ± 0.004 [40] | 335.15 ± 0.1 | | | 558.7±4.3% [40] | 323.15 |
| 1.4464 ± 0.004 [40] | 313.65 ± 0.1 | 1.4155 ± 0.003 [40] | 344.65 ± 0.8 | | | | |

### 39-71: 1-Propyl-2,3-dimethylimidazolium tris(trifluoromethylsulfonyl)methide

**Abbreviation**: [P1M2,3IM][Me]
**Molecular Formula**: $C_{12}H_{15}F_9N_2O_6S_3$
**Molar Mass**: 550.44
**Structure**:

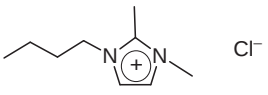


**Character**:
**Application**:

| $K$ (S/m) | $T$ (K) |
|---|---|
| 0.046 [134] | 298.15 |

### 310-11: 1-Butyl-2,3-dimethylimidazolium chloride

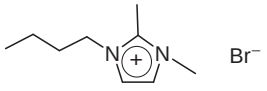
**Abbreviation**: [BDMIM]Cl
**Molecular Formula**: $C_9H_{17}N_2Cl$
**Molar Mass**: 188.7
**Structure**:



**Character**:
**Application**: [175]

### 310-12: 1-Butyl-2,3-dimethylimidazolium bromide

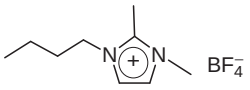
**Abbreviation**: [BDMIM]Br
**Molecular Formula**: $C_9H_{17}N_2Br$
**Molar Mass**: 233.15
**Structure**:



**Character**:
**Application**: [175]

### 310-21: 1-Butyl-2,3-dimethylimidazolium tetrafluoroborate

**Abbreviation**: [BDMIM][$BF_4$]
**Molecular Formula**: $C_9H_{17}N_2BF_4$
**Molar Mass**: 240.05
**Structure**:



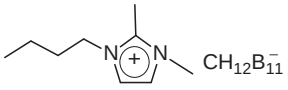

**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 312.8 [176] | 205.15 [40] |
| 310.15 [12] | |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $C_p$ (J·mol$^{-1}$·K$^{-1}$) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1.2 [12] | 298.15 | 1.0762 ± 0.003 [40] | 313.15 ± 0.1 | 780 [12] | 298.15 | 375.3 ± 3.4% [40] | 330.15 |
| 1.0935 ± 0.003 [40] | 300.15 ± 0.1 | 1.0634 ± 0.007 [40] | 323.15 ± 0.1 | | | 406.5 ± 3.4% [40] | 372.15 |

### 310-22: 1-Butyl-2,3-dimethylimidazolium 1-carbon icosahedral

**Abbreviation**: [BDMIM][CB11]
**Molecular Formula**: $C_{10}H_{29}B_{11}N_2$
**Molar Mass**: 296.27
**Structure**:

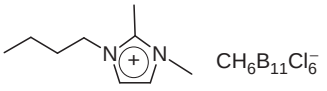



**Character**:
**Application**:

| $T_m$ (K) | $T_f$ (K) |
|---|---|
| 402.15 [174] | 390.15 [174] |

### 310-23: 1-Butyl-2,3-dimethylimidazolium hexachloride-1-carbon icosahedral

**Abbreviation**: [BDMIM][CB11Cl]
**Molecular Formula**: $C_{10}H_{23}B_{11}C_{l6}N_2$
**Molar Mass**: 502.94
**Structure**:



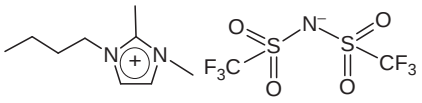

**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 374.15 [174] |

| $\rho$ (g/cm$^3$) |
|---|
| 1.367 [174] |

### 310-31: 1-Butyl-2,3-dimethylimidazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [BDMIM][TFSI]
**Molecular Formula**: $C_{11}H_{17}F_6N_3O_4S_2$
**Molar Mass**: 433.4
**Structure**:

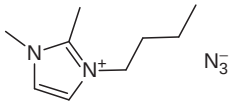


**Character**:
**Application**:

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.421 [10] | 298.15 |

### 310-318: 1-Butyl-2,3-dimethylimidazolium azide

**Abbreviation**: [BMMIm]$N_3$
**Molecular Formula**: $C_9H_{17}N_5$
**Molar Mass**: 195.26
**Structure**:

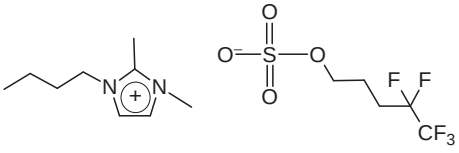


**Character**:
**Application**:

| Electrochemical Window (V) | Cathode Limit (V) | Anodic Limit (V) |
|---|---|---|
| 2.1 [177] | −1.8 | 0.3 |

### 310-413: 1-Butyl-2,3-dimethylimidazolium 4,4,5,5,5-pentafluoropentyl sulfate

**Abbreviation**: [BDMIM][$C_5F_5$]
**Molecular Formula**: $C_{14}H_{23}F_5N_2SO_4$
**Molar Mass**: 410.4
**Structure**:



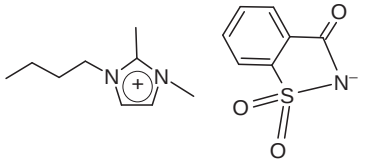
**Character**: Half-hydrophobic
**Application**: Medium for lipase-catalyzed reaction

| $T_m$ (K) |
|---|
| 285.75 [62] |

| $K$ (S/m) | $\eta_D$ (cp) |
|---|---|
| 0.01 [62] | 3200 [62] |

### 310-312: 1-Butyl-2,3-dimethylimidazolium saccharinate

**Abbreviation**: [BDMIM][Sac]
**Molecular Formula**: $C_{16}H_{21}N_3O_3S$
**Molar Mass**: 335.42
**Structure**:

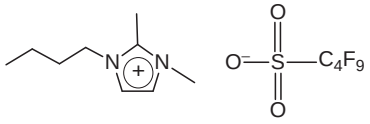


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 343.15 [16] |

### 310-45: 1-Butyl-2,3-dimethylimidazolium perfluorobutylsulfonate

**Abbreviation**: [BDMIM][NfO]
**Molecular Formula**: $C_{13}H_{17}F_9N_2SO_3$
**Molar Mass**: 452.34
**Structure**:

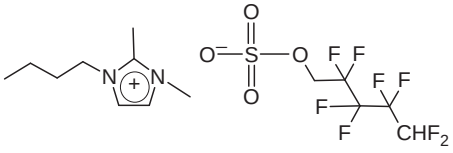


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 332.15-334.15 [178] |

### 310-414: 1-Butyl-2,3-dimethylimidazolium 2,2,3,3,4,4,5,5-octafluoropentyl sulfate

**Abbreviation**: [BDMIM][$C_5F_8$]
**Molecular Formula**: $C_{14}H_{20}F_8N_2O_4S$
**Molar Mass**: 464.37
**Structure**:



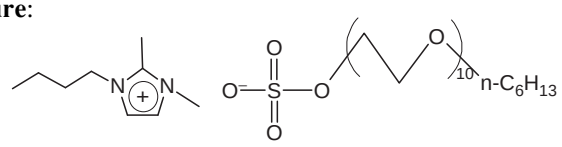
**Character**: Hydrophobic
**Application**: Medium for lipase-catalyzed reaction

| $T_m$ (K) |
|---|
| 258.95 [62] |

| $K$ (S/m) | $\eta_D$ (cp) |
|---|---|
| 0.027 [62] | 840 [62] |

### 310-424: 1-Butyl-2,3-dimethylimidazolium polyethylenoxy (10)cetyl ether sulfate

**Abbreviation**: [bdmim][cetyl-PEG10-sulfate]
**Molecular Formula**: $C_{35}H_{70}N_2O_{14}S$
**Molar Mass**: 775.00
**Structure**:

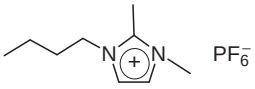


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 308.15-310.15 [110] |

### 310-51: 1-Butyl-2,3-dimethylimidazolium hexafluorophosphate

**Abbreviation**: [BDMIM][$PF_6$]
**Molecular Formula**: $C_9H_{17}N_2PF_6$
**Molar Mass**: 298.21
**Structure**:



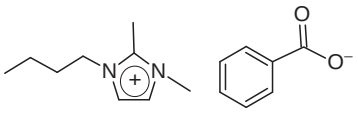
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 313.0 [176] | 215.15 [40] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $C_p$ (J·mol$^{-1}$·K$^{-1}$) | $T$ (K) |
|---|---|---|---|
| 1.2416 ± 0.001 [40] | 295.65 ± 0.1 | 433.6 ± 2.4% [40] | 298.15 |
| 1.2190 ± 0.007 [40] | 313.15 ± 0.1 | 449.1 ± 2.4% [40] | 323.15 |
| 1.2055 ± 0.010 [40] | 323.15 ± 0.1 | | |

### 310-64: 1-Butyl-2,3-dimethylimidazolium benzoate

**Abbreviation**: [BM2Im][ba]
**Molecular Formula**: $C_{16}H_{22}N_2O_2$
**Molar Mass**: 274.36
**Structure**:

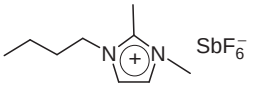


**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 202.69 [121] | 528.75 [121] |

### 310-86: 1-Butyl-2,3-dimethylimidazolium hexafluoroantimonate

**Abbreviation**: [BDMIM][$SbF_6$]
**Molecular Formula**: $C_9H_{17}N_2SbF_6$
**Molar Mass**: 389
**Structure**:

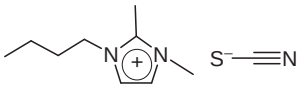


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 317.5 [176] |

### 310-1503: 1-Butyl-2,3-dimethylimidazolium thiocyanate

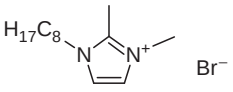
**Abbreviation**: [DMBI][SCN]
**Molecular Formula**: $C_{10}H_{17}N_3S$
**Molar Mass**: 211.33
**Structure**:



**Character**:
**Application**: [175]

### 312-12: 1-Octyl-2,3-dimethylimidazolium bromide

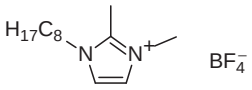
**Abbreviation**: [ODMIM]Br
**Molecular Formula**: $C_{13}H_{25}BrN_2$
**Molar Mass**: 289.26
**Structure**:



**Character**:
**Application**: [175]

### 312-21: 1-Octyl-2,3-dimethylimidazolium tetrafluoroborate

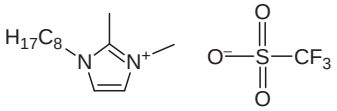
**Abbreviation**: [ODMIM][$BF_4$]
**Molecular Formula**: $C_{13}H_{25}BF_4N_2$
**Molar Mass**: 296.16
**Structure**:



**Character**:
**Application**: [175]

### 312-43: 1-octyl-2,3-dimethylimidazolium trifluoromethanesulfonate

**Abbreviation**: [DMOIm][TfO]
**Molecular Formula**: $C_{14}H_{25}F_3N_2O_3S$
**Molar Mass**: 358.42
**Structure**:



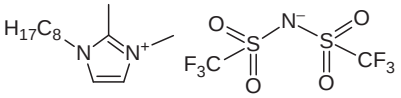
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 235.15 [179] |

| $\rho$ (g/cm$^3$) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|
| 1.15 [179] | 26.4 [179] | 298.15 | 0.568 [179] | 298.15 |

### 312-31: 1-Octyl-2,3-dimethylimidazolium bis((trifluoromethyl)sulfonyl)imide

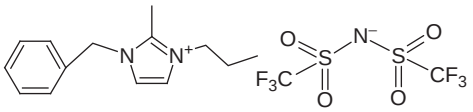
**Abbreviation**: [ODMIM][TFSI]
**Molecular Formula**: $C_{15}H_{25}F_6N_3O_4S_2$
**Molar Mass**: 489.5
**Structure**:



**Character**:
**Application**: [175]

### 313-31: 1-Benzyl-2-methyl-3-propylimidazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [BzMPIM][TFSI]
**Molecular Formula**: $C_{16}H_{19}F_6N_3O_4S_2$
**Molar Mass**: 495.46
**Structure**:

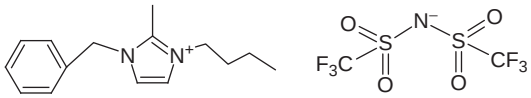


**Character**:
**Application**:

| $K$ (S/m) | $T$ (K) |
|---|---|
| 0.0059 [180] | 293.15 |

### 314-31: 1-Benzyl-2-methyl-3-butylimidazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [BzMBIM][TFSI]
**Molecular Formula**: $C_{17}H_{21}F_6N_3O_4S_2$
**Molar Mass**: 509.49
**Structure**:

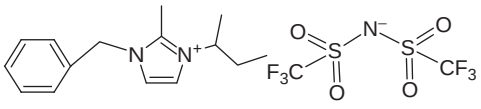


**Character**:
**Application**:

| $K$ (S/m) | $T$ (K) |
|---|---|
| 0.0027 [180] | 293.15 |

### 315-31:1-Benzyl-2-methyl-3-(3-methyl)propylimidazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [BzMB'IM][TFSI]
**Molecular Formula**: $C_{17}H_{21}F_6N_3O_4S_2$
**Molar Mass**: 509.49
**Structure**:

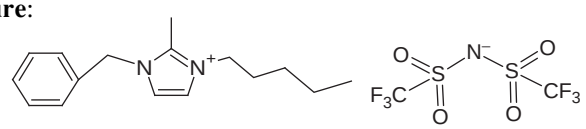


**Character**:
**Application**:

| $K$ (S/m) | $T$ (K) |
|---|---|
| 0.0037 [180] | 293.15 |

**316-31: 1-Benzyl-2-methyl-3-amylimidazolium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: [BzMAIM][TFSI]
**Molecular Formula**: $C_{18}H_{23}F_6N_3O_4S_2$
**Molar Mass**: 523.51
**Structure**:

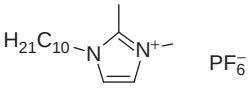


**Character**:
**Application**:

| $K$ (S/m) | $T$ (K) |
|---|---|
| 0.0029 [180] | 293.15 |

**317-51: 1-Decyl-2,3-dimethylimidazolium hexafluorophosphate**

**Abbreviation**: [DDMIM][$PF_6$]
**Molecular Formula**: $C_{15}H_{29}N_2PF_6$
**Molar Mass**: 382.7
**Structure**:



**Character**:
**Application**: [175]

**318-12: 1-Phenylethanoyl-2-styrene-3-methylimidazolium bromide**

**Abbreviation**: [PEStMIM]Br
**Molecular Formula**: $C_{20}H_{20}BrN_2O$
**Molar Mass**: 384.3
**Structure**:
**Character**:
**Application**:

**319-21: 1,3-Dimethyl-nimtrimleimidazolium tetrafluoroborate**

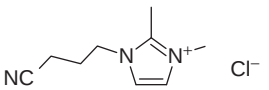
**Abbreviation**: [DMNiIM][$BF_4$]
**Molecular Formula**: $C_6H_8BF_4N_3S$
**Molar Mass**: 241.02
**Structure**:
**Character**:
**Application**:

**321-21: 1,2-Dimethyl-3-phenylethanoyl(*p*-Cl)imidazolium tetrafluoroborate**

**Abbreviation**: [PClDMIM][$BF_4$]
**Molecular Formula**: $C_{13}H_{14}BClF_4N_2O$
**Molar Mass**: 336.52
**Structure**:
**Character**:
**Application**:

**354-11: 1-Propylnitrile-2,3-dimethylimidazolium chloride**

**Abbreviation**: [$C_3$CNdmim]Cl
**Molecular Formula**: $C_9H_{14}N_3Cl$
**Molar Mass**: 199.68
**Structure**:

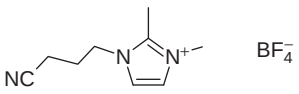


**Character**:
**Application**: Solvent and ligand for catalyzed reactions

| $T_m$ (K) |
|---|
| 378.15 [152] |

**354-21: 1-Propylnitrile-2,3-dimethylimidazolium tetrafluoroborate**

**Abbreviation**: [$C_3$CNdmim][$BF_4$]
**Molecular Formula**: $C_9H_{14}N_3BF_4$
**Molar Mass**: 251.03
**Structure**:

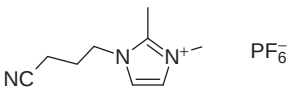


**Character**:
**Application**: Solvent and ligand for catalyzed reactions

| $T_m$ (K) |
|---|
| 313.15 [152] |

**354-51: 1-Propylnitrile-2,3-dimethylimidazolium hexafluorophosphate**

**Abbreviation**: [$C_3$CNdmim][$PF_6$]
**Molecular Formula**: $C_9H_{14}N_3PF_6$
**Molar Mass**: 309.19
**Structure**:

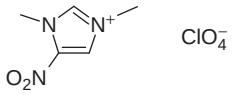


**Character**:
**Application**: Solvent and ligand for catalyzed reactions

| $T_m$ (K) |
|---|
| 358.15 [152] |

### 355-14: 1,3-Dimethyl-5-nitroimidazolium perchlorate

**Abbreviation**: $[Me_2NO_2Im][ClO_4]$
**Molecular Formula**: $C_5H_8N_3O_6Cl$
**Molar Mass**: 241.59
**Structure**:

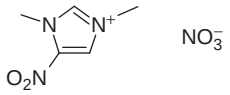


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 445.15 [181] | 532.15 [181] |

### 355-39: 1,3-Dimethyl-5-nitroimidazolium nitrate

**Abbreviation**: $[Me_2NO_2Im][NO_3]$
**Molecular Formula**: $C_5H_8N_4O_5$
**Molar Mass**: 204.14
**Structure**:

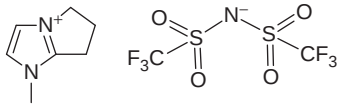


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 436.15 [181] | 447.15 [181] |

### 356-31: 1-Methyl-2,3-trimethyleneimidazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [m-3C-im][TFSI]
**Molecular Formula**: $C_9H_{11}F_6N_3O_4S_2$
**Molar Mass**: 403.32
**Structure**:

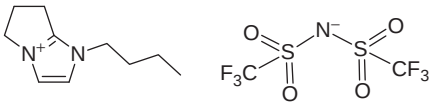


**Character**: Stable ionic liquid
**Application**:

| $T_m$ (K) |
|---|
| 356.15-358.15 [182] |
| 356.15-358.15 [183] |

### 357-31: 1-Butyl-2,3-trimethyleneimidazolium bis((trifluoromethyl)sulfonyl)imide

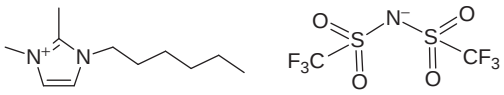
**Abbreviation**: [b-3C-im][TFSI]
**Molecular Formula**: $C_{12}H_{17}F_6N_3O_4S_2$
**Molar Mass**: 445.4
**Structure**:



**Character**: Stable ionic liquid
**Application**: [183]

### 358-31: 1-Hexyl-2,3-dimethylimidazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [hmmim][TFSI]
**Molecular Formula**: $C_{13}H_{21}F_6N_3O_4S_2$
**Molar Mass**: 461.45
**Structure**:

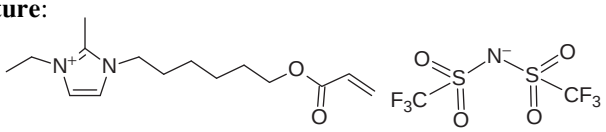


**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 268 [128] | 199 [128] |

### 359-31: 1-(Hexyl acrylate)-2-methyl-3-ethylimidazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: $[AcrylateC_6MEIm][NTf_2]$
**Molecular Formula**: $C_{17}H_{25}F_6N_3O_6S_2$
**Molar Mass**: 545.52
**Structure**:

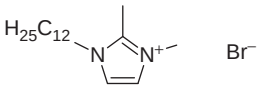


**Character**:
**Application**:

| $T_g$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|
| 205.15 [157] | 0.068 [157] | 303.15 |

**360-12: 1-Dodecyl-2,3-dimethylimidazolium bromide**

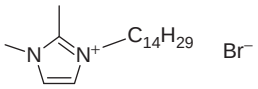
**Abbreviation**: [DMDdI]Br
**Molecular Formula**: $C_{17}H_{33}N_2Br$
**Molar Mass**: 345.36
**Structure**:



**Character**:
**Application**: [175]

**361-12: 1,2-Dimethyl-3-tetradecylimidazolium bromide**

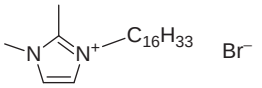
**Abbreviation**: [DMTdI]Br
**Molecular Formula**: $C_{19}H_{37}N_2Br$
**Molar Mass**: 373.41
**Structure**:



**Character**:
**Application**: [175]

**362-12: 1-Hexadecyl-2,3-dimethylimidazolium bromide**

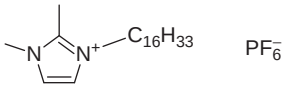
**Abbreviation**: [DMHdI]Br
**Molecular Formula**: $C_{21}H_{41}N_2Br$
**Molar Mass**: 401.47
**Structure**:



**Character**:
**Application**: [175]

**362-51: 1-Hexadecyl-2,3-dimethylimidazolium hexafluorophosphate**

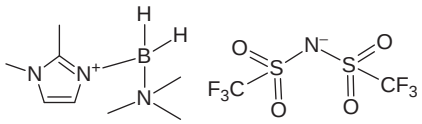
**Abbreviation**: [DMHdI][$PF_6$]
**Molecular Formula**: $C_{21}H_{41}N_2PF_6$
**Molar Mass**: 466.53
**Structure**:



**Character**:
**Application**: [175]

**363-31: (1,2-Dimethyl-imidazole)(trimethylamine)$BH_2$ bis ((trifluoromethyl)sulfonyl)imide**

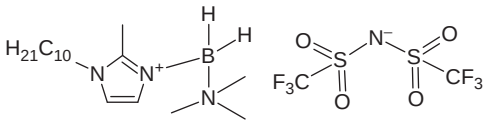
**Abbreviation**: [$Me_3NBH_2$DMIm][TFSI]
**Molecular Formula**: $C_{10}H_{19}F_6N_4BO_4S_2$
**Molar Mass**: 448.22
**Structure**:



**Character**: Hydrophobic
**Application**: [162]

**364-31: (1-Decyl-2-methyl-imidazole)(trimethylamine) $BH_2$ bis((trifluoromethyl)sulfonyl)imide**

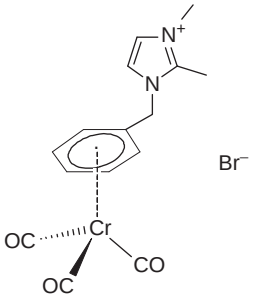
**Abbreviation**: [$Me_3NBH_2$BMIm][TFSI]
**Molecular Formula**: $C_{19}H_{37}F_6N_4BO_4S_2$
**Molar Mass**: 574.46
**Structure**:



**Character**: Hydrophobic
**Application**: [162]

**365-12: $Cr(CO)_3(\eta^6$-$C_6H_5CH_2$MMIM) bromide**

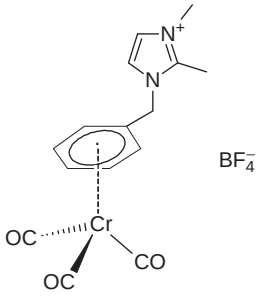
**Abbreviation**: [$Cr(CO)_3(\eta^6$-$C_6H_5CH_2$MMIM)]Br
**Molecular Formula**: $C_{15}H_{15}N_2CrO_3Br$
**Molar Mass**: 403.19
**Structure**:



**Character**:
**Application**: [151]

**365-21: $Cr(CO)_3(\eta^6$-$C_6H_5CH_2$MMIM) tetrafluoroborate**

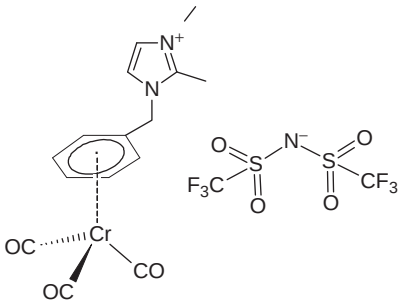
**Abbreviation**: [$Cr(CO)_3(\eta^6$-$C_6H_5CH_2$MMIM)][$BF_4$]
**Molecular Formula**: $C_{15}H_{15}N_2CrO_3BF_4$
**Molar Mass**: 410.09
**Structure**:



**Character**:
**Application**: [151]

### 365-31: $Cr(CO)_3(\eta^6\text{-}C_6H_5CH_2MMIM)$ bis((trifluoromethyl)sulfonyl)imides

**Abbreviation**: $[Cr(CO)_3(\eta^6\text{-}C_6H_5CH_2MMIM)][NTf_2]$
**Molecular Formula**: $C_{17}H_{15}CrF_6N_3O_7S_2$
**Molar Mass**: 603.43
**Structure**:

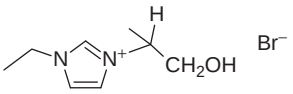


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 341.15 [151] |

### 366-12: L-1-Ethyl-3-(1′-hydroxy-2′-propanyl)imidazolium bromide

**Abbreviation**: [L-EHyPIm]Br
**Molecular Formula**: $C_8H_{15}N_2OBr$
**Molar Mass**: 235.12
**Structure**:



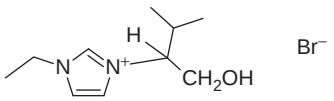
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 278.15-279.15 [184] |

| α | Concentration | $T$ (K) | Solvent |
|---|---|---|---|
| 3.7 [184] | 0.02 | 298.15 | $CH_3OH$ |

### 367-12: L-1-Ethyl-3-(1′-hydroxy-3′-methyl-2′-butanyl) imidazolium bromide

**Abbreviation**: [L-EHyMBIm]Br
**Molecular Formula**: $C_{10}H_{19}N_2OBr$
**Molar Mass**: 263.17
**Structure**:



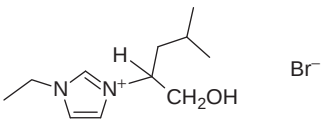
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 284.15-285.15 [184] |

| α | Concentration | $T$ (K) | Solvent |
|---|---|---|---|
| −10 [184] | 0.02 | 298.15 | $CH_3OH$ |

### 368-12: L-1-Ethyl-3-(1′-hydroxy-4′-methyl-2′-pentanyl) imidazolium bromide

**Abbreviation**: [L-EHyMPIm]Br
**Molecular Formula**: $C_{11}H_{21}N_2OBr$
**Molar Mass**: 277.2
**Structure**:



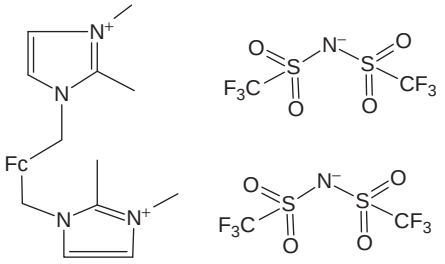
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 288.15-289.15 [184] |

| α | Concentration | $T$ (K) | Solvent |
|---|---|---|---|
| 9.2 [184] | 0.02 | 298.15 | $CH_3OH$ |

**369-31:1,1′-Bis((1-(2,3-dimethyl)imidazolium)methyl) ferrocene di[bis((trifluoromethyl)sulfonyl)imide]**

**Abbreviation**: $[Fc(MMMIm)_2][NTf_2]_2$
**Molecular Formula**: $C_{26}H_{28}F_{12}FeN_6O_8S_4$
**Molar Mass**: 964.63
**Structure**:

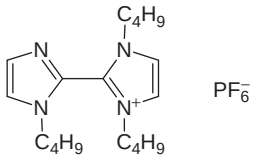


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 359.35 [153] | 578.15 [153] |

**370-51: 1,3,1′-Tributyl-2,2′-biimidazolium hexafluorophosphate**

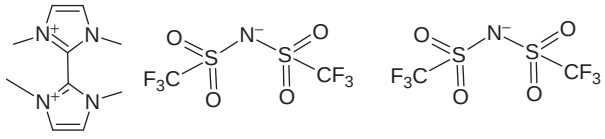
**Abbreviation**: $[Bu_3(Im)_2][PF_6]$
**Molecular Formula**: $C_{18}H_{31}N_4PF_6$
**Molar Mass**: 448.43
**Structure**:



**Character**:
**Application**: Catalyst for Heck reaction [185]

**371-31: 1,3,1′,3′-Tetramethyl-2,2′-biimidazolium di[bis(trifluoromethanesulfonyl)amide]**

**Abbreviation**: $[(DMIm)_2][NTf_2]_2$
**Molecular Formula**: $C_{14}H_{16}F_{12}N_6O_8S_4$
**Molar Mass**: 752.55
**Structure**:

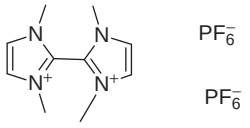


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 366.15 [186] | 668.15 [186] |

**371-51: 1,3,1′,3′-Tetramethyl-2,2′-biimidazolium bis(hexafluorophosphate)**

**Abbreviation**: $[(DMIm)_2][PF_6]_2$
**Molecular Formula**: $C_{10}H_{16}F_{12}N_4P_2$
**Molar Mass**: 482.19
**Structure**:

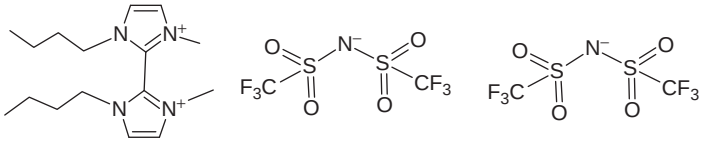


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 390.15 [186] | 636.15 [186] |

**372-31: 1,1′-Dibutyl-3,3′-dimethylbiimidazolium di[bis(trifluoromethanesulfonyl)amide]**

**Abbreviation**: $[(C_4MIm)_2][NTf_2]_2$
**Molecular Formula**: $C_{20}H_{28}F_{12}N_6O_8S_4$
**Molar Mass**: 836.71
**Structure**:

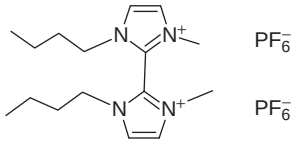


**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 218.15 [186] | 621.15 [186] |

**372-51: 1,1′-Dibutyl-3,3′-dimethylbiimidzaolium bis(hexafluorophosphate)**

**Abbreviation**: $[(C_4MIm)_2][PF_6]$
**Molecular Formula**: $C_{16}H_{28}F_{12}N_4P_2$
**Molar Mass**: 566.35
**Structure**:

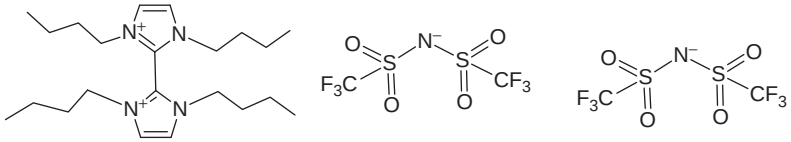


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 348.15 [186] | 601.15 [186] |

**373-31: 1,3,1′,3′-Tetrabutyl-2,2′-biimidazolium di[bis(trifluoromethanesulfonyl)amide]**

**Abbreviation**: $[(C_4C_4Im)_2][NTf_2]_2$
**Molecular Formula**: $C_{26}H_{40}F_{12}N_6O_8S_4$
**Molar Mass**: 920.87
**Structure**:

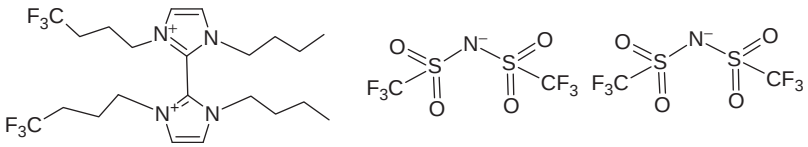


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 368.15 [186] | 611.15 [186] |

**374-31: 1,1′-Dibutyl-3,3′-di-(4,4,4-trifluorobutyl)-2,2′-biimidazolium di[bis(trifluoromethanesulfonyl) amide]**

**Abbreviation**: $[(CF_3(CH_2)_3BIm)_2][NTf_2]_2$
**Molecular Formula**: $C_{26}H_{34}F_{18}N_6O_8S_4$
**Molar Mass**: 1028.81
**Structure**:

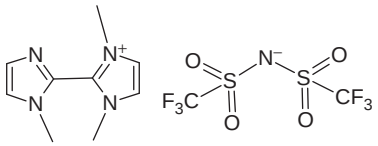


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 392.15 [186] | 604.15 [186] |

### 375-31: 1,3,1′-Trimethyl-2,2′-biimidazolium bis(trifluoromethanesulfonyl)amide

**Abbreviation**: [(MIm)(DMIm)][$NTf_2$]
**Molecular Formula**: $C_{11}H_{13}F_6N_5O_4S_2$
**Molar Mass**: 457.37
**Structure**:

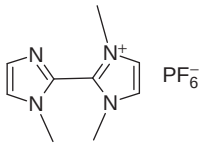


**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 696.15 [186] |

### 375-51: 1,3,1′-Trimethyl-2,2′-biimidazolium hexafluorophosphate

**Abbreviation**: [(MIm)(DMIm)][$PF_6$]
**Molecular Formula**: $C_9H_{13}F_6N_4P$
**Molar Mass**: 322.19
**Structure**:

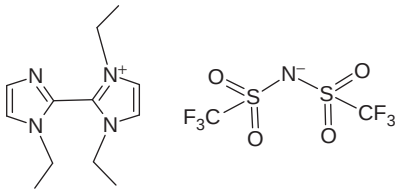


**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 615.15 [186] |

### 376-31: 1,3,1′-Triethyl-2,2′-biimidazolium bis(trifluoromethanesulfonyl)amide

**Abbreviation**: [(EIm)(DEIm)][$NTf_2$]
**Molecular Formula**: $C_{14}H_{19}F_6N_5O_4S_2$
**Molar Mass**: 499.45
**Structure**:

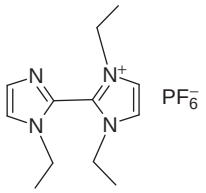


**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 599.15 [186] |

### 376-51: 1,3,1′-Triethyl-2,2′-biimidazolium hexafluorophosphate

**Abbreviation**: [(EIm)(DEIm)][$PF_6$]
**Molecular Formula**: $C_{12}H_{19}F_6N_4P$
**Molar Mass**: 364.27
**Structure**:

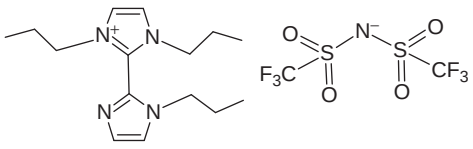


**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 599.15 [186] |

### 377-31: 1,3,1′-Tripropyl-2,2′-biimidazolium bis(trifluoromethanesulfonyl)amide

**Abbreviation**: [(PIm)(DPIm)][$NTf_2$]
**Molecular Formula**: $C_{17}H_{25}F_6N_5O_4S_2$
**Molar Mass**: 541.53
**Structure**:

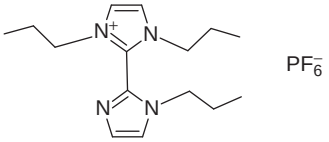


**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 617.15 [186] |

### 377-51: 1,3,1′-Tripropyl-2,2′-biimidazolium hexafluorophosphate

**Abbreviation**: [(PIm)(DPIm)][$PF_6$]
**Molecular Formula**: $C_{15}H_{25}F_6N_4P$
**Molar Mass**: 406.35
**Structure**:

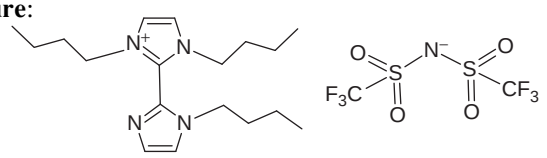


**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 575.15 [186] |

**378-31: 1,3,1′-Tributyl-2,2′-biimidazolium bis(trifluoromethanesulfonyl)amide**

**Abbreviation**: [(BIm)(DBIm)][$NTf_2$]
**Molecular Formula**: $C_{20}H_{31}F_6N_5O_4S_2$
**Molar Mass**: 583.61
**Structure**:

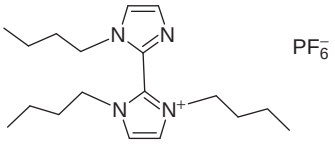


**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 605.15 [186] |

**378-51: 1,3,1′-Tributyl-2,2′-biimidazolium hexafluorophosphate**

**Abbreviation**: [(BIm)(DBIm)][$PF_6$]
**Molecular Formula**: $C_{18}H_{31}F_6N_4P$
**Molar Mass**: 448.43
**Structure**:

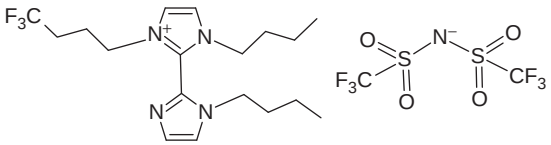


**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 572.15 [186] |

**379-31: 1,1′-Dibutyl-3-(4,4,4-trifluorobutyl)-2,2′-biimidazolium bis(trifluoromethanesulfonyl)amide**

**Abbreviation**: [(BIm)($CF_3(CH_2)_3$BIm)][$NTf_2$]
**Molecular Formula**: $C_{20}H_{28}F_9N_5O_4S_2$
**Molar Mass**: 637.58
**Structure**:

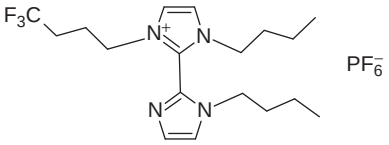


**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 595.15 [186] |

**379-51: 1,1′-Dibutyl-3-(4,4,4-trifluorobutyl)-2,2′-biimidazolium hexafluorophosphate**

**Abbreviation**: [(BIm)($CF_3(CH_2)_3$BIm)][$PF_6$]
**Molecular Formula**: $C_{18}H_{28}F_9N_4P$
**Molar Mass**: 502.4
**Structure**:

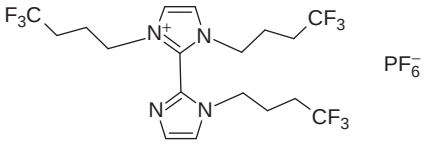


**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 586.15 [186] |

**380-51: 1,3,1′-Tri-(4,4,4-trifluorobutyl)-2,2′-biimidazolium hexafluorophosphate**

**Abbreviation**: [($CF_3(CH_2)_3$Im)($CF_3(CH_2)_3)_2$Im)][$PF_6$]
**Molecular Formula**: $C_{18}H_{22}F_{15}N_4P$
**Molar Mass**: 610.34
**Structure**:

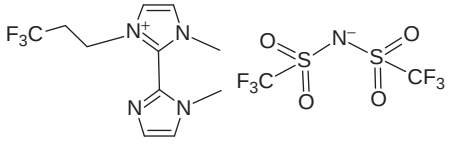


**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 630.15 [186] |

**381-31: 1,1′-Dimethyl-3-(3,3,3-trifluoropropyl)-2,2′-biimidazolium bis(trifluoromethanesulfonyl)amide**

**Abbreviation**: [(MIm)($CF_3(CH_2)_2$MIm][$NTf_2$]
**Molecular Formula**: $C_{13}H_{14}F_9N_5O_4S_2$
**Molar Mass**: 539.4
**Structure**:

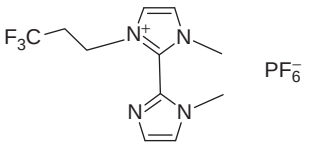


**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 606.15 [186] |

### 381-51: 1,1′-Dimethyl-3-(3,3,3-trifluoropropyl)-2,2′-biimidazolium hexafluorophosphate

**Abbreviation**: [(MIm)($CF_3(CH_2)_2$MIm][$PF_6$]
**Molecular Formula**: $C_{11}H_{14}F_9N_4P$
**Molar Mass**: 404.21
**Structure**:

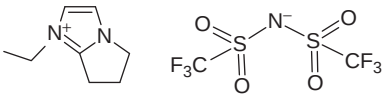


**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 590.15 [186] |

### 382-31: 1-Ethyl-2,3-trimethyleneimidazolium bis(trifluoromethanesulfonyl)amide

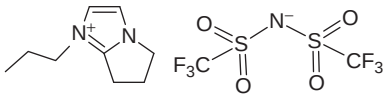
**Abbreviation**: [e-3C-im][$NTf_2$]
**Molecular Formula**: $C_{10}H_{13}F_6N_3O_4S_2$
**Molar Mass**: 417.35
**Structure**:



**Character**:
**Application**: [182]

### 383-31: 1-Propyl-2,3-trimethyleneimidazolium bis(trifluoromethanesulfonyl)amide

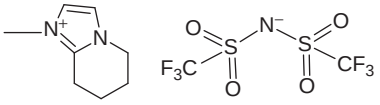
**Abbreviation**: [p-3C-im][$NTf_2$]
**Molecular Formula**: $C_{11}H_{15}F_6N_3O_4S_2$
**Molar Mass**: 431.37
**Structure**:



**Character**:
**Application**: [182]

### 384-31: 1-Methyl-2,3-tetramethyleneimidazolium bis(trifluoromethanesulfonyl)amide

**Abbreviation**: [m-4C-im][$NTf_2$]
**Molecular Formula**: $C_{10}H_{13}F_6N_3O_4S_2$
**Molar Mass**: 417.35
**Structure**:

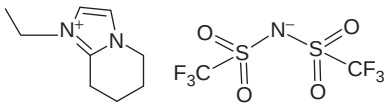


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 319.15-321.15 [182] |

### 385-31: 1-Ethyl-2,3-tetramethyleneimidazolium bis(trifluoromethanesulfonyl)amide

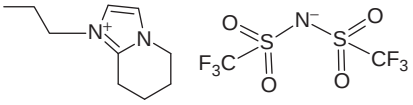
**Abbreviation**: [e-4C-im][$NTf_2$]
**Molecular Formula**: $C_{11}H_{15}F_6N_3O_4S_2$
**Molar Mass**: 431.37
**Structure**:



**Character**:
**Application**: [182]

### 386-31: 1-Propyl-2,3-tetramethyleneimidazolium bis(trifluoromethanesulfonyl)amide

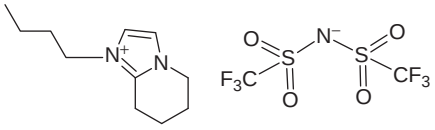
**Abbreviation**: [p-4C-im][$NTf_2$]
**Molecular Formula**: $C_{12}H_{17}F_6N_3O_4S_2$
**Molar Mass**: 445.4
**Structure**:



**Character**:
**Application**: [182]

**387-31: 1-Butyl-2,3-tetramethyleneimidazolium bis(trifluoromethanesulfonyl)amide**

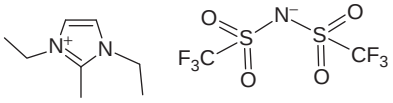
**Abbreviation**: [b-4C-im][$NTf_2$]
**Molecular Formula**: $C_{13}H_{19}F_6N_3O_4S_2$
**Molar Mass**: 459.43
**Structure**:



**Character**:
**Application**: [182]

**388-31: 1,3-Diethyl-2-methylimidazolium bis(trifluoromethylsulfonyl)amide**

**Abbreviation**: [EEMIM][$NTf_2$]
**Molecular Formula**: $C_{10}H_{15}F_6N_3O_4S_2$
**Molar Mass**: 419.36
**Structure**:



**Character**:
**Application**:

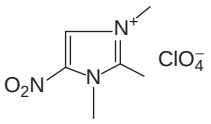
| $T_m$ (K) |
|---|
| 251.15 [12] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $n$ |
|---|---|---|---|---|
| 1.432 [12] | 298.15 | 36 [12] | 298.15 | 1.43 [12] |

## 2.4. Tetra-alkyl imidazolium

### 44-14: 1,2,3-Trimethyl-5-nitroimidazolium perchlorate

**Abbreviation**: $[NO_2Me_3Im][ClO_4]$
**Molecular Formula**: $C_6H_{10}N_3O_6Cl$
**Molar Mass**: 255.61
**Structure**:

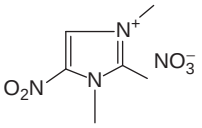


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 459.15 [181] | 580.15 [181] |

### 44-39: 1,2,3-Trimethyl-5-nitroimidazolium nitrate

**Abbreviation**: $[NO_2Me_3Im][NO_3]$
**Molecular Formula**: $C_6H_{10}N_4O_5$
**Molar Mass**: 218.17
**Structure**:

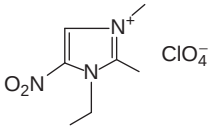


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 434.15 [181] | 439.15 [181] |

### 45-14: 1-Ethyl-2,3-dimethyl-5-nitroimidazolium perchlorate

**Abbreviation**: $[NO_2EtMe_2Im][ClO_4]$
**Molecular Formula**: $C_7H_{12}N_3O_6Cl$
**Molar Mass**: 269.64
**Structure**:

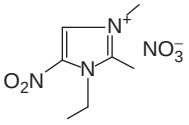


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 419.15 [181] | 510.15 [181] |

### 45-39: 1-Ethyl-2,3-dimethyl-5-nitroimidazolium nitrate

**Abbreviation**: $[NO_2EtMe_2Im][NO_3]$
**Molecular Formula**: $C_7H_{12}N_4O_5$
**Molar Mass**: 232.19
**Structure**:

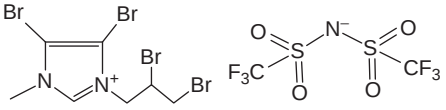


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 338.15 [181] | 419.15 [181] |

### 46-31:1-(2,3-Dibromopropyl)-3-methyl-4,5-dibromoimidazolium bis(trifluoromethanesulfonyl)amide

**Abbreviation**: $[(CH_2BrCHBrCH_2),MIm(Br_2)][NTf_2]$
**Molecular Formula**: $C_9H_9Br_4F_6N_3O_4S_2$
**Molar Mass**: 720.92
**Structure**:



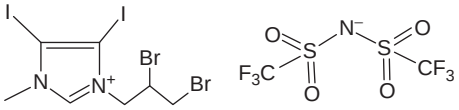
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 249.15 [166] | 580.15 [166] |

| $\rho$(g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 2.26 [166] | 298.15 | 987.2 [166] | 333.15 |

### 47-31:1-(2,3-Dibromopropyl)-3-methyl-4,5-diiodoimidazolium bis(trifluoromethanesulfonyl)amide

**Abbreviation**: $[(CH_2BrCHBrCH_2),MIm(I_2)][NTf_2]$
**Molecular Formula**: $C_9H_9Br_2F_6I_2N_3O_4S_2$
**Molar Mass**: 814.92
**Structure**:



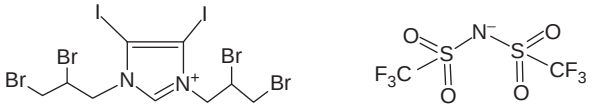
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 257.15 [166] | 560.15 [166] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 2.55 [166] | 298.15 | >1500 [166] | 333.15 |

**48-31: 1,3-Di(2,3-dibromopropyl)-4,5-diiodoimidazolium bis(trifluoromethanesulfonyl)amide**

**Abbreviation**: $[(CH_2BrCHBrCH_2)_2Im(I_2)][NTf_2]$
**Molecular Formula**: $C_{11}H_{11}Br_4F_6I_2N_3O_4S_2$
**Molar Mass**: 1000.77
**Structure**:




**Character**:
**Application**:

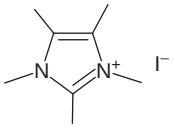
| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 270.15 [166] | 555.15 [166] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 2.80 [166] | 298.15 | >1500 [166] | 333.15 |

## 2.5. Quinary alkyl imidazolium

### 51-13: 1,2,3,4,5-Quinarymethylimidazolium iodine

**Abbreviation**: $[M_5IM]I$
**Molecular Formula**: $C_8H_{15}IN_2$
**Molar Mass**: 266.12
**Structure**:

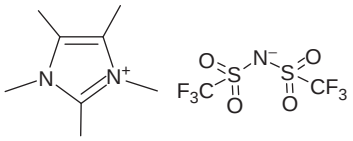


**Character**:
**Application**:

| $T_m$ (K) | $T_f$ (K) | $T_d$ (K) |
|---|---|---|
| 486.15 [17] | 396.15 [17] | 606.15 [17] |
| | | 576.15 [17] |

### 51-31: 1,2,3,4,5-Quinarymethylimidazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: $[M_5IM][TFSI]$
**Molecular Formula**: $C_{10}H_{15}F_6N_3O_4S_2$
**Molar Mass**: 419.37
**Structure**:

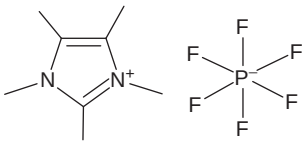


**Character**:
**Application**:

| $T_m$ (K) | $T_f$ (K) | $T_d$ (K) |
|---|---|---|
| 391.15 [17] | 381.15 [17] | 739.15 [17] |
| | | 743.15 [17] |

### 51-51: 1,2,3,4,5-Quinarymethylimidazolium hexafluorophosphate

**Abbreviation**: $[M_5IM][PF_6]$
**Molecular Formula**: $C_8H_{15}F_6N_2P$
**Molar Mass**: 284.18
**Structure**:

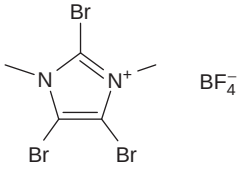


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 439.15 [17] | 674.15 [17] |
| | 760.15 [17] |

### 52-21: 1,3-Dimethyl-2,4,5-trimbromimidazolium tetrafluoroborate

**Abbreviation**: $[DMBr_3IM][BF_4]$
**Molecular Formula**: $C_5H_6BBr_3F_4N_2$
**Molar Mass**: 420.63
**Structure**:



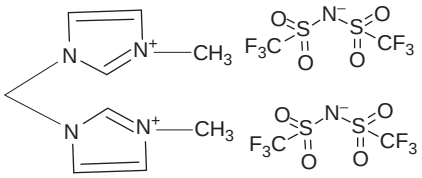
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 541.15 [9] |

## 2.6. Double imidazolium

### 68-31: 1,1′-Methylene-3,3′-dimethylbis(imidazolium) di[bis(trifluoromethanesulfonyl)amide]

**Abbreviation**: $[(MIm)_2CH_2][NTf_2]_2$
**Molecular Formula**: $C_{13}H_{14}F_{12}N_6O_8S_4$
**Molar Mass**: 738.53
**Structure**:

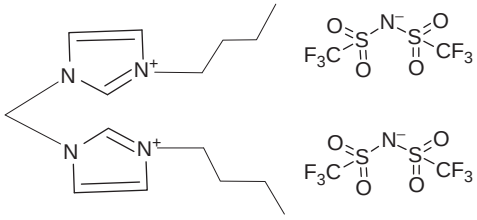


**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 228.15 [187] | 681.15 [187] |

### 69-31: 1,1′-Methylene-3,3′-dibutylbis(imidazolium) di[bis(trifluoromethanesulfonyl)amide]

**Abbreviation**: $[(BIm)_2CH_2][NTf_2]_2$
**Molecular Formula**: $C_{19}H_{26}F_{12}N_6O_8S_4$
**Molar Mass**: 822.68
**Structure**:

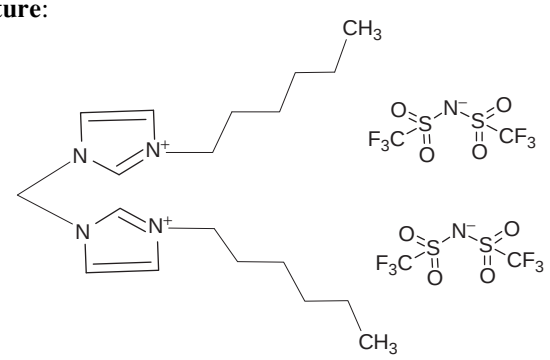


**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 222.15 [187] | 685.15 [187] |

### 610-31: 1,1′-Methylene-3,3′-dihexylbis(imidazolium) di[bis(trifluoromethanesulfonyl)amide]

**Abbreviation**: $[(HIm)_2CH_2][NTf_2]_2$
**Molecular Formula**: $C_{23}H_{34}F_{12}N_6O_8S_4$
**Molar Mass**: 878.79
**Structure**:

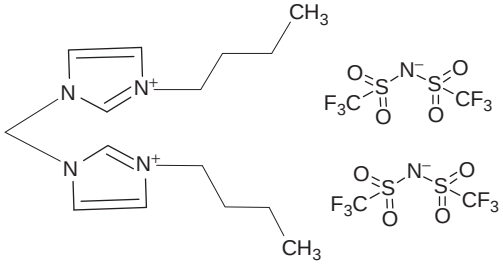


**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 224.15 [187] | 677.15 [187] |

### 611-31: 1,1′-Methylene-3,3′-di(4,4,4-trifluorobutyl) bis(imidazolium) di[bis(trifluoromethanesulfonyl)amide]

**Abbreviation**: $[(CF_3(CH_2)_3Im)_2CH_2][NTf_2]_2$
**Molecular Formula**: $C_{19}H_{20}F_{18}N_6O_8S_4$
**Molar Mass**: 930.63
**Structure**:

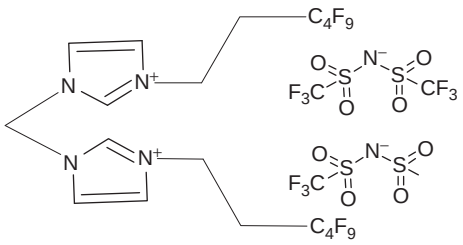


**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 226.15 [187] | 715.15 [187] |

**612-31: 1,1′-Methylene-3,3′-di(3,3,4,4,5,5,6,6,6-nonafluorohexyl)bis(imidazolium) di[bis(trifluoromethanesulfonyl)amide]**

**Abbreviation**: $[(C_4F_9(CH_2)_2Im)_2CH_2][NTf_2]_2$
**Molecular Formula**: $C_{23}H_{16}F_{30}N_6O_8S_4$
**Molar Mass**: 1202.62
**Structure**:

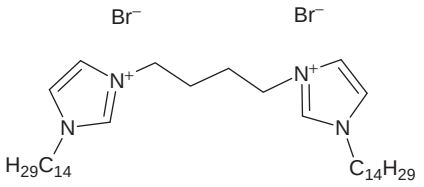


**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 254.15 [187] | 693.15 [187] |

**613-12: 1,4-Bis(3-tetradecylimidazolium-1-yl) butane bromide**

**Abbreviation**: $[(C_{14}Im)_2(CH_2)_4]Br_2$
**Molecular Formula**: $C_{38}H_{72}Br_2N_4$
**Molar Mass**: 744.81
**Structure**:

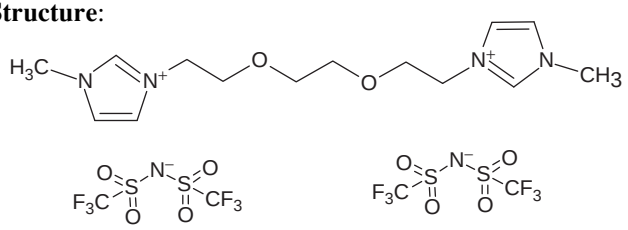


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 331.15 [141] | 576.15 [141] |

**614-31: 1,1-[1,2-Ethanediylbis(oxy-1,2-ethanediyl)] bis[3-methyl-1H-imidazolium-1-yl] bis(trifluoromethanesulfonyl)imide**

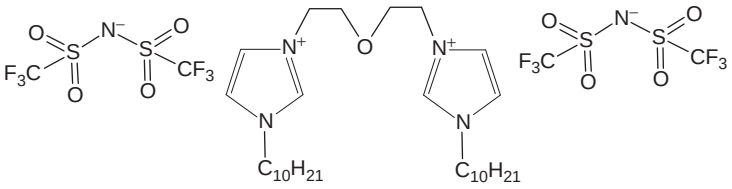
**Abbreviation**: $[MImC_6O_2MIm][NTf_2]_2$
**Molecular Formula**: $C_{18}H_{24}F_{12}N_6O_{10}S_4$
**Molar Mass**: 840.66
**Structure**:



**Character**:
**Application**: [169]

**615-31: 1,1′-(3-Oxapentane-1,5-diyl)bis(3-decyl-1H-imidazolium-1-yl) di[bis(trifluoromethanesulfonyl)amide]**

**Abbreviation**: $[C_{10}H_{21}O_1IM][NTf_2]_2$
**Molecular Formula**: $C_{34}H_{56}F_{12}N_6O_9S_4$
**Molar Mass**: 1049.08
**Structure**:



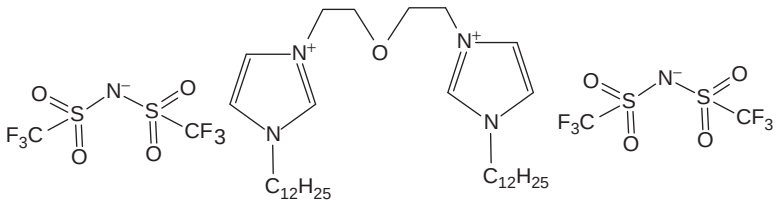
**Character**:
**Application**: [188]

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 283.35 | 688.95 |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.31 | 298.15 |

### 616-31: 1,1′-(3-Oxapentane-1,5-diyl)bis(3-dodecyl-1H-imidazolium-1-yl) di[bis(trifluoromethanesulfonyl)amide]

**Abbreviation**: $[C_{12}H_{25}O_1IM][NTf_2]_2$
**Molecular Formula**: $C_{38}H_{64}F_{12}N_6O_9S_4$
**Molar Mass**: 1105.19
**Structure**:



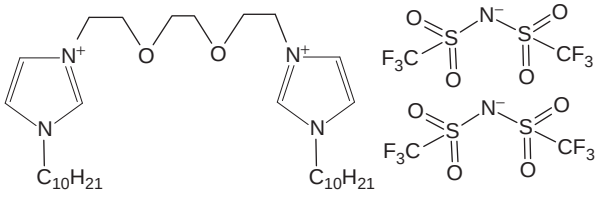
**Character**:
**Application**: [188]

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 303.85 | 690.25 |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.37 | 298.15 |

### 617-31: 1,1′-(3,6-Dioxaoctane-1,8-diyl)bis(3-decyl-1H-imidazolium-1-yl) di[bis(trifluoromethanesulfonyl)amide]

**Abbreviation**: $[C_{10}H_{21}O_2IM][NTf_2]_2$
**Molecular Formula**: $C_{36}H_{60}F_{12}N_6O_{10}S_4$
**Molar Mass**: 1093.14
**Structure**:



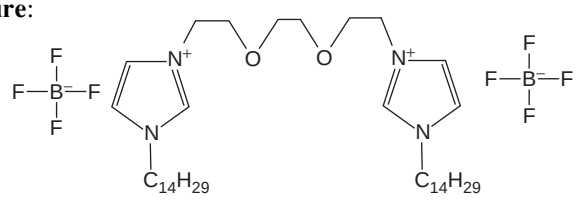
**Character**:
**Application**: [188]

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 223.65 | 681.85 |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.3 | 298.15 |

### 618-21: 1,1′-(3,6-Dioxaoctane-1,8-diyl)bis(3-tetradecyl-1H-imidazolium-1-yl) ditetrafluoroborate

**Abbreviation**: $[C_{14}H_{29}O_2IM][BF_4]_2$
**Molecular Formula**: $C_{40}H_{76}N_4O_2B_2F_8$
**Molar Mass**: 818.67
**Structure**:



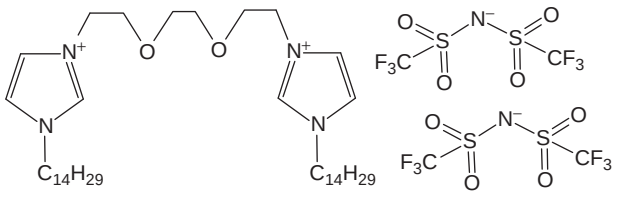
**Character**:
**Application**: [188]

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 306.05 | 633.15 |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.13 | 298.15 |

### 618-31: 1,1′-(3,6-Dioxaoctane-1,8-diyl)bis(3-tetradecyl-1H-imidazolium-1-yl) di[bis(trifluoromethanesulfonyl) amide]

**Abbreviation**: $[C_{14}H_{29}O_2IM][NTf_2]_2$
**Molecular Formula**: $C_{44}H_{76}F_{12}N_6O_{10}S_4$
**Molar Mass**: 1205.35
**Structure**:



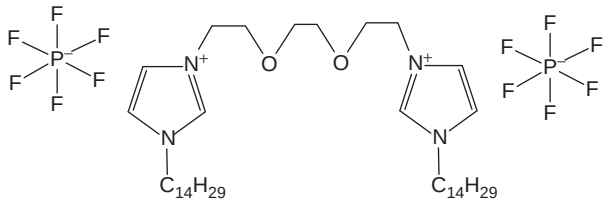
**Character**:
**Application**: [188]

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 276.25 | 711.95 |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) |
|---|---|---|---|---|
| 1.28 | 298.15 | 40.8 | 358.15 | 0.000206 |

### 618-51: 1,1′-(3,6-Dioxaoctane-1,8-diyl)bis(3-tetradecyl-1H-imidazolium-1-yl) dihexafluorophosphate

**Abbreviation**: $[C_{14}H_{29}O_2IM][PF_6]_2$
**Molecular Formula**: $C_{40}H_{76}N_4O_2P_2F_{12}$
**Molar Mass**: 934.99
**Structure**:



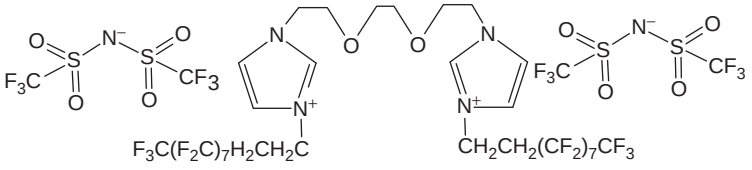
**Character**:
**Application**: [188]

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 346.55 | 623.05 |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.23 | 298.15 |

### 619-31: 1,1′-(3,6-Dioxaoctane-1,8-diyl) bis(3-perfluorodecyl-1H-imidazolium-1-yl) di[bis(trifluoromethanesulfonyl)amide]

**Abbreviation**: $[C_{10}F_{17}O_2IM][NTf_2]_2$
**Molecular Formula**: $C_{36}H_{26}F_{46}N_6O_{10}S_4$
**Molar Mass**: 1704.81
**Structure**:



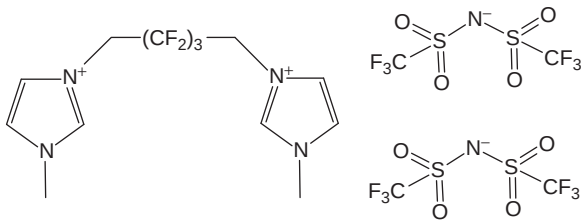
**Character**:
**Application**: [188]

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 281.75 | 660.05 |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.76 | 298.15 | 172.0 | 358.15 |

**620-31: 1,1′-(2,2,3,3,4,4-Hexafluoropentane-1,5-diyl) bis(3-methyl-1H-imidazolium-1-yl) di[bis(trifluoromethanesulfonyl)amide]**

**Abbreviation**: $[CH_3(CF_2)_3IM][NTf_2]_2$
**Molecular Formula**: $C_{17}H_{16}F_{18}N_6O_8S_4$
**Molar Mass**: 902.57
**Structure**:



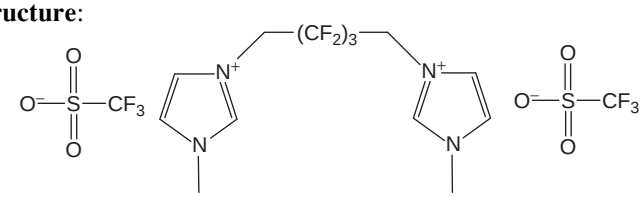
**Character**:
**Application**: [188]

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 333.05 | 657.75 |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.77 | 298.15 |

**620-43: 1,1′-(2,2,3,3,4,4-Hexafluoropentane-1,5-diyl) bis(3-methyl-1H-imidazolium-1-yl) ditrifluoromethanesulfonate**

**Abbreviation**: $[CH_3(CF_2)_3IM][TfO]_2$
**Molecular Formula**: $C_{15}H_{16}F_{12}N_4O_6S_2$
**Molar Mass**: 641.42
**Structure**:



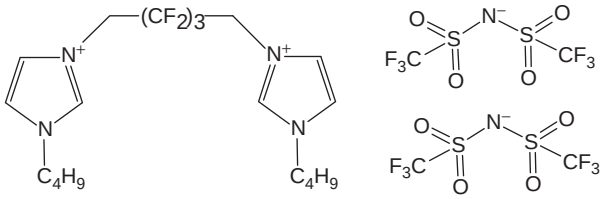
**Character**:
**Application**: [188]

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 446.25 | 638.58 |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.73 | 298.15 |

**621-31: 1,1′-(2,2,3,3,4,4-Hexafluoropentane-1,5-diyl) bis(3-butyl-1H-imidazolium-1-yl) di[bis(trifluoromethanesulfonyl)amide]**

**Abbreviation**: $[C_4H_9(CF_2)_3IM][NTf_2]_2$
**Molecular Formula**: $C_{23}H_{28}F_{18}N_6O_8S_4$
**Molar Mass**: 986.73
**Structure**:



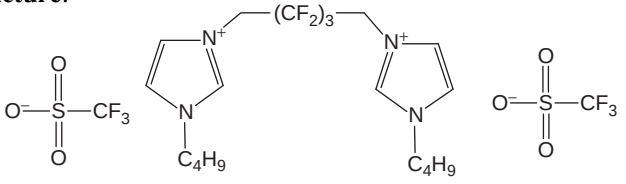
**Character**:
**Application**: [188]

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 322.35 | 649.55 |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.63 | 298.15 | 151.8 | 358.15 |

**621-43: 1,1′-(2,2,3,3,4,4-Hexafluoropentane-1,5-diyl)bis(3-butyl-1H-imidazolium-1-yl) ditrifluoromethanesulfonate**

**Abbreviation**: $[C_4H_9(CF_2)_3IM][TfO]_2$
**Molecular Formula**: $C_{21}H_{28}F_{12}N_4O_6S_2$
**Molar Mass**: 724.58
**Structure**:



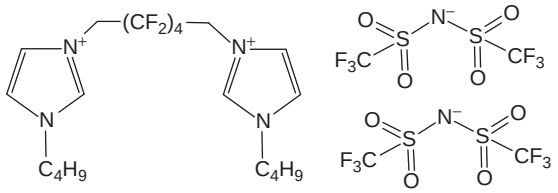
**Character**:
**Application**: [188]

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 345.95 | 618.24 |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.48 | 298.15 |

**622-31: 1,1′-(2,2,3,3,4,4,5,5-Octafluorohexane-1,6-diyl) bis(3-butyl-1H-imidazolium-1-yl) di[bis(trifluoromethanesulfonyl)amide]**

**Abbreviation**: $[C_4H_9(CF_2)_4IM][NTf_2]_2$
**Molecular Formula**: $C_{24}H_{28}F_{20}N_6O_8S_4$
**Molar Mass**: 1036.74
**Structure**:



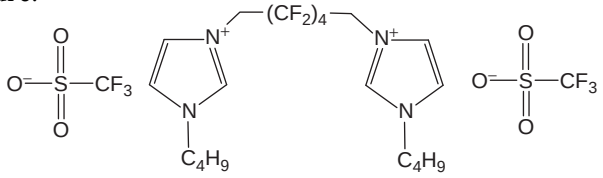
**Character**:
**Application**: [188]

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 347.55 | 648.25 |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.64 | 298.15 | 226.6 | 358.15 |

**622-43: 1,1′-(2,2,3,3,4,4,5,5-Octafluorohexane-1,6-diyl) bis(3-butyl-1H-imidazolium-1-yl) ditrifluoromethanesulfonate**

**Abbreviation**: $[C_4H_9(CF_2)_4IM][TfO]_2$
**Molecular Formula**: $C_{22}H_{28}F_{14}N_4O_6S_2$
**Molar Mass**: 774.58
**Structure**:



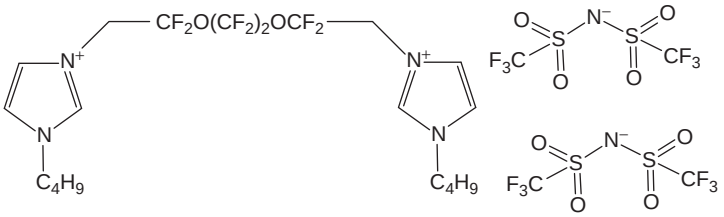
**Character**:
**Application**: [188]

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 421.16 | 619.18 |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.51 | 298.15 |

**623-31: 1,1′-(2,2,4,4,5,5,7,7-Octafluoro-3,6-dioxaoctane-1,8-diyl)bis(3-butyl-1H-imidazolium-1-yl) di[bis(trifluoromethanesulfonyl)amide]**

**Abbreviation**: $[C_4H_9(CF_2)_4O_2IM][NTf_2]_2$
**Molecular Formula**: $C_{24}H_{28}F_{20}N_6O_{10}S_4$
**Molar Mass**: 1068.74
**Structure**:



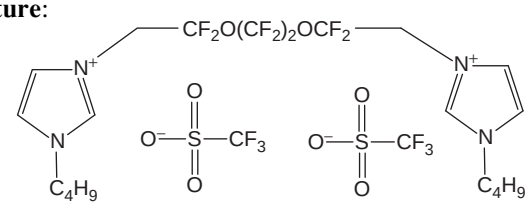
**Character**:
**Application**: [188]

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 341.35 | 627.45 |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.67 | 298.15 |

**623-43: 1,1′-(2,2,4,4,5,5,7,7-Octafluoro-3,6-dioxaoctane-1,8-diyl)bis(3-butyl-1H-imidazolium-1-yl) ditrifluoromethanesulfonate**

**Abbreviation**: $[C_4H_9(CF_2)_4O_2IM][TfO]_2$
**Molecular Formula**: $C_{22}H_{28}F_{14}N_4O_8S_2$
**Molar Mass**: 806.58
**Structure**:



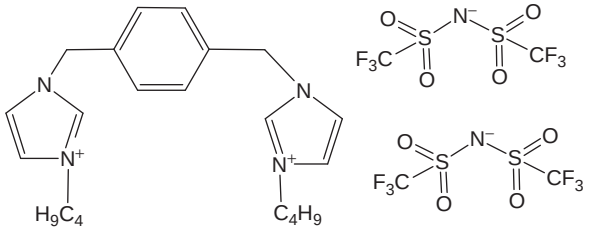

**Character**:
**Application**: [188]

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 373.43 | 625.49 |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.63 | 298.15 |

**624-31: 1,1′-(1,4-Phenylenebismethylene)bis(3-butyl-1H-imidazolium-1-yl) di[bis(trifluoromethanesulfonyl)amide]**

**Abbreviation**: $[C_4H_9(Ph)IM][NTf_2]_2$
**Molecular Formula**: $C_{26}H_{32}F_{12}N_6O_8S_4$
**Molar Mass**: 912.81
**Structure**:



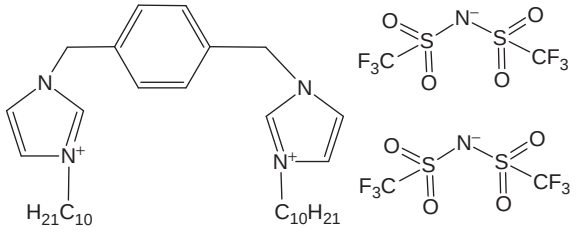

**Character**:
**Application**: [188]

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 322.45 | 647.15 |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.53 | 298.15 |

**625-31: 1,1′-(1,4-Phenylenebismethylene)bis(3-decyl-1H-imidazolium-1-yl) di[bis(trifluoromethanesulfonyl)amide]**

**Abbreviation**: $[C_{10}H_{21}(Ph)IM][NTf_2]_2$
**Molecular Formula**: $C_{38}H_{56}F_{12}N_6O_8S_4$
**Molar Mass**: 1081.13
**Structure**:



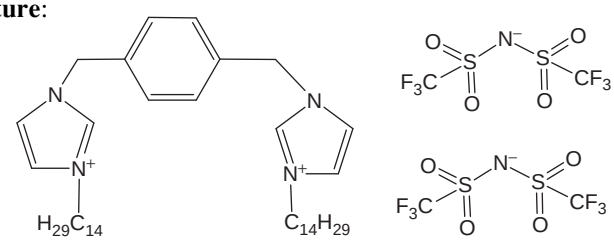

**Character**:
**Application**: [188]

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 341.55 | 659.95 |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.36 | 298.15 |

**626-31: 1,1′-(1,4-Phenylenebismethylene)bis(3-tetradecyl-1H-imidazolium-1-yl) di[bis(trifluoromethanesulfonyl) amide]**

**Abbreviation**: $[C_{14}H_{29}(Ph)IM][NTf_2]_2$
**Molecular Formula**: $C_{46}H_{72}F_{12}N_6O_8S_4$
**Molar Mass**: 1193.34
**Structure**:



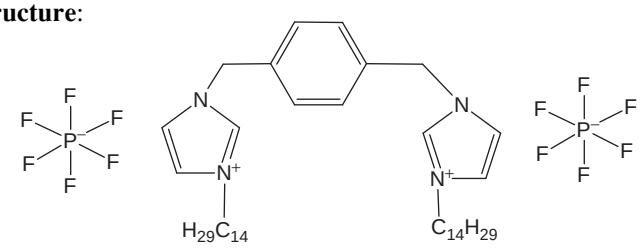

**Character**:
**Application**: [188]

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 356.15 | 654.65 |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) |
|---|---|---|---|---|
| 1.31 | 298.15 | 106.5 | 358.15 | 0.00019 |

**626-51: 1,1′-(1,4-Phenylenebismethylene)bis(3-tetradecyl-1H-imidazolium-1-yl) dihexafluorophosphate**

**Abbreviation**: $[C_{14}H_{29}(Ph)IM][PF_6]_2$
**Molecular Formula**: $C_{42}H_{72}F_{12}N_4P_2$
**Molar Mass**: 922.98
**Structure**:



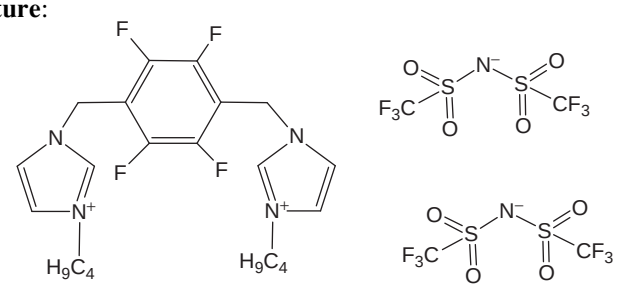
**Character**:
**Application**: [188]

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 383.85 | 577.95 |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.24 | 298.15 |

**627-31:1,1′-(2,3,5,6-Tetrafluoro-1,4-phenylenebismethylene)bis(3-butyl-1H-imidazolium-1-yl) di[bis(trifluoromethanesulfonyl)amide]**

**Abbreviation**: $[C_4H_9(PhF_4)IM][NTf_2]_2$
**Molecular Formula**: $C_{26}H_{28}F_{16}N_6O_8S_4$
**Molar Mass**: 984.77
**Structure**:



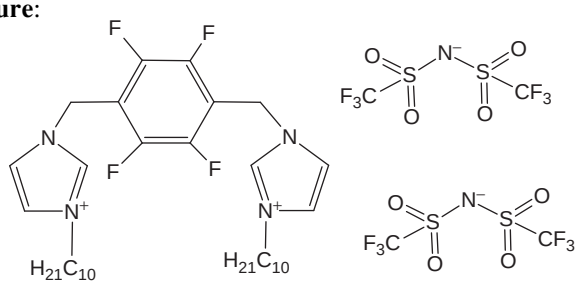
**Character**:
**Application**: [188]

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 345.15 | 672.25 |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.69 | 298.15 | 123.8 | 358.15 |

**628-31:1,1′-(2,3,5,6-Tetrafluoro-1,4-phenylenebismethylene)bis(3-decyl-1H-imidazolium-1-yl) di[bis(trifluoromethanesulfonyl)amide]**

**Abbreviation**: $[C_{10}H_{21}(PhF_4)IM][NTf_2]_2$
**Molecular Formula**: $C_{38}H_{52}F_{16}N_6O_8S_4$
**Molar Mass**: 1153.09
**Structure**:



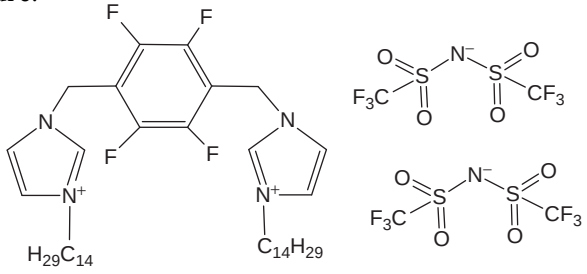
**Character**:
**Application**: [188]

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 351.35 | 647.85 |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) |
|---|---|---|
| 1.45 | 298.15 | 0.000285 |

**629-31:1,1′-(2,3,5,6-Tetrafluoro-1,4-phenylenebismethylene)bis(3-tetradecyl-1H-imidazolium-1-yl) di[bis(trifluoromethanesulfonyl)amide]**

**Abbreviation**: $[C_{14}H_{29}(PhF_4)IM][NTf_2]_2$
**Molecular Formula**: $C_{46}H_{68}F_{16}N_6O_8S_4$
**Molar Mass**: 1265.30
**Structure**:



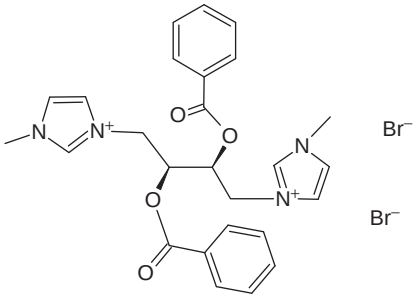
**Character**:
**Application**: [188]

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 361.85 | 649.95 |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) |
|---|---|---|---|---|
| 1.43 | 298.15 | 213.4 | 358.15 | 0.000198 |

**630-12: 1,4-Di-(1-methylimidazolium)-2,3-di(benzoyl oxygen)-butane dibromide**

**Abbreviation**: $[MIm\text{-}CH_2CHBzO]_2Br_2$
**Molecular Formula**: $C_{26}H_{28}Br_2N_4O_4$
**Molar Mass**: 620.33
**Structure**:



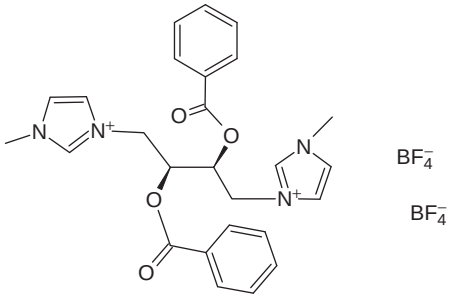

**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 455.15-456.15 [165] |

| α | Concentration | $T$ (K) | Solvent |
|---|---|---|---|
| −31.0 [165] | 2 | 293.15 | Ethanol |

**630-21: 1,4-Di-(1-methylimidazolium)-2,3-di(benzoyl oxygen)-butane ditetrafluoroborate**

**Abbreviation**: $[MIm\text{-}CH_2CHBzO]_2[BF_4]_2$
**Molecular Formula**: $C_{26}H_{28}B_2F_8N_4O_4$
**Molar Mass**: 634.13
**Structure**:



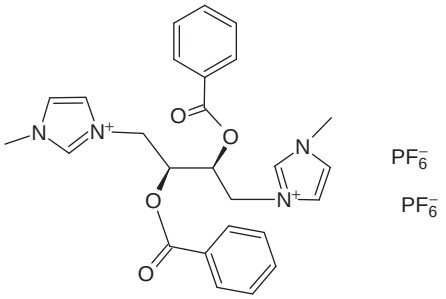

**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 402.15-403.15 [165] |

| α | Concentration | $T$ (K) | Solvent |
|---|---|---|---|
| −10.1 [165] | 2 | 293.15 | Acetone |

**630-51: 1,4-Di-(1-methylimidazolium)-2,3-di(benzoyl oxygen)-butane dihexafluorophosphate**

**Abbreviation**: $[MIm\text{-}CH_2CHBzO]_2[PF_6]_2$
**Molecular Formula**: $C_{26}H_{28}F_{12}N_4O_4P_2$
**Molar Mass**: 750.45
**Structure**:




**Character**:
**Application**:

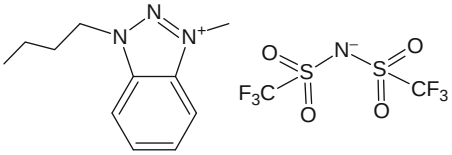
| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 361.15-363.15 [165] | 508.15 [189] |

| α | Concentration | $T$ (K) | Solvent |
|---|---|---|---|
| −36.3 [165] | 2 | 293.15 | Acetone |

# 3 Triazolium

### 71-31: 1-Butyl-3-methylbenzotriazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation:** [Bt14][TFSI]
**Molecular Formula:** $C_{13}H_{16}F_6N_4O_4S_2$
**Molar Mass:** 470.42
**Structure:**

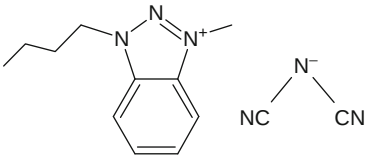


**Character:**
**Application:**

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 302.15 [190] | 213.15 [190] | 588.15 [190] |

### 71-34: 1-Butyl-3-methylbenzotriazolium dicyanoamide

**Abbreviation:** [Bt14][dca]
**Molecular Formula:** $C_{13}H_{16}N_6$
**Molar Mass:** 256.31
**Structure:**

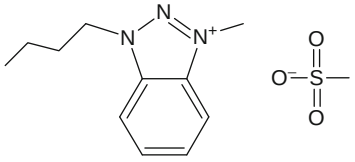


**Character:**
**Application:**

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 208.15 [190] | 458.15 [190] |

### 71-42: 1-Butyl-3-methylbenzotriazolium mesylate

**Abbreviation:** [Bt14][mesy]
**Molecular Formula:** $C_{12}H_{19}N_3O_3S$
**Molar Mass:** 285.37
**Structure:**

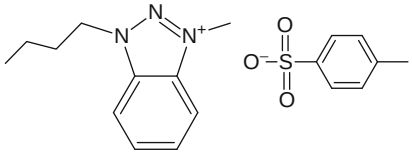


**Character:**
**Application:**

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 330.15 [190] | 235.15 [190] | 473.15 [190] |

### 71-47: 1-Butyl-3-methylbenzotriazolium tosylate

**Abbreviation**: [Bt14][Tos]
**Molecular Formula**: $C_{18}H_{23}N_3O_3S$
**Molar Mass**: 361.46
**Structure**:

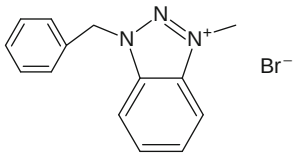


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 393.15 [190] | 498.15 [190] |

### 72-12: 1-Benzyl-3-methylbenzotriazolium bromide

**Abbreviation**: [Bt1Bn]Br
**Molecular Formula**: $C_{14}H_{14}BrN_3$
**Molar Mass**: 304.18
**Structure**:

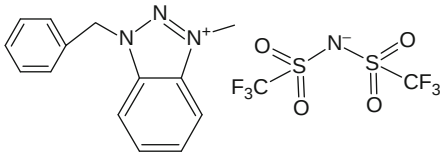


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 446.15 [190] | 443.15 [190] |

### 72-31: 1-Benzyl-3-methylbenzotriazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [Bt1Bn][TFSI]
**Molecular Formula**: $C_{16}H_{14}F_6N_4O_4S_2$
**Molar Mass**: 504.43
**Structure**:

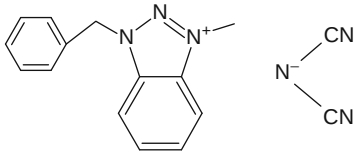


**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 342.15 [190] | 246.15 [190] | 553.15 [190] |

### 72-34: 1-Benzyl-3-methylbenzotriazolium dicyanoamide

**Abbreviation**: [Bt1Bn][dca]
**Molecular Formula**: $C_{16}H_{14}N_6$
**Molar Mass**: 290.32
**Structure**:

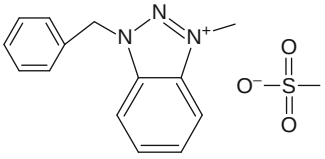


**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 239.15 [190] | 428.15 [190] |

### 72-42: 1-Benzyl-3-methylbenzotriazolium mesylate

**Abbreviation**: [Bt1Bn][mesy]
**Molecular Formula**: $C_{15}H_{17}N_3O_3S$
**Molar Mass**: 319.38
**Structure**:

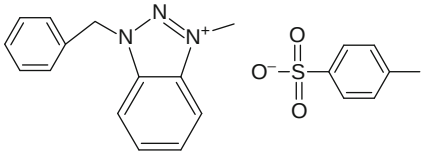


**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 365.15 [190] | 261.15 [190] | 453.15 [190] |

### 72-47: 1-Benzyl-3-methylbenzotriazolium tosylate

**Abbreviation**: [Bt1Bn][Tos]
**Molecular Formula**: $C_{21}H_{21}N_3O_3S$
**Molar Mass**: 395.47
**Structure**:

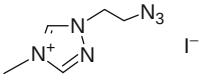


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 416.15 [190] | 478.15 [190] |

### 73-13: 1-(2-Azidoethyl)-4-methyl-1,2,4-triazolium iodine

**Abbreviation**: $[(CH_2)_2N_3C_1Taz]I$
**Molecular Formula**: $C_5H_9N_6I$
**Molar Mass**: 280.07
**Structure**:

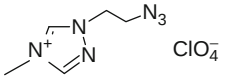


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 327.15 [191] |

### 73-14: 1-(2-Azidoethyl)-4-methyl-1,2,4-triazolium perchlorate

**Abbreviation**: $[(CH_2)_2N_3C_1Taz][ClO_4]$
**Molecular Formula**: $C_5H_9N_6ClO_4$
**Molar Mass**: 252.62
**Structure**:



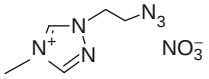
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 221.15 [191] | 465.15 [191] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.6 [191] | 298.15 |

### 73-39: 1-(2-Azidoethyl)-4-methyl-1,2,4-triazolium nitrate

**Abbreviation**: $[(CH_2)_2N_3C_1Taz][NO_3]$
**Molecular Formula**: $C_5H_9N_7O_3$
**Molar Mass**: 215.17
**Structure**:



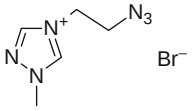
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 216.15 [191] | 392.15 [191] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.49 [191] | 298.15 |

### 74-12: 1-Methyl-4-(2-azidoethyl)-1,2,4-triazolium bromide

**Abbreviation**: $[Me(CH_2)_2N_3Taz]Br$
**Molecular Formula**: $C_5H_9N_6Br$
**Molar Mass**: 233.07
**Structure**:

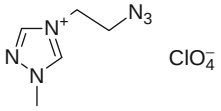


**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 228.15 [191] |

### 74-14: 1-Methyl-4-(2-azidoethyl)-1,2,4-triazolium perchlorate

**Abbreviation**: $[Me(CH_2)_2N_3Taz][ClO_4]$
**Molecular Formula**: $C_5H_9N_6ClO_4$
**Molar Mass**: 252.62
**Structure**:



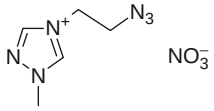
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 336.15 [191] | 425.15 [191] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.59 [191] | 298.15 |

### 74-39: 1-Methyl-4-(2-azidoethyl)-1,2,4-triazolium nitrate

**Abbreviation**: $[Me(CH_2)_2N_3Taz][NO_3]$
**Molecular Formula**: $C_5H_9N_7O_3$
**Molar Mass**: 215.17
**Structure**:



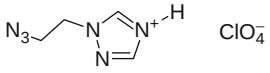
**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 416.15 [191] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.45 [191] | 298.15 |

### 75-14: 1-(2-Azidoethyl)-1,2,4-triazolium perchlorate

**Abbreviation**: $[N_3(CH_2)_2Taz][ClO_4]$
**Molecular Formula**: $C_4H_7N_6ClO_4$
**Molar Mass**: 238.59
**Structure**:



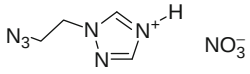
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 217.15 [191] | 423.15 [191] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.61 [191] | 298.15 |

### 75-39: 1-(2-Azidoethyl)-1,2,4-triazolium nitrate

**Abbreviation**: $[N_3(CH_2)_2Taz][NO_3]$
**Molecular Formula**: $C_4H_7N_7O_3$
**Molar Mass**: 201.14
**Structure**:



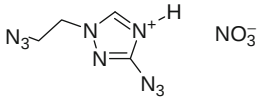
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 372.15 [191] | 443.15 [191] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.6 [191] | 298.15 |

### 76-39: 1-(2-Azidoethyl)-3-azido-1,2,4-triazolium nitrate

**Abbreviation**: $[N_3(CH_2)_2N_3Taz][NO_3]$
**Molecular Formula**: $C_4H_6N_{10}O_3$
**Molar Mass**: 242.16
**Structure**:



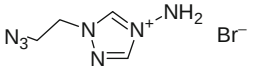
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 219.15 [191] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.58 [191] | 298.15 |

### 77-12: 1-(2-Azidoethyl)-4-amino-1,2,4-triazolium bromide

**Abbreviation**: $[N_3(CH_2)_2NH_2Taz]Br$
**Molecular Formula**: $C_4H_8N_7Br$
**Molar Mass**: 234.06
**Structure**:

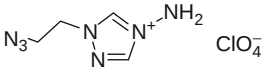


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 358.15 [191] |

### 77-14: 1-(2-Azidoethyl)-4-amino-1,2,4-triazolium perchlorate

**Abbreviation**: $[N_3(CH_2)_2NH_2Taz][ClO_4]$
**Molecular Formula**: $C_4H_8N_7ClO_4$
**Molar Mass**: 253.6
**Structure**:



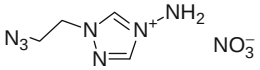
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 227.15 [191] | 491.15 [191] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.63 [191] | 298.15 |

### 77-39: 1-(2-Azidoethyl)-4-amino-1,2,4-triazolium nitrate

**Abbreviation**: $[N_3(CH_2)_2NH_2Taz][NO_3]$
**Molecular Formula**: $C_4H_8N_8O_3$
**Molar Mass**: 216.16
**Structure**:



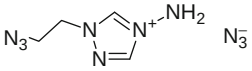
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 343.15 [191] | 426.15 [191] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.57 [191] | 298.15 |

### 77-318: 1-(2-Azidoethyl)-4-amino-1,2,4-triazolium Azide

**Abbreviation**: $[N_3(CH_2)_2NH_2Taz]N_3$
**Molecular Formula**: $C_4H_8N_{10}$
**Molar Mass**: 196.17
**Structure**:

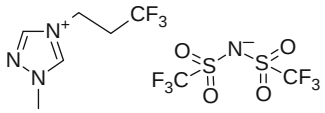


**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 379.15 [192] |

### 78-31: 1-Methyl-4-(3,3,3-trifluoropropyl)-1,2,4-triazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: $[C_1(CH_2)_2CF_3Taz][NTf_2]$
**Molecular Formula**: $C_8H_9F_9N_4O_4S_2$
**Molar Mass**: 460.3
**Structure**:



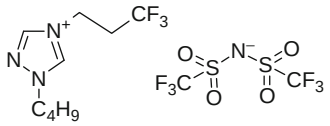
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 215.15 [193] | 649.15 [193] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.66 [193] | 297.15 |

### 79-31: 1-Butyl-4-(3,3,3-trifluoropropyl)-1,2,4-triazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: $[C_4(CH_2)_2CF_3Taz][NTf_2]$
**Molecular Formula**: $C_{11}H_{15}F_9N_4O_4S_2$
**Molar Mass**: 502.38
**Structure**:



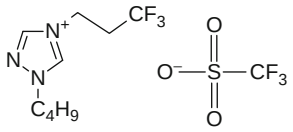
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 206.15 [193] | 668.15 [193] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.603 [193] | 297.15 |

### 79-43: 1-Butyl-4-(3,3,3-trifluoropropyl)-1,2,4-triazolium trifluoromethanesulfonate

**Abbreviation**: $[C_4(CH_2)_2CF_3Taz][TfO]$
**Molecular Formula**: $C_{10}H_{15}F_6N_3SO_3$
**Molar Mass**: 371.3
**Structure**:

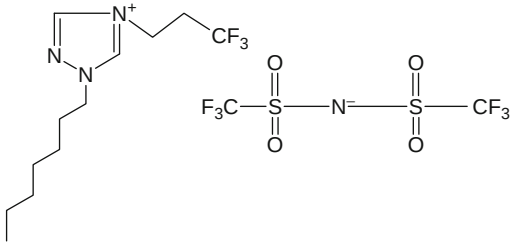


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 306.15 [193] |

### 710-31:1-Heptyl-4-(3,3,3-trifluoropropyl)-1,2,4-triazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: $[C_7(CH_2)_2CF_3Taz][NTf_2]$
**Molecular Formula**: $C_{14}H_{21}F_9N_4O_4S_2$
**Molar Mass**: 544.46
**Structure**:



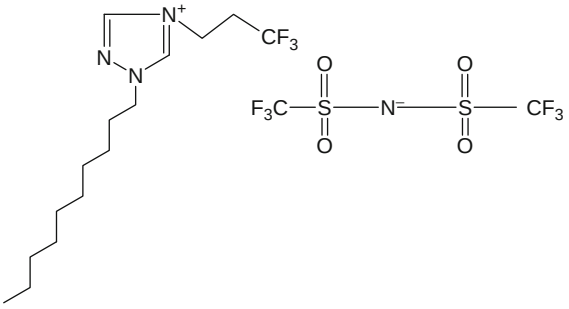
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 206.15 [193] | 675.15 [193] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.52 [193] | 297.15 |

**711-31:1-Decyl-4-(3,3,3-trifluoropropyl)-1,2,4-triazolium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: $[C_{10}(CH_2)_2CF_3Taz][NTf_2]$
**Molecular Formula**: $C_{17}H_{27}F_9N_4O_4S_2$
**Molar Mass**: 586.54
**Structure**:



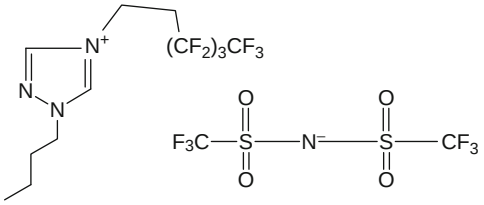
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 205.15 [193] | 673.15 [193] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.49 [193] | 297.15 |

**712-31:1-Butyl-4-(1H,1H,2H,2H-perfluorohexyl)-1,2,4-triazolium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: $[C_4C_6F_9Taz][NTf_2]$
**Molecular Formula**: $C_{14}H_{15}F_{15}N_4O_4S_2$
**Molar Mass**: 652.40
**Structure**:

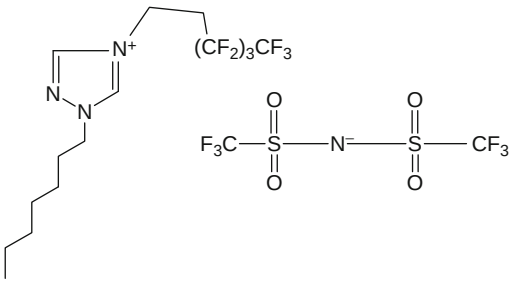


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 342.15 [193] | 667.15 [193] |

**713-31:1-Heptyl-4-(1H,1H,2H,2H-perfluorohexyl)-1,2,4-triazolium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: $[C_7C_6F_9Taz][NTf_2]$
**Molecular Formula**: $C_{17}H_{21}F_{15}N_4O_4S_2$
**Molar Mass**: 694.48
**Structure**:

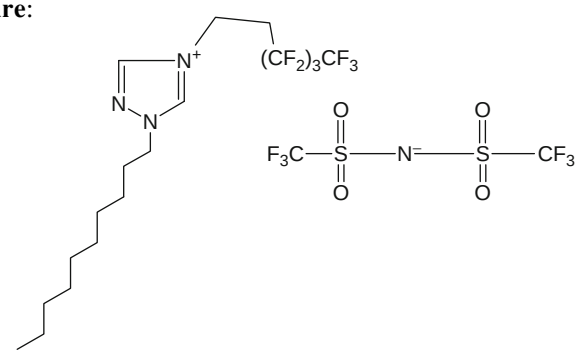


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 328.15 [193] | 669.15 [193] |

**714-31:1-Decyl-4-(1H,1H,2H,2H-perfluorohexyl)-1,2,4-triazolium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: $[C_{10}C_6F_9Taz][NTf_2]$
**Molecular Formula**: $C_{20}H_{27}F_{15}N_4O_4S_2$
**Molar Mass**: 736.56
**Structure**:

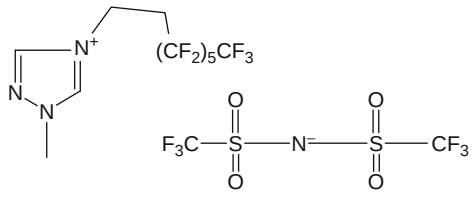


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 326.15 [193] | 669.15 [193] |

**715-31:1-Methyl-4-(1H,1H,2H,2H-perfluorooctyl)-1,2,4-triazolium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: $[C_1C_8F_{13}Taz][NTf_2]$
**Molecular Formula**: $C_{13}H_9F_{19}N_4O_4S_2$
**Molar Mass**: 710.34
**Structure**:

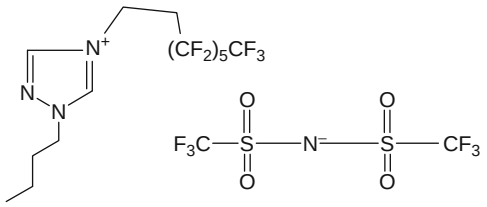


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 335.15 [193] | 654.15 [193] |

**716-31:1-Butyl-4-(1H,1H,2H,2H-perfluorooctyl)-1,2,4-triazolium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: $[C_4C_8F_{13}Taz][NTf_2]$
**Molecular Formula**: $C_{16}H_{15}F_{19}N_4O_4S_2$
**Molar Mass**: 752.42
**Structure**:

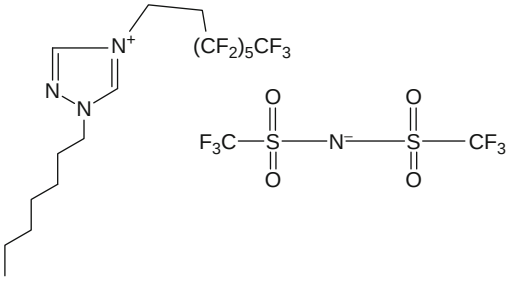


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 301.15 [193] | 641.15 [193] |

**717-31:1-Heptyl-4-(1H,1H,2H,2H-perfluorooctyl)-1,2,4-triazolium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: $[C_7C_8F_{13}Taz][NTf_2]$
**Molecular Formula**: $C_{19}H_{21}F_{19}N_4O_4S_2$
**Molar Mass**: 794.5
**Structure**:

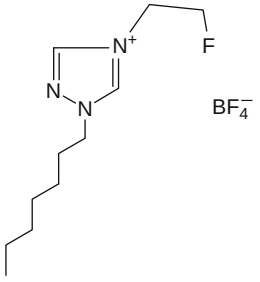


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 295.15 [193] | 678.15 [193] |

**718-21: 1-Heptyl-4-(1-fluoroethyl)-1,2,4-triazolium tetrafluoroborate**

**Abbreviation**: $[C_7C_2FTaz][BF_4]$
**Molecular Formula**: $C_{11}H_{21}BF_5N_3$
**Molar Mass**: 301.11
**Structure**:

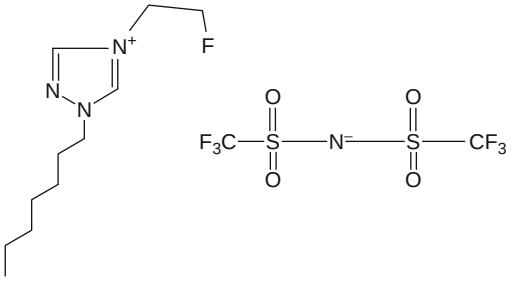


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 325.15 [193] | 609.15 [193] |

**718-31: 1-Heptyl-4-(1-fluoroethyl)-1,2,4-triazolium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: $[C_7C_2FTaz][NTf_2]$
**Molecular Formula**: $C_{13}H_{21}F_7N_4O_4S_2$
**Molar Mass**: 494.45
**Structure**:



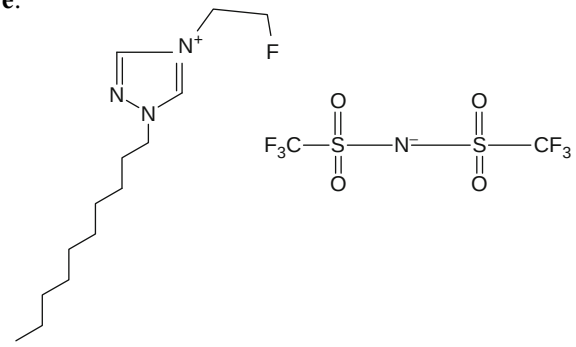
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 203.15 [193] | 632.15 [193] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.393 [193] | 297.15 |

**719-31: 1-Decyl-4-(1-fluoroethyl)-1,2,4-triazolium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: $[C_{10}C_2FTaz][NTf_2]$
**Molecular Formula**: $C_{16}H_{27}F_7N_4O_4S_2$
**Molar Mass**: 536.53
**Structure**:



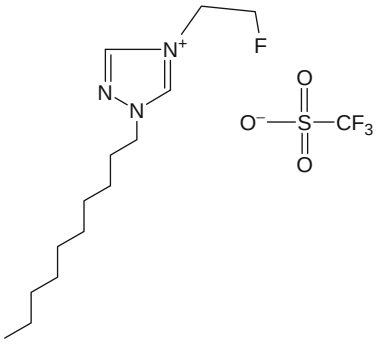
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 211.15 [193] | 698.15 [193] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.37 [193] | 297.15 |

**719-43: 1-Decyl-4-(1-fluoroethyl)-1,2,4-triazolium trifluoromethanesulfonate**

**Abbreviation**: $[C_{10}C_2FTaz][OTf]$
**Molecular Formula**: $C_{15}H_{27}F_4N_3SO_3$
**Molar Mass**: 405.45
**Structure**:

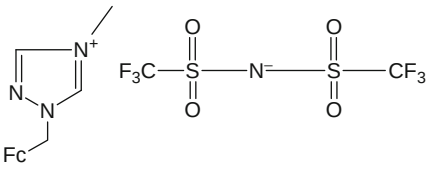


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 319.15 [193] | 635.15 [193] |

**720-31: 1-(Ferrocenylmethyl)-4-methyltriazolium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: $[FcC_1Taz][NTf_2]$
**Molecular Formula**: $C_{16}H_{16}F_6FeN_4O_4S_2$
**Molar Mass**: 562.29
**Structure**:



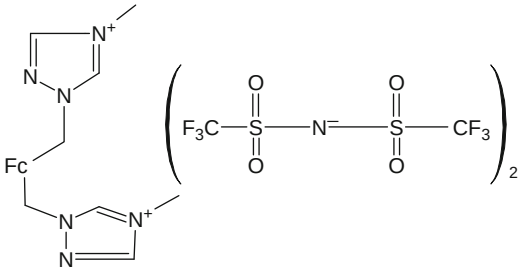
**Character**:
**Application**:

| $T_d$ (K) | $T_g$ (K) |
|---|---|
| 522.15 [153] | 257.15 [153] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.85 [153] | 297.15 |

### 721-31: 1,1′-Bis((1-(4-methyl)-1,2,4-triazolium)methyl) ferrocene di[bis((trifluoromethyl)sulfonyl)imide]

**Abbreviation**: $[Fc(Taz)_2][NTf_2]_2$
**Molecular Formula**: $C_{22}H_{22}F_{12}FeN_8O_8S_4$
**Molar Mass**: 938.55
**Structure**:



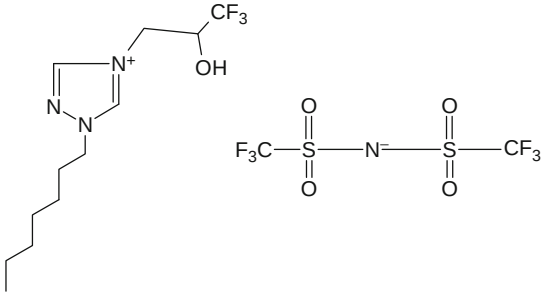
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 262.15 [153] | 564.15 [153] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.88 [153] | 297.15 |

### 722-31: 1-Heptyl-4-(3,3,3-trifluoro-2-propanol)triazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: $[C_7CF_3CH(OH)CH_2Taz][NTf_2]$
**Molecular Formula**: $C_{14}H_{21}F_9N_4O_5S_2$
**Molar Mass**: 560.46
**Structure**:



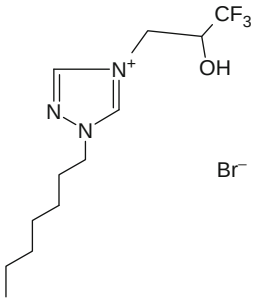
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 221.45 [194] | 588.15 [194] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.43 [194] | 297.15 |

### 722-12: 1-Heptyl-4-(3,3,3-trifluoro-2-propanol)triazolium bromide

**Abbreviation**: $[C_7CF_3CH(OH)CH_2Taz]Br$
**Molecular Formula**: $C_{12}H_{21}F_3N_3OBr$
**Molar Mass**: 360.21
**Structure**:

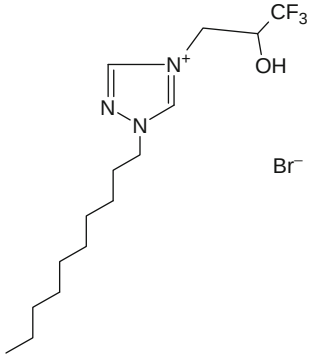


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 484.05 [194] |

### 723-12: 1-Decyl-4-(3,3,3-trifluoro-2-propanol)triazolium bromide

**Abbreviation**: $[C_{10}CF_3CH(OH)CH_2Taz]Br$
**Molecular Formula**: $C_{15}H_{27}F_3N_3OBr$
**Molar Mass**: 402.29
**Structure**:

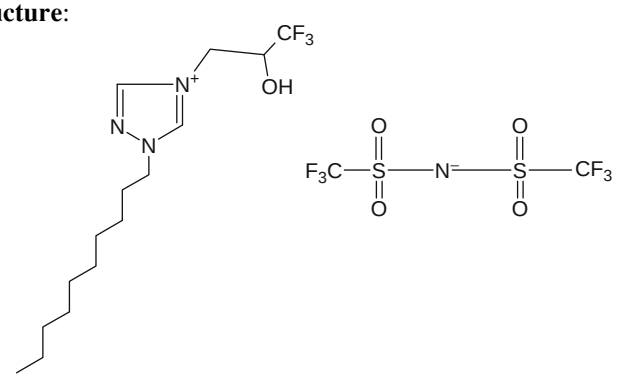


**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 493.95 [194] |

### 723-31: 1-Decyl-4-(3,3,3-trifluoro-2-propanol)triazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: $[C_{10}CF_3CH(OH)CH_2Taz][NTf_2]$
**Molecular Formula**: $C_{17}H_{27}F_9N_4O_5S_2$
**Molar Mass**: 602.54
**Structure**:



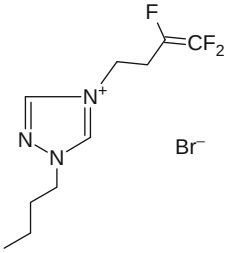
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 225.95 [194] | 593.15 [194] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.4 [194] | 297.15 |

### 724-12: 1-Butyl-4-(3,4,4-trifluoro-3-butenyl)triazolium bromide

**Abbreviation**: $[C_4(CH_2)_2CF{=}CF_2Taz]Br$
**Molecular Formula**: $C_{10}H_{15}F_3N_3Br$
**Molar Mass**: 314.15
**Structure**:

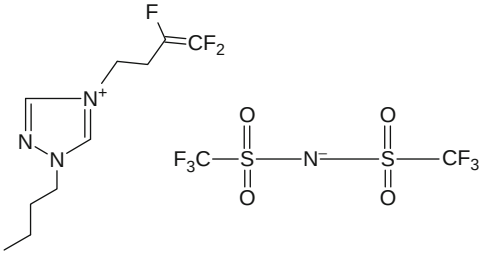


**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 341.65 [194] |

### 724-31: 1-Butyl-4-(3,4,4-trifluoro-3-butenyl)triazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: $[C_4(CH_2)_2CF{=}CF_2Taz][NTf_2]$
**Molecular Formula**: $C_{12}H_{15}F_9N_4O_4S_2$
**Molar Mass**: 514.39
**Structure**:



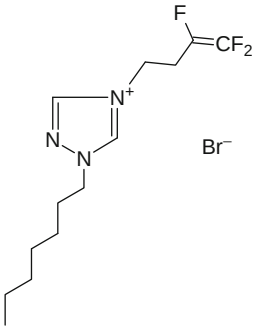
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 250.75 [194] | 632.15 [194] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.57 [194] | 297.15 |

### 725-12: 1-Heptyl-4-(3,4,4-trifluoro-3-butenyl)triazolium bromide

**Abbreviation**: $[C_7(CH_2)_2CF{=}CF_2Taz]Br$
**Molecular Formula**: $C_{13}H_{21}F_3N_3Br$
**Molar Mass**: 356.23
**Structure**:

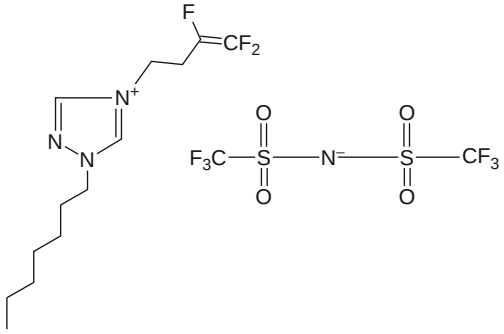


**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 544.15 [194] |

**725-31: 1-Heptyl-4-(3,4,4-trifluoro-3-butenyl)triazolium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: $[C_7(CH_2)_2CF{=}CF_2Taz][NTf_2]$
**Molecular Formula**: $C_{15}H_{21}F_9N_4O_4S_2$
**Molar Mass**: 556.47
**Structure**:



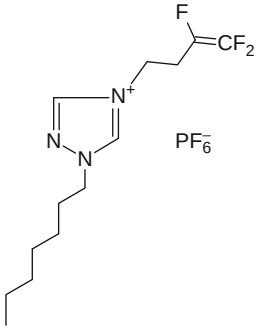
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 216.75 [194] | 623.15 [194] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.44 [194] | 297.15 |

**725-51: 1-Heptyl-4-(3,4,4-trifluoro-3-butenyl)triazolium hexafluorophosphate**

**Abbreviation**: $[C_7(CH_2)_2CF{=}CF_2Taz][PF_6]$
**Molecular Formula**: $C_{13}H_{21}F_9N_3P$
**Molar Mass**: 421.29
**Structure**:

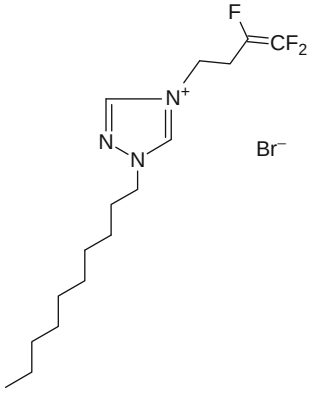


**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 623.15 [194] |

**726-12: 1-Decyl-4-(3,4,4-trifluoro-3-butenyl)triazolium bromide**

**Abbreviation**: $[C_{10}(CH_2)_2CF{=}CF_2Taz]Br$
**Molecular Formula**: $C_{16}H_{27}F_3N_3Br$
**Molar Mass**: 398.30
**Structure**:

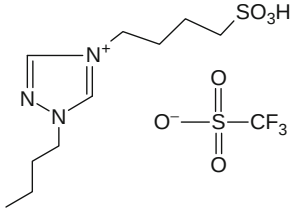


**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 559.15 [194] |

**729-43: 1-Butyl-4-(butyl-4-sulfonic acid)triazolium trifluoromethanesulfonate**

**Abbreviation**: $[C_4C_4SO_3Taz][TfO]$
**Molecular Formula**: $C_{11}H_{20}F_3N_3O_6S_2$
**Molar Mass**: 411.42
**Structure**:



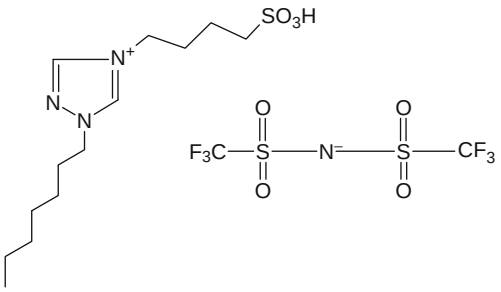
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 232.15 [194] | 606.15 [194] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.48 [194] | 297.15 |

### 730-31: 1-Heptyl-4-(butyl-4-sulfonic acid)triazolium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: $[C_7C_4SO_3HTaz][NTf_2]$
**Molecular Formula**: $C_{15}H_{26}F_6N_4O_7S_3$
**Molar Mass**: 584.58
**Structure**:



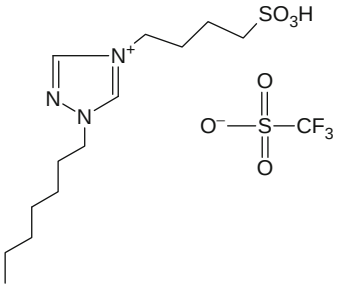
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 228.75 [194] | 681.15 [194] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.52 [194] | 297.15 |

### 730-43: 1-Heptyl-4-(butyl-4-sulfonic acid)triazolium trifluoromethanesulfonate

**Abbreviation**: $[C_7C_4SO_3HTaz][TfO]$
**Molecular Formula**: $C_{14}H_{26}F_3N_3O_6S$
**Molar Mass**: 421.43
**Structure**:



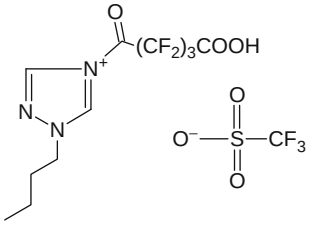
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 232.15 [194] | 634.15 [194] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.43 [194] | 297.15 |

### 731-43: 1-Butyl-4-(2,2,3,3,4,4-hexafluoro-5-oxo-pentanoic acid)triazolium trifluoromethanesulfonate

**Abbreviation**: $[C_4CO(CF_2)_3COOH][TfO]$
**Molecular Formula**: $C_{12}H_{12}F_9N_3O_6S$
**Molar Mass**: 497.29
**Structure**:



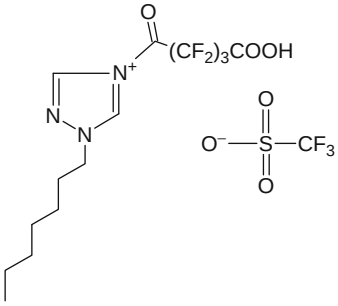
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 205.45 [194] | 527.15 [194] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.63 [194] | 297.15 |

### 732-43: 1-Heptyl-4-(2,2,3,3,4,4-hexafluoro-5-oxo-pentanoic acid)triazolium trifluoromethanesulfonate

**Abbreviation**: $[C_7CO(CF_2)_3COOH][TfO]$
**Molecular Formula**: $C_{15}H_{18}F_9N_3O_6S$
**Molar Mass**: 539.37
**Structure**:



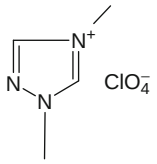
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 234.15 [194] | 527.15 [194] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.46 [194] | 297.15 |

### 733-14: 1,4-Dimethyl-2-H-1,2,4-triazolium perchlorate

**Abbreviation**: $[Me_2Taz][ClO_4]$
**Molecular Formula**: $C_4H_8N_3ClO_4$
**Molar Mass**: 197.58
**Structure**:

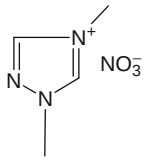


**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 239.15 [181] | 370.15 [181] |

### 733-39: 1,4-Dimethyl-2-H-1,2,4-triazolium nitrate

**Abbreviation**: $[Me_2Taz][NO_3]$
**Molecular Formula**: $C_4H_8N_4O_3$
**Molar Mass**: 160.13
**Structure**:

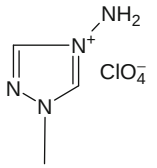


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 274.15 [181] | 433.15 [181] |

### 734-14: 1-Methyl-4-amino-1,2,4-triazolium perchlorate

**Abbreviation**: $[MeNH_2Taz][ClO_4]$
**Molecular Formula**: $C_3H_7N_4ClO_4$
**Molar Mass**: 198.56
**Structure**:



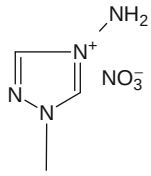
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 359.15 [181, 195] | 532.15 [181, 195] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.66 [195] | 298.15 |

### 734-39: 1-Methyl-4-amino-1,2,4-triazolium nitrate

**Abbreviation:** $[MeNH_2Taz][NO_3]$
**Molecular Formula:** $C_3H_7N_5O_3$
**Molar Mass:** 161.12
**Structure:**



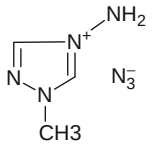
**Character:**
**Application:**

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 327.15 [195] | 213.15 [181, 195] | 494.15 [181, 195] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.55 [195] | 298.15 |

### 734-318: 1-Methyl-4-amino-1,2,4-triazolium azide

**Abbreviation**: $[MeNH_2Taz]N_3$
**Molecular Formula**: $C_3H_7N_7$
**Molar Mass**: 141.13
**Structure**:

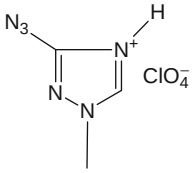



**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 316.15 [192] | 402.15 [192] |

### 735-14: 1-Methyl-3-azido-1,2,4-triazolium perchlorate

**Abbreviation**: $[MeN_3Taz][ClO_4]$
**Molecular Formula**: $C_3H_5N_6ClO_4$
**Molar Mass**: 224.56
**Structure**:



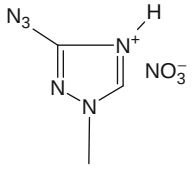

**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 328.15 [181] | 420.15 [181] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.66 [181] | 298.15 |

### 735-39: 1-Methyl-3-azido-1,2,4-triazolium nitrate

**Abbreviation**: $[MeN_3Taz][NO_3]$
**Molecular Formula**: $C_3H_5N_7O_3$
**Molar Mass**: 187.12
**Structure**:



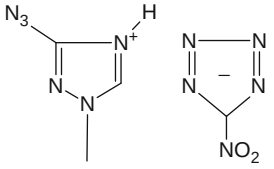

**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 339.15 [181] | 412.15 [181] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.63 [181] | 298.15 |

### 735-1101: 1-Methyl-3-azido-1,2,4-triazolium 5-nitrotetrazolate

**Abbreviation**: $[MeN_3Taz][Ntet]$
**Molecular Formula**: $C_4H_5N_{11}O_2$
**Molar Mass**: 239.16
**Structure**:



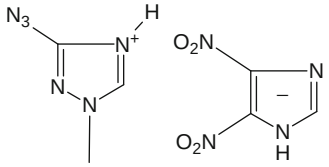

**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 235.15 [196] | 414.15 [196] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.45 [196] | 298.15 |

### 735-1201: 1-Methyl-3-azido-1,2,4-triazolium 4,5-dinitroimidazolate

**Abbreviation**: [$MeN_3$Taz][Nlmi]
**Molecular Formula**: $C_6H_6N_{10}O_4$
**Molar Mass**: 282.17
**Structure**:



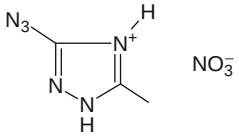
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 353.15 [196] | 418.15 [196] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.6 [196] | 298.15 |

### 736-39: 5-Methyl-3-azido-1,2,4-triazolium nitrate

**Abbreviation**: [$HMeN_3$Taz][$NO_3$]
**Molecular Formula**: $C_3H_5N_7O_3$
**Molar Mass**: 187.12
**Structure**:



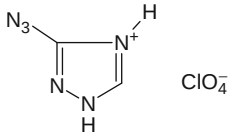
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 391.15 [181] | 409.15 [181] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.61 [181] | 298.15 |

### 737-14: 3-Azido-1,2,4-triazolium perchlorate

**Abbreviation**: [$HN_3$Taz][$ClO_4$]
**Molecular Formula**: $C_2H_3N_6ClO_4$
**Molar Mass**: 210.54
**Structure**:

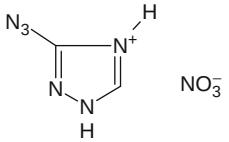


**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 427.15 [181] |

### 737-39: 3-Azido-1,2,4-triazolium nitrate

**Abbreviation**: [$HN_3$Taz][$NO_3$]
**Molecular Formula**: $C_2H_3N_7O_3$
**Molar Mass**: 173.09
**Structure**:



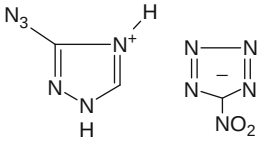
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 420.15 [181] | 447.15 [181] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.76 [181] | 298.15 |

### 737-1101: 3-Azido-1,2,4-triazolium 5-nitrotetrazolate

**Abbreviation**: $[HN_3Taz][Ntet]$
**Molecular Formula**: $C_3H_3N_{11}O_2$
**Molar Mass**: 225.13
**Structure**:



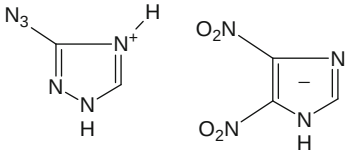
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 238.15 [196] | 434.15 [196] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.53 [196] | 298.15 |

### 737-1201: 3-Azido-1,2,4-triazolium 4,5-dinitroimidazolate

**Abbreviation**: $[HN_3Taz][Nlmi]$
**Molecular Formula**: $C_5H_4N_{10}O_4$
**Molar Mass**: 268.15
**Structure**:



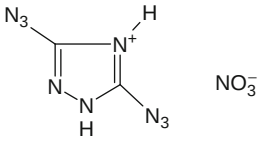
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 365.15 [196] | 431.15 [196] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.7 [196] | 298.15 |

### 738-39: 3,5-Diazido-1,2,4-triazolium nitrate

**Abbreviation**: $[HN_3N_3Taz][NO_3]$
**Molecular Formula**: $C_2H_2N_{10}O_3$
**Molar Mass**: 214.1
**Structure**:

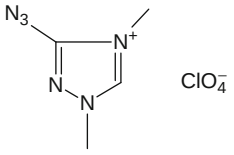


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 370.15 [181] | 409.15 [181] |

### 739-14: 1,4-Dimethyl-3-azido-1,2,4-triazolium perchlorate

**Abbreviation**: $[Me_2N_3Taz][ClO_4]$
**Molecular Formula**: $C_4H_7N_6ClO_4$
**Molar Mass**: 238.59
**Structure**:

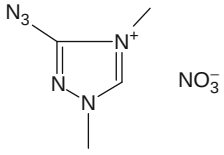


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 341.15 [181] | 420.15 [181] |

### 739-39: 1,4-Dimethyl-3-azido-1,2,4-triazolium nitrate

**Abbreviation:** $[Me_2N_3Taz][NO_3]$
**Molecular Formula:** $C_4H_7N_7O_3$
**Molar Mass:** 201.14
**Structure:**

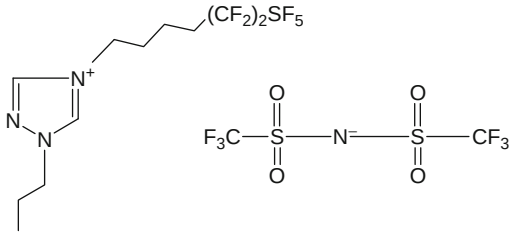


**Character:**
**Application:**

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 371.15 [181] | 402.15 [181] |

### 740-31: 1-Propyl-4-SF5(CF2)2(CH2)4-1,2,4-triazolium bis ((trifluoromethyl)sulfonyl)imide

**Abbreviation:** $[C_3SF_5(CF_2)_2(CH_2)_4Taz][NTf_2]$
**Molecular Formula:** $C_{13}H_{17}F_{15}N_4O_4S_3$
**Molar Mass:** 674.47
**Structure:**



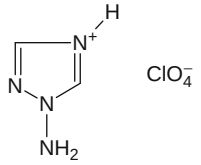
**Character:**
**Application:**

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 218.35 [156] | ≈573.15 [156] |

| $\rho$ (g/cm$^3$) |
|---|
| 1.89 [156] |

### 741-14: 1-Amino-1,2,4-triazolium perchlorate

**Abbreviation:** $[NH_2Taz][ClO_4]$
**Molecular Formula:** $C_2H_5N_4ClO_4$
**Molar Mass:** 184.54
**Structure:**



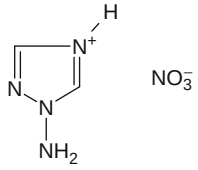
**Character:**
**Application:**

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 364.15 [195] | 508.15 [195] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.8 [195] | 298.15 |

### 741-39: 1-Amino-1,2,4-triazolium nitrate

**Abbreviation:** $[NH_2Taz][NO_3]$
**Molecular Formula:** $C_2H_5N_5O_3$
**Molar Mass:** 147.09
**Structure:**



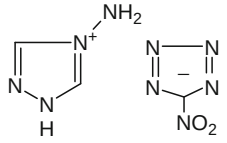
**Character:**
**Application:**

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 394.15 [195] | 422.15 [195] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.69 [195] | 298.15 |

### 742-1101: 4-Amino-1,2,4-triazolium 5-nitrotetrazolate

**Abbreviation:** $[HNH_2Taz][Ntet]$
**Molecular Formula:** $C_3H_5N_9O_2$
**Molar Mass:** 199.13
**Structure:**



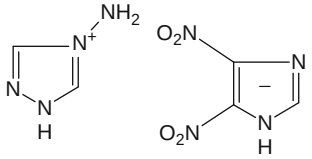
**Character:**
**Application:**

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 375.15 [196] | 463.15 [196] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.58 [196] | 298.15 |

### 742-1201: 4-Amino-1,2,4-triazolium 4,5-dinitroimidazolate

**Abbreviation:** [$HNH_2$Taz][Nlmi]
**Molecular Formula:** $C_5H_6N_8O_4$
**Molar Mass:** 242.15
**Structure:**



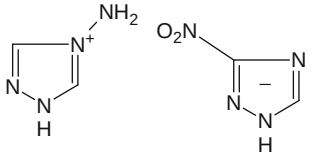
**Character:**
**Application:**

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 410.15 [196] | 422.15 [196] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.65 [196] | 298.15 |

### 742-1301: 4-Amino-1,2,4-triazolium 3-nitro-1,2,4-triazolate

**Abbreviation:** [$HNH_2$Taz][Ntri]
**Molecular Formula:** $C_4H_6N_8O_2$
**Molar Mass:** 198.14
**Structure:**



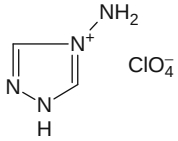
**Character:**
**Application:**

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 337.15 [196] | 471.15 [196] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.5 [196] | 298.15 |

### 742-14: 4-Amino-1,2,4-triazolium perchlorate

**Abbreviation:** [$HNH_2$Taz][$ClO_4$]
**Molecular Formula:** $C_2H_5N_4ClO_4$
**Molar Mass:** 184.54
**Structure:**

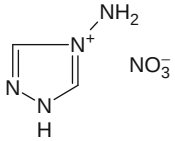


**Character:**
**Application:**

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 356.15 [195] | 481.15 [195] |

### 742-39: 4-Amino-1,2,4-triazolium nitrate

**Abbreviation:** [$HNH_2$Taz][$NO_3$]
**Molecular Formula:** $C_2H_5N_5O_3$
**Molar Mass:** 147.09
**Structure:**



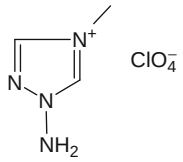
**Character:**
**Application:**

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 342.15 [195] | 454.15 [195] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.64 [195] | 298.15 |

### 743-14: 1-Amino-4-methyl-1,2,4-triazolium perchlorate

**Abbreviation:** $[NH_2MeTaz][ClO_4]$
**Molecular Formula:** $C_3H_7N_4ClO_4$
**Molar Mass:** 198.56
**Structure:**



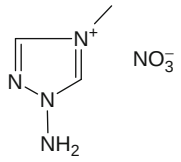
**Character:**
**Application:**

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 381.15 [195] | 526.15 [195] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.66 [195] | 298.15 |

### 743-39: 1-Amino-4-methyl-1,2,4-triazolium nitrate

**Abbreviation:** $[NH_2MeTaz][NO_3]$
**Molecular Formula:** $C_3H_7N_5O_3$
**Molar Mass:** 161.12
**Structure:**



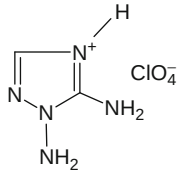
**Character:**
**Application:**

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 211.15 [195] | 490.15 [195] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.51 [195] | 298.15 |

### 744-14: 1,5-Diamino-1,2,4-triazolium perchlorate

**Abbreviation:** $[(NH_2)_2Taz][ClO_4]$
**Molecular Formula:** $C_2H_6N_5ClO_4$
**Molar Mass:** 199.55
**Structure:**

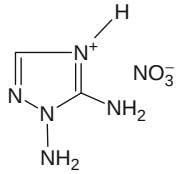


**Character:**
**Application:**

| $T_m$ (K) |
|---|
| 411.15 [195] |

### 744-39: 1,5-Diamino-1,2,4-triazolium nitrate

**Abbreviation:** $[(NH_2)_2Taz][NO_3]$
**Molecular Formula:** $C_2H_6N_6O_3$
**Molar Mass:** 162.11
**Structure:**

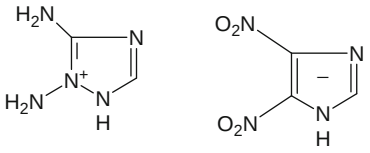


**Character:**
**Application:**

| $T_m$ (K) |
|---|
| 432.15 [195] |

### 745-1201: 2,3-Diamino-1,2,4-triazolium 4,5-dinitroimidazolate

**Abbreviation:** [H(NH$_2$)$_2$Taz][Nlmi]
**Molecular Formula:** $C_5H_7N_9O_4$
**Molar Mass:** 257.17
**Structure:**



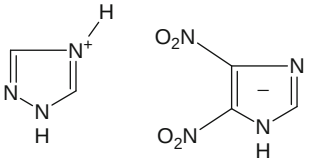
**Character:**
**Application:**

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 426.15 [196] | 438.15 [196] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.64 [196] | 298.15 |

### 746-1201: 1,2,4-Triazolium 4,5-dinitroimidazolate

**Abbreviation:** [Taz][Nlmi]
**Molecular Formula:** $C_5H_5N_7O_4$
**Molar Mass:** 227.14
**Structure:**



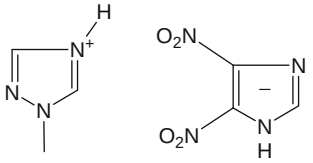
**Character:**
**Application:**

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 429.15 [196] | 438.15 [196] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.73 [196] | 298.15 |

### 747-1201: 1-Methyl-1,2,4-triazolium 4,5-dinitroimidazolate

**Abbreviation:** [MeTaz][Nlmi]
**Molecular Formula:** $C_6H_7N_7O_4$
**Molar Mass:** 241.16
**Structure:**



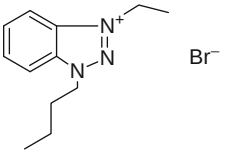
**Character:**
**Application:**

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 375.15 [196] | 423.15 [196] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.66 [196] | 298.15 |

### 748-12: 1-Butyl-3-ethylbenzotriazolium bromide

**Abbreviation:** [Bt24]Br
**Molecular Formula:** $C_{12}H_{18}N_3Br$
**Molar Mass:** 284.19
**Structure:**

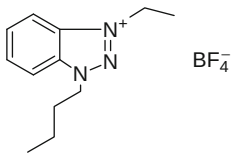


**Character:**
**Application:** Electrochemical organic synthesis

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 238.15 [197] | 448.15 [197] |

### 748-21: 1-Butyl-3-ethylbenzotriazolium tetrafluoroborate

**Abbreviation:** [Bt24][$BF_4$]
**Molecular Formula:** $C_{12}H_{18}N_3BF_4$
**Molar Mass:** 291.10
**Structure:**

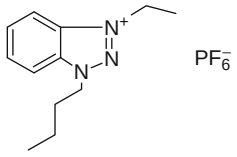


**Character:**
**Application:** Electrochemical organic synthesis

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 218.15 [197] | 589.15 [197] |

### 748-51: 1-Butyl-3-ethylbenzotriazolium hexafluorophosphate

**Abbreviation:** [Bt24][$PF_6$]
**Molecular Formula:** $C_{12}H_{18}N_3PF_6$
**Molar Mass:** 349.26
**Structure:**

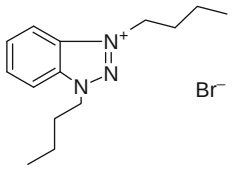


**Character:**
**Application:** Electrochemical organic synthesis

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 374.15 [197] | 618.15 [197] |

### 749-12: 1,3-Dibutylbenzotriazolium bromide

**Abbreviation:** [Bt44]Br
**Molecular Formula:** $C_{14}H_{22}N_3Br$
**Molar Mass:** 312.25
**Structure:**

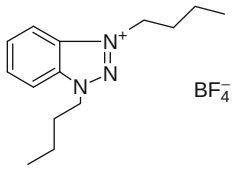


**Character:**
**Application:** Electrochemical organic synthesis

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 361.15 [197] | 443.15 [197] |

### 749-21: 1,3-Dibutylbenzotriazolium tetrafluoroborate

**Abbreviation:** [Bt44][$BF_4$]
**Molecular Formula:** $C_{14}H_{22}N_3BF_4$
**Molar Mass:** 319.15
**Structure:**

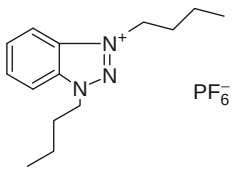


**Character:**
**Application:** Electrochemical organic synthesis

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 358.15 [197] | 553.15 [197] |

### 749-51: 1,3-Dibutylbenzotriazolium hexafluorophosphate

**Abbreviation:** [Bt44][$PF_6$]
**Molecular Formula:** $C_{14}H_{22}N_3PF_6$
**Molar Mass:** 377.31
**Structure:**

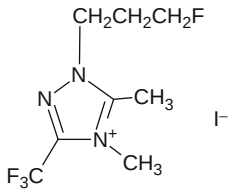


**Character:**
**Application:** Electrochemical organic synthesis

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 386.15 [197] | 592.15 [197] |

### 750-13: 1-(3-Fluoropropyl)-3-trifluoromethyl-4,5-dimethyl-1,2,4-triazolium iodine

**Abbreviation:** [($Me_2$)($CF_3$)(($CH_2$)$_3$F)Taz]I
**Molecular Formula:** $C_8H_{12}F_4N_3I$
**Molar Mass:** 353.1
**Structure:**

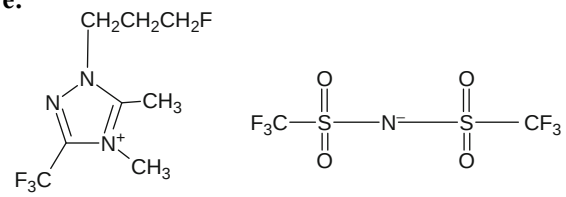


**Character:**
**Application:**

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 388.15 [198] | 523.15 [198] |

**750-31: 1-(3-Fluoropropyl)-3-trifluoromethyl-4,5-dimethyl-1,2,4-triazolium bis(trifluoromethanesulfonyl) amide**

**Abbreviation:** $[(Me_2)(CF_3)((CH_2)_3F)Taz][NTf_2]$
**Molecular Formula:** $C_{10}H_{12}F_{10}N_4O_4S_2$
**Molar Mass:** 506.34
**Structure:**

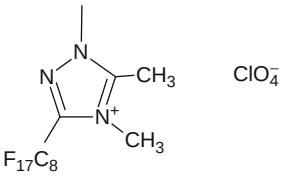


**Character:**
**Application:**

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 322.15 [198] | 596.15 [198] |

**751-14: 1,4,5-Trimethyl-3-perfluorooctyl-1,2,4-triazolium perchlorate**

**Abbreviation:** $[Me_3(C_8F_{17})Taz][ClO_4]$
**Molecular Formula:** $C_{13}H_9C_lF_{17}N_3O_4$
**Molar Mass:** 629.65
**Structure:**

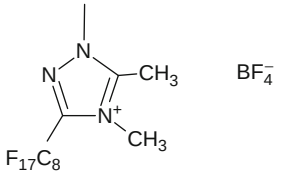


**Character:**
**Application:**

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 363.15 [198] | 567.15 [198] |

**751-21: 1,4,5-Trimethyl-3-perfluorooctyl-1,2,4-triazolium tetrafluoroborate**

**Abbreviation:** $[Me_3(C_8F_{17})Taz][BF_4]$
**Molecular Formula:** $C_{13}H_9BF_{21}N_3$
**Molar Mass:** 617.01
**Structure:**

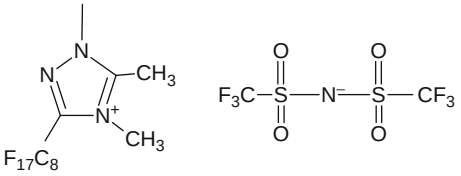


**Character:**
**Application:**

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 371.15 [198] | 579.15 [198] |

**751-31: 1,4,5-Trimethyl-3-perfluorooctyl-1,2,4-triazolium bis(trifluoromethanesulfonyl)amide**

**Abbreviation:** $[Me_3(C_8F_{17})Taz][NTf_2]$
**Molecular Formula:** $C_{15}H_9F_{23}N_4O_4S_2$
**Molar Mass:** 810.35
**Structure:**

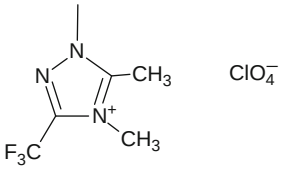


**Character:**
**Application:**

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 354.15 [198] | 586.15 [198] |

### 752-14: 1,4,5-Trimethyl-3-trifluoromethyl-1,2,4-triazolium perchlorate

**Abbreviation:** $[Me_3(CF_3)Taz][ClO_4]$
**Molecular Formula:** $C_6H_9ClF_3N_3O_4$
**Molar Mass:** 279.6
**Structure:**

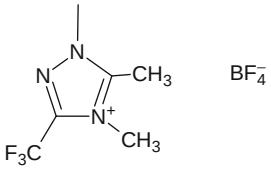


**Character:**
**Application:**

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 401.15 [198] | 543.15 [198] |

### 752-21: 1,4,5-Trimethyl-3-trifluoromethyl-1,2,4-triazolium tetrafluoroborate

**Abbreviation:** $[Me_3(CF_3)Taz][BF_4]$
**Molecular Formula:** $C_6H_9BF_7N_3$
**Molar Mass:** 266.96
**Structure:**

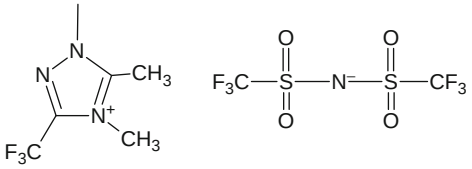


**Character:**
**Application:**

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 403.15 [198] | 599.15 [198] |

### 752-31: 1,4,5-Trimethyl-3-trifluoromethyl-1,2,4-triazolium bis(trifluoromethanesulfonyl)amide

**Abbreviation:** $[Me_3(CF_3)Taz][NTf_2]$
**Molecular Formula:** $C_8H_9F_9N_4O_4S_2$
**Molar Mass:** 460.3
**Structure:**

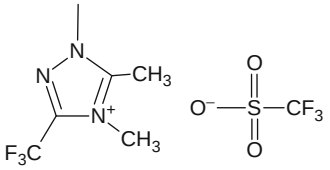


**Character:**
**Application:**

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 343.15 [198] | 641.15 [198] |

### 752-43: 1,4,5-Trimethyl-3-trifluoromethyl-1,2,4-triazolium trifluoromethanesulfonate

**Abbreviation:** $[Me_3(CF_3)Taz][TfO]$
**Molecular Formula:** $C_7H_9F_6N_3O_3S$
**Molar Mass:** 329.22
**Structure:**

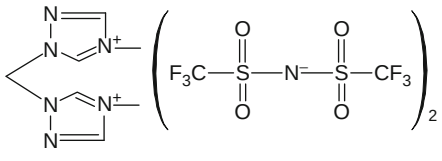


**Character:**
**Application:**

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 410.15 [198] | 597.15 [198] |

### 753-31: 1,1′-Methylene-3,3′-dimethylbis(1,2,4-triazolium) di[bis(trifluoromethanesulfonyl)amide]

**Abbreviation:** $[(MTaz)_2CH_2][NTf_2]_2$
**Molecular Formula:** $C_{11}H_{12}F_{12}N_8O_8S_4$
**Molar Mass:** 740.5
**Structure:**

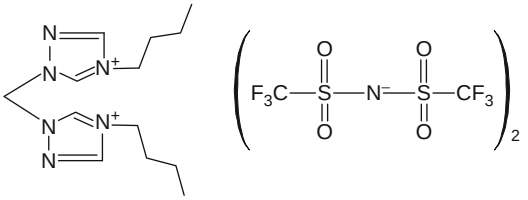


**Character:**
**Application:**

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 247.15 [187] | 598.15 [187] |

### 754-31: 1,1′-Methylene-3,3′-dibutylbis(1,2,4-triazolium) di[bis(trifluoromethanesulfonyl)amide]

**Abbreviation:** $[(BTaz)_2CH_2][NTf_2]_2$
**Molecular Formula:** $C_{17}H_{24}F_{12}N_8O_8S_4$
**Molar Mass:** 824.66
**Structure:**

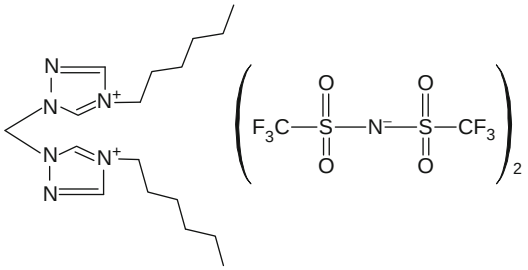


**Character:**
**Application:**

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 234.15 [187] | 594.15 [187] |

### 755-31: 1,1′-Methylene-3,3′-dihexylbis(1,2,4-triazolium) di[bis(trifluoromethanesulfonyl)amide]

**Abbreviation:** $[(HTaz)_2CH_2][NTf_2]_2$
**Molecular Formula:** $C_{21}H_{32}F_{12}N_8O_8S_4$
**Molar Mass:** 880.77
**Structure:**

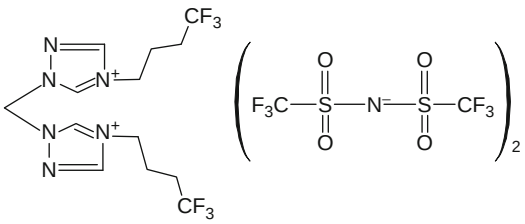


**Character:**
**Application:**

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 367.15 [187] | 615.15 [187] |

### 756-31: 1,1′-Methylene-3,3′-di(4,4,4-trifluorobutyl)bis (1,2,4-triazolium) di[bis(trifluoromethanesulfonyl)amide]

**Abbreviation:** $[(CF_3(CH_2)_3Taz)_2CH_2][NTf_2]_2$
**Molecular Formula:** $C_{17}H_{18}F_{18}N_8O_8S_4$
**Molar Mass:** 932.6
**Structure:**

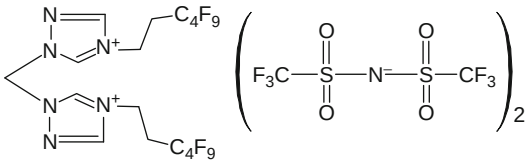


**Character:**
**Application:**

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 228.15 [187] | 635.15 [187] |

### 757-31: 1,1′-Methylene-3,3′-di(3,3,4,4,5,5,6,6,6-nonafluorohexyl)bis(1,2,4-triazolium) di[bis(trifluoromethanesulfonyl)amide]

**Abbreviation:** $[(C_4F_9(CH_2)_2Taz)_2CH_2][NTf_2]_2$
**Molecular Formula:** $C_{21}H_{14}F_{30}N_8O_8S_4$
**Molar Mass:** 1204.6
**Structure:**

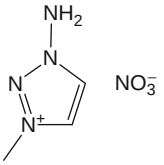


**Character:**
**Application:**

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 220.15 [187] | 622.15 [187] |

### 758-39: 1-Amino-3-methyl-1,2,3-triazolium nitrate

**Abbreviation:** $[NH_2MeTaz][NO_3]$
**Molecular Formula:** $C_3H_7N_5O_3$
**Molar Mass:** 161.12
**Structure:**

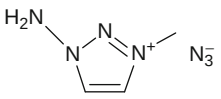


**Character:**
**Application:**

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 359.15–361.15 [199] | 458.15 [199] |

### 758-318: 1-Amino-3-methyl-1,2,3-triazolium azide

**Abbreviation:** $[NH_2MeTaz][N_3]$
**Molecular Formula:** $C_3H_7N_7$
**Molar Mass:** 141.13
**Structure:**

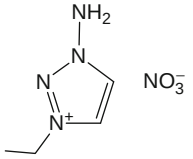


**Character:**
**Application:**

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 323.15 [192] | 429.15 [192] |

### 759-39: 1-Amino-3-ethyl-1,2,3-triazolium nitrate

**Abbreviation:** $[NH_2EtTaz][NO_3]$
**Molecular Formula:** $C_4H_9N_5O_3$
**Molar Mass:** 175.15
**Structure:**

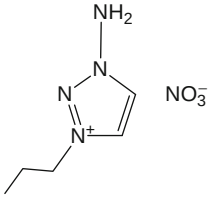


**Character:**
**Application:**

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 303.15–305.15 [199] | 438.15 [199] |

### 760-39: 1-Amino-3-*n*-propyl-1,2,3-triazolium nitrate

**Abbreviation:** $[NH_2PrTaz][NO_3]$
**Molecular Formula:** $C_5H_{11}N_5O_3$
**Molar Mass:** 189.17
**Structure:**

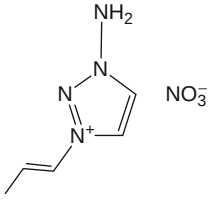


**Character:**
**Application:**

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 306.15–308.15 [199] | 438.15 [199] |

### 761-39: 1-Amino-3-(2-propenyl)-1,2,3-triazolium nitrate

**Abbreviation:** $[NH_2PropTaz][NO_3]$
**Molecular Formula:** $C_5H_9N_5O_3$
**Molar Mass:** 187.16
**Structure:**

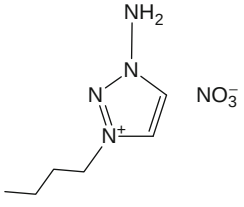


**Character:**
**Application:**

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 281.15–284.15 [199] | 408.15 [199] |

### 762-39: 1-Amino-3-*n*-butyl-1,2,3-triazolium nitrate

**Abbreviation:** $[NH_2BuTaz][NO_3]$
**Molecular Formula:** $C_6H_{13}N_5O_3$
**Molar Mass:** 203.2
**Structure:**

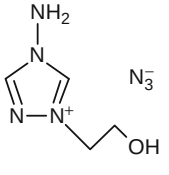


**Character:**
**Application:**

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 321.15–323.15 [199] | 448.15 [199] |

### 764-318: 1-(2-Hydroxyethyl)-4-amino-1,2,4-triazolium azide

**Abbreviation:** $[EtOHNH_2Taz][N_3]$
**Molecular Formula:** $C_4H_9N_7O$
**Molar Mass:** 171.16
**Structure:**

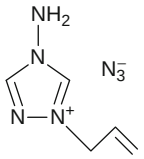


**Character:**
**Application:**

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 223.15 [192] | 402.15 [192] |

### 765-318: 1-Allyl-4-amino-1,2,4-triazolium azide

**Abbreviation:** [AllylNH$_2$Taz][N$_3$]
**Molecular Formula:** $C_5H_9N_7$
**Molar Mass:** 167.17
**Structure:**

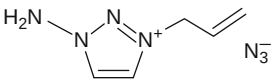


**Character:**
**Application:**

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 216.15 [192] | 382.15 [192] |

### 766-318: 1-Amino-3-allyl-1,2,3-triazolium azide

**Abbreviation:** [NH$_2$AllylTaz][N$_3$]
**Molecular Formula:** $C_5H_9N_7$
**Molar Mass:** 167.17
**Structure:**

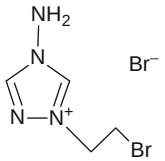


**Character:**
**Application:**

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 211.15 [192] | 387.15 [192] |

### 767-12: 1-(2-Bromoethyl)-4-amino-1,2,4-triazolium bromide

**Abbreviation:** [(CH$_2$)$_2$BrNH$_2$Taz]Br
**Molecular Formula:** $C_4H_8N_4Br_2$
**Molar Mass:** 271.94
**Structure:**



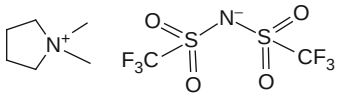
**Character:**
**Application:**

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 404.15 [192] | 427.15 [192] |

# 4 Pyrrolidinium

**81-31: *N*,*N*-dimethylpyrrolidinium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: [P11][TFSI]
**Molecular Formula**: $C_8H_{14}F_6N_2O_4S_2$
**Molar Mass**: 380.33
**Structure**:

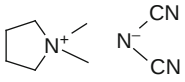


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 378.15 [43] |
| 405.15 ± [200, 201] |

**81-34: *N*,*N*-dimethylpyrrolidinium dicyanoamide**

**Abbreviation**: [P11][dca]
**Molecular Formula**: $C_8H_{14}N_4$
**Molar Mass**: 166.22
**Structure**:

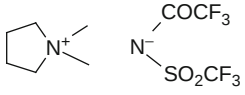


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 388.15 ± 2 [55] |

**81-35: *N*,*N*-dimethylpyrrolidinium 2,2,2-trifluoro-*N*-(trifluoromethylsulfonyl)acetamide**

**Abbreviation**: [P11][TSAC]
**Molecular Formula**: $C_9H_{14}F_6N_2O_3S$
**Molar Mass**: 344.28
**Structure**:

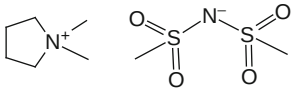


**Character**:
**Application**:

| $T_m$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|
| 287.15 [43] | 80 [43] | 298.15 |

**81-37: *N*,*N*-dimethylpyrrolidinium bis(methylsulfonyl)imide**

**Abbreviation**: [P11][MSI]
**Molecular Formula**: $C_8H_{20}N_2O_4S_2$
**Molar Mass**: 272.39
**Structure**:

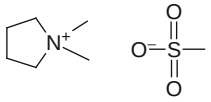


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 313.15-328.15 [57] |

### 81-42: *N*,*N*-dimethylpyrrolidinium mesylate

**Abbreviation**: [P11][mesy]
**Molecular Formula**: $C_7H_{17}NO_3S$
**Molar Mass**: 195.28
**Structure**:

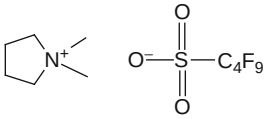


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 473.15 ± 2 [202] |

### 81-45: *N*,*N*-dimethylpyrrolidinium perfluorobutylsulfonate

**Abbreviation**: [P11][NfO]
**Molecular Formula**: $C_{10}H_{14}F_9NO_3S$
**Molar Mass**: 399.27
**Structure**:

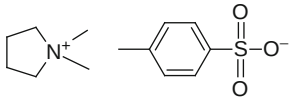


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) | $T_{s\text{-}s}$ (K) |
|---|---|---|
| 471.15 [203] | 633.15 [203] | 272.15, 297.15 [203] |

### 81-47: *N*,*N*-dimethylpyrrolidinium tosylate

**Abbreviation**: [P11][Tos]
**Molecular Formula**: $C_{13}H_{21}NO_3S$
**Molar Mass**: 271.38
**Structure**:

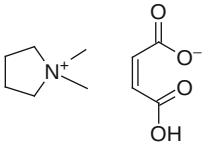


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 440.15 ± 2 [202] |

### 81-635: *N*,*N*′-dimethylpyrrolidinium hydrogen maleate

**Abbreviation**: [P11]M
**Molecular Formula**: $C_{10}H_{17}NO_4$
**Molar Mass**: 215.25
**Structure**:



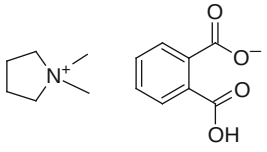
**Character**:
**Application**:

| $T_m$ (K) | $T_f$ (K) |
|---|---|
| 346.85 [70] | 319.65 [70] |

| $K$ (S/m) | $T$ (K) |
|---|---|
| 0.353 [70] | 303.15 |

### 81-636: *N*,*N*′-dimethylpyrrolidinium hydrogen phthalate

**Abbreviation**: [P11]P
**Molecular Formula**: $C_{14}H_{19}NO_4$
**Molar Mass**: 265.30
**Structure**:



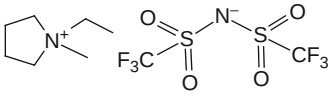
**Character**:
**Application**:

| $T_m$ (K) | $T_f$ (K) |
|---|---|
| 360.85 [70] | 314.65 [70] |

| $K$ (S/m) | $T$ (K) |
|---|---|
| 0.061 [70] | 303.15 |

### 82-31: *N*-methyl-*N*-ethyl-pyrrolidinium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [P12][TFSI]
**Molecular Formula**: $C_9H_{16}F_6N_2O_4S_2$
**Molar Mass**: 394.36
**Structure**:

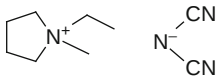


**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 382.15 [204]<br>359.15 ± 1 [200, 201] | 171.15 [200] |

### 82-34: *N*-methyl-*N*-ethyl-pyrrolidinium dicyanoamide

**Abbreviation**: [P12][dca]
**Molecular Formula**: $C_9H_{16}N_4$
**Molar Mass**: 180.25
**Structure**:

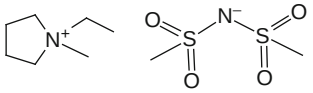


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 263.15 ± 2 [55] |

### 82-37: *N*-methyl-*N*-ethyl-pyrrolidinium bis(methylsulfonyl)imide

**Abbreviation**: [P12][MSI]
**Molecular Formula**: $C_9H_{22}N_2O_4S_2$
**Molar Mass**: 286.42
**Structure**:

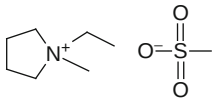


**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 209.15 [57] |

### 82-42: *N*-methyl-*N*-ethyl-pyrrolidinium mesylate

**Abbreviation**: [P12][mesy]
**Molecular Formula**: $C_8H_{19}NO_3S$
**Molar Mass**: 209.31
**Structure**:

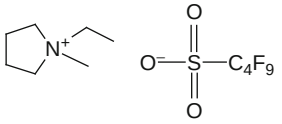


**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 313.15 ± 2 [202] | 167.15 ± 2 [202] |

### 82-45: *N*-methyl-*N*-ethyl-pyrrolidinium perfluorobutylsulfonate

**Abbreviation**: [P12][NfO]
**Molecular Formula**: $C_{11}H_{16}F_9NO_3S$
**Molar Mass**: 413.3
**Structure**:

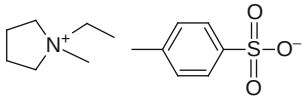


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) | $T_{s\text{-}s}$ (K) |
|---|---|---|
| 449.15 [203] | 623.15 [203] | 214.15, 222.15 [203] |

### 82-47: *N*-methyl-*N*-ethyl-pyrrolidinium tosylate

**Abbreviation**: [P12][Tos]
**Molecular Formula**: $C_{14}H_{23}NO_3S$
**Molar Mass**: 285.41
**Structure**:

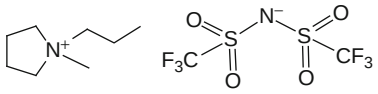


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 393.15 ± 2 [202] |

### 83-31: *N*-methyl-*N*-propyl-pyrrolidinium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [P13][TFSI]
**Molecular Formula**: $C_{10}H_{18}F_6N_2O_4S_2$
**Molar Mass**: 408.39
**Structure**:



**Character**:
**Application**:

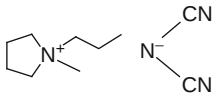
| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 279.15 [204] | 183.15 ± 2 [200, 201] | 704.15 [38] |
| 285.15 ± 1 [200, 201] | 182.15 ± 2 [204] | 613.15 [205] |
| | | 690.15 [206] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.45 ± 5% [200, 201, 204] | 293.15 | 61 [50] | 298.15 | 0.14 [51, 200, 201] | 298.15 |
| 1.27 [206] | 293.15 | 59 [206] | | 0.39 [50] | 298.15 |
| | | | | 0.49 [206] | |

| $C_p$ (J·mol$^{-1}$·K$^{-1}$) [35] | $T$ (K) | $C_p$ (J·mol$^{-1}$·K$^{-1}$) [35] | $T$ (K) | $C_p$ (J·mol$^{-1}$·K$^{-1}$) [35] | $T$ (K) | $C_p$ (J·mol$^{-1}$·K$^{-1}$) [35] | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 544.2 | 283.15 | 557.3 | 303.15 | 570.5 | 323.15 | 583.9 | 343.15 |
| 547.5 | 288.15 | 560.6 | 308.15 | 573.8 | 328.15 | 587.2 | 348.15 |
| 550.7 | 293.15 | 563.9 | 313.15 | 577.2 | 333.15 | 590.6 | 353.15 |
| 554.0 | 298.15 | 567.2 | 318.15 | 580.5 | 338.15 | 594.0 | 358.15 |

### 83-34: *N*-methyl-*N*-propyl-pyrrolidinium dicyanoamide

**Abbreviation**: [P13][dca]
**Molecular Formula**: $C_{10}H_{18}N_4$
**Molar Mass**: 194.28
**Structure**:



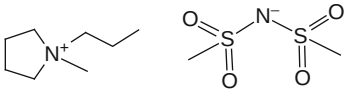
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 238.15 ± 2 [55] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 0.92 ± 5% [55] | 298.15 | 45 ± 5% [55] | 298.15 |

### 83-37: *N*-methyl-*N*-propyl-pyrrolidinium bis(methylsulfonyl)imide

**Abbreviation**: [P13][MSI]
**Molecular Formula**: $C_{10}H_{24}N_2O_4S_2$
**Molar Mass**: 300.44
**Structure**:

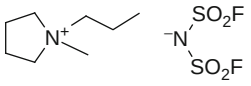


**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 210.15 [57] |

### 83-317: *N*-methyl-*N*-propyl-pyrrolidinium bis(fluorosulfonyl)imide

**Abbreviation**: [P13][FSI]
**Molecular Formula**: $C_8H_{18}F_2N_2O_4S_2$
**Molar Mass**: 308.37
**Structure**:



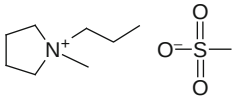
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 255.5 [41] |

| $K$ (S/m) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 0.83 [41] | 298.15 | 52.7 [41] | 298.15 |
| 0.82 [50] | 298.15 | 40 [50] | 298.15 |

### 83-42: *N*-methyl-*N*-propyl-pyrrolidinium mesylate

**Abbreviation**: [P13][mesy]
**Molecular Formula**: $C_9H_{21}NO_3S$
**Molar Mass**: 223.34
**Structure**:

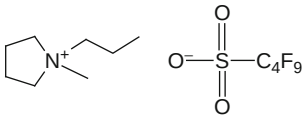


**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 353.15 ± 2 [202] | 201.15 ± 2 [202] |

### 83-45: *N*-methyl-*N*-propyl-pyrrolidinium perfluorobutylsulfonate

**Abbreviation**: [P13][NfO]
**Molecular Formula**: $C_{12}H_{18}F_9NO_3S$
**Molar Mass**: 427.33
**Structure**:

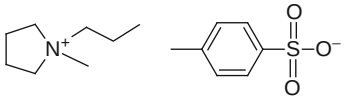


**Character**:
**Application**:

| $T_{s\text{-}s}$ (K) |
|---|
| 209.15, 268.15, 276.15 [203] |

### 83-47: *N*-methyl-*N*-propyl-pyrrolidinium tosylate

**Abbreviation**: [P13][Tos]
**Molecular Formula**: $C_{15}H_{25}NO_3S$
**Molar Mass**: 299.43
**Structure**:

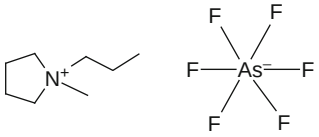


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 353.15 ± 2 [202] |

### 83-85: *N*-methyl-*N*-propyl-pyrrolidinium hexafluoroarsenate

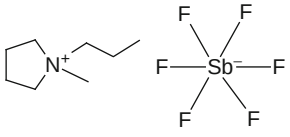
**Abbreviation**: [P13][$AsF_6$]
**Molecular Formula**: $C_8H_{18}F_6NAs$
**Molar Mass**: 317.15
**Structure**:



**Character**:
**Application**:

### 83-86: *N*-methyl-*N*-propyl-pyrrolidinium hexafluoroantimonate

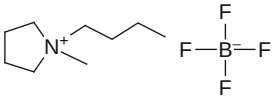
**Abbreviation**: [P13][$SbF_6$]
**Molecular Formula**: $C_8H_{18}F_6NSb$
**Molar Mass**: 363.99
**Structure**:



**Character**:
**Application**:

### 84-21: *N*-methyl-*N*-butyl-pyrrolidinium tetrafluoroborate

**Abbreviation**: [P14][$BF_4$]
**Molecular Formula**: $C_9H_{20}NBF_4$
**Molar Mass**: 229.07
**Structure**:

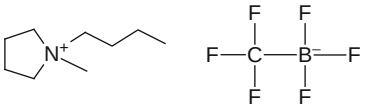


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 351.15 [205] | 676.15 [38] |
| | 583.15 [205] |

### 84-223: *N*-methyl-*N*-butyl-pyrrolidinium trifluoromethyltrifluoroborate

**Abbreviation**: [P14][$CF_3BF_3$]
**Molecular Formula**: $C_{10}H_{20}F_6BN$
**Molar Mass**: 279.07
**Structure**:



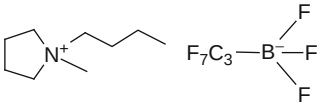
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 255.15 [38] | 509.15 [38] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.2135 [38] | 298.15 | 137 [38] | 298.15 | 0.33 [38] | 298.15 |

### 84-225: *N*-methyl-*N*-butyl-pyrrolidinium (heptafluoro-*n*-propyl)trifluoroborate

**Abbreviation**: [P14][$C_3F_7BF_3$]
**Molecular Formula**: $C_{12}H_{20}F_{10}BN$
**Molar Mass**: 379.09
**Structure**:

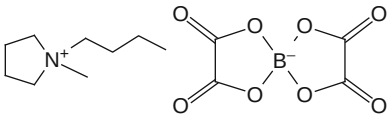


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) | $T_{s\text{-}s}$ (K) |
|---|---|---|
| 326.15 [38] | 600.15 [38] | 158.15, 187.15, 129.15, 301.15 [38] |

### 84-210: *N*-methyl-*N*-butyl-pyrrolidinium bis(oxalato)borate

**Abbreviation**: [P14][BOB]
**Molecular Formula**: $C_{13}H_{20}BNO_8$
**Molar Mass**: 329.11
**Structure**:

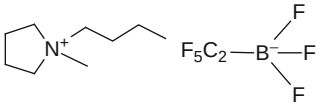


**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 235.35 [91] |

### 84-224: *N*-methyl-*N*-butyl-pyrrolidinium pentafluoroethyltrifluoroborate

**Abbreviation**: [P14][$C_2F_5BF_3$]
**Molecular Formula**: $C_{11}H_{20}F_8BN$
**Molar Mass**: 329.08
**Structure**:



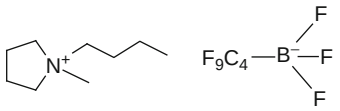
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) | $T_{s\text{-}s}$ (K) |
|---|---|---|
| 295.15 [38] | 584.15 [38] | 180.15 [38] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.2877 [38] | 298.15 | 71 [38] | 298.15 | 0.35 [38] | 298.15 |

### 84-226: *N*-methyl-*N*-butyl-pyrrolidinium (nonafluoro-*n*-butyl)trifluoroborate

**Abbreviation**: [P14][$C_4F_9BF_3$]
**Molecular Formula**: $C_{13}H_{20}F_{12}BN$
**Molar Mass**: 429.1
**Structure**:

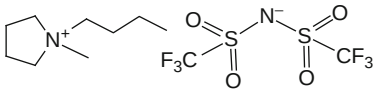


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) | $T_{s\text{-}s}$ (K) |
|---|---|---|
| 334.15 [38] | 597.15 [38] | 159.15, 192.15 [38] |

### 84-31: *N*-methyl-*N*-butyl-pyrrolidinium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [P14][TFSI]
**Molecular Formula**: $C_{11}H_{20}F_6N_2O_4S_2$
**Molar Mass**: 422.41
**Structure**:



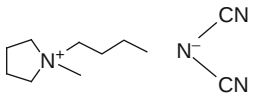
**Character**:
**Application**:

| $T_m$ (K) | $T_{s\text{-}s}$ (K) |
|---|---|
| 251.5 [204] | 243.15 [38] |
| 255.15 ± 1 [200, 201] | |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.379 [31] | 301.15 | 85 ± 5% [200, 201, 204] | 298.15 | 0.22 [200, 201] | 298.15 |
| | | 70 [45] | 298.15 | 0.29 [45] | 298.15 |
| | | 76 [38] | 298.15 | 0.26 [38] | 298.15 |
| | | 67.2 [31] | 301.15 | 0.6 [207] | 333.15 |

### 84-34: *N*-methyl-*N*-butyl-pyrrolidinium dicyanoamide

**Abbreviation**: [P14][dca]
**Molecular Formula**: $C_{11}H_{20}N_4$
**Molar Mass**: 208.3
**Structure**:



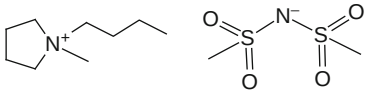
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 218.15 [55] | 167.15 ± 2 [55] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 0.95 ± 5% [55] | 298.15 | 50 ± 5% [55] | 298.15 |
| 0.952 [31] | 301.15 | 45.3 [31] | 301.15 |

### 84-37: *N*-methyl-*N*-butyl-pyrrolidinium bis(methylsulfonyl)imide

**Abbreviation**: [P14][MSI]
**Molecular Formula**: $C_{11}H_{26}N_2O_4S_2$
**Molar Mass**: 314.47
**Structure**:



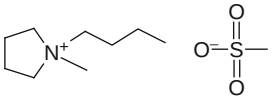
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 215.15 [57] |

| $\rho$ (g/cm$^3$) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|
| 1.28 [57] | 1680 [57] | 293.15 | 0.007 [57] | 298.15 |

### 84-42: *N*-methyl-*N*-butyl-pyrrolidinium mesylate

**Abbreviation**: [P14][mesy]
**Molecular Formula**: $C_{10}H_{23}NO_3S$
**Molar Mass**: 237.36
**Structure**:

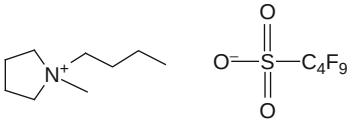


**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 336.15 ± 2 [202] | 205.15 ± 2 [202] |

### 84-45: *N*-methyl-*N*-butyl-pyrrolidinium perfluorobutylsulfonate

**Abbreviation**: [P14][NfO]
**Molecular Formula**: $C_{13}H_{20}F_9NO_3S$
**Molar Mass**: 441.35
**Structure**:

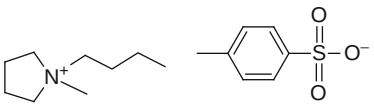


**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) | $T_{s\text{-}s}$ (K) |
|---|---|---|---|
| 367.15 [203] | 194.15 [203] | 623.15 [203] | 278.15 [203] |

### 84-47: *N*-methyl-*N*-butyl-pyrrolidinium tosylate

**Abbreviation**: [P14][Tos]
**Molecular Formula**: $C_{16}H_{27}NO_3S$
**Molar Mass**: 313.46
**Structure**:

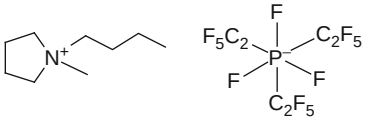


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 388.15 ± 2 [202] |

### 84-54: *N*-methyl-*N*-butyl-pyrrolidinium tris(pentafluoroethyl)trifluorophosphate

**Abbreviation**: [P14][TPTP]
**Molecular Formula**: $C_{15}H_{20}F_{18}PN$
**Molar Mass**: 587.27
**Structure**:

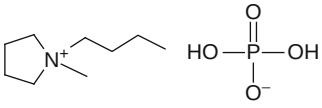


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| <223.15 [36] | 523.15 [36] |

### 84-510: *N*-methyl-*N*-butyl-pyrrolidinium dihydrogen phosphate

**Abbreviation**: [P14][dhp]
**Molecular Formula**: $C_9H_{22}NPO_4$
**Molar Mass**: 239.25
**Structure**:

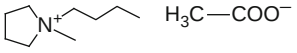


**Character**:
**Application**: Dissolve proteins

| $T_m$ (K) | $T_{s\text{-}s}$ (K) |
|---|---|
| 385.15 [209] | 278.15, 364.15 [209] |

### 84-63: *N*-methyl-*N*-butyl-pyrrolidinium acetate

**Abbreviation**: [P14][OAc]
**Molecular Formula**: $C_{11}H_{23}NO_2$
**Molar Mass**: 201.31
**Structure**:

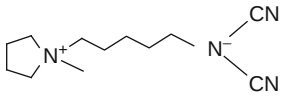


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 354.15 [208] | 423.15 [208] |

### 85-34: *N*-methyl-*N*-hexyl-pyrrolidinium dicyanoamide

**Abbreviation**: [P16][dca]
**Molecular Formula**: $C_{13}H_{24}N_4$
**Molar Mass**: 236.36
**Structure**:



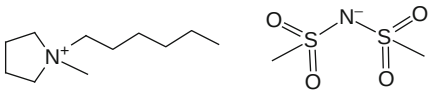
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 262.15 ± 2 [55] | 173.15 ± 2 [55] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 0.92 ± 5% [55] | 298.15 | 45 ± 5% [55] | 298.15 |

### 85-37: *N*-methyl-*N*-hexyl-pyrrolidinium bis(methylsulfonyl)imide

**Abbreviation**: [P16][MSI]
**Molecular Formula**: $C_{13}H_{30}N_2O_4S_2$
**Molar Mass**: 342.52
**Structure**:

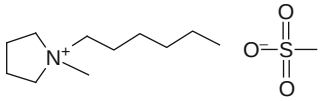


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 218.15 [57] |

### 85-42: *N*-methyl-*N*-hexyl-pyrrolidinium mesylate

**Abbreviation**: [P16][mesy]
**Molecular Formula**: $C_{12}H_{27}NO_3S$
**Molar Mass**: 265.42
**Structure**:

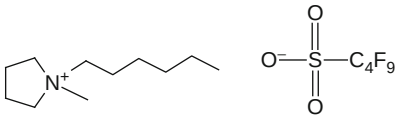


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 359.15 ± 2 [202] |

### 85-45: *N*-methyl-*N*-hexyl-pyrrolidinium perfluorobutylsulfonate

**Abbreviation**: [P16][NfO]
**Molecular Formula**: $C_{15}H_{24}F_9NO_3S$
**Molar Mass**: 469.41
**Structure**:

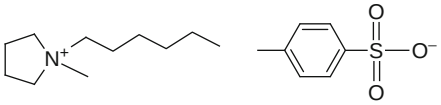


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) | $T_{s\text{-}s}$ (K) |
|---|---|---|
| 393.15 [203] | 623.15 [203] | 213.15, 370.15 [203] |

### 85-47: *N*-methyl-*N*-hexyl-pyrrolidinium tosylate

**Abbreviation**: [P16][Tos]
**Molecular Formula**: $C_{18}H_{31}NO_3S$
**Molar Mass**: 341.52
**Structure**:

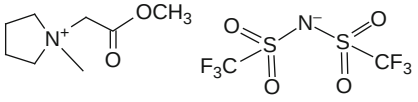


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 410.15 ± 2 [202] |

### 86-31: Methyl-*N*-methylpyrrolidinium-*N*-acetate bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [MEMPyr][TFSI]
**Molecular Formula**: $C_{10}H_{16}F_6N_2O_6S_2$
**Molar Mass**: 438.37
**Structure**:

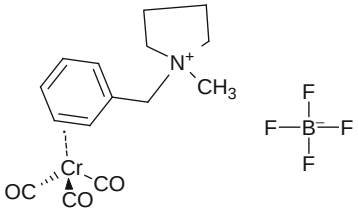


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 231.05 [148] | 563.15 [148] |

### 87-21: *N*-[(1-phenyl-chromium tricarbonyl)-methyl]-*N*-methylpyrrolidinium tetrafluoroborate

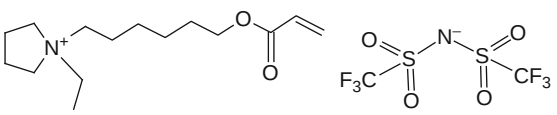
**Abbreviation**: $[Cr(CO)_3(\eta^6\text{-}C_6H_5CH_2NMePyr)][BF_4]$
**Molecular Formula**: $C_{15}H_{18}NCrO_3BF_4$
**Molar Mass**: 399.11
**Structure**:



**Character**:
**Application**: [151]

### 88-31: *N*-(hexyl acrylate)-*N*-ethylpyrrolidinium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [PY2,AcrylateC$_6$][TFSI]
**Molecular Formula**: $C_{17}H_{28}F_6N_2O_6S_2$
**Molar Mass**: 534.54
**Structure**:



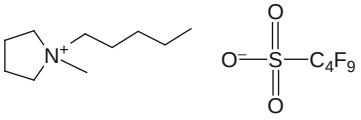
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 196.15 [157] |

| $K$ (S/m) | $T$ (K) |
|---|---|
| 0.092 [157] | 303.15 |

### 89-45: *N*-pentyl-*N*-methylpyrrolidinium perfluorobutylsulfonate

**Abbreviation**: [P1,5][NfO]
**Molecular Formula**: $C_{14}H_{22}F_9NO_3S$
**Molar Mass**: 455.38
**Structure**:

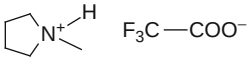


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) | $T_{s\text{-}s}$ (K) |
|---|---|---|
| 389.15-391.15 [203] | 623.15 [203] | 226.15 [203] |

### 810-61: *N*-methylpyrrolidinium trifluoroacetate

**Abbreviation**: [Hmpy][TA]
**Molecular Formula**: $C_7H_{12}F_3NO_2$
**Molar Mass**: 199.17
**Structure**:



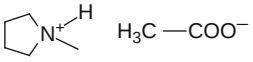
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 311.15 [5] |

| $K$ (S/m) |
|---|
| 0.1 [5] |

### 810-63: *N*-methylpyrrolidinium acetate

**Abbreviation**: [Hmpy][OAc]
**Molecular Formula**: $C_7H_{15}NO_2$
**Molar Mass**: 145.2
**Structure**:



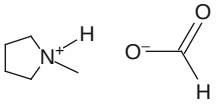
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 165.15 [5] |

| $\eta_D$ (cp) | $K$ (S/m) |
|---|---|
| 3.2 [5] | 0.2 [5] |

### 810-65: *N*-methylpyrrolidinium formate

**Abbreviation**: [Hmpy][HCO$_2$]
**Molecular Formula**: $C_6H_{13}NO_2$
**Molar Mass**: 131.17
**Structure**:



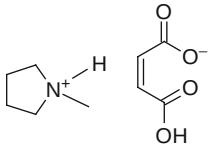
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 241.15 [5] | 157.15 [5] |

| $\eta_D$ (cp) | $K$ (S/m) |
|---|---|
| 7.5 [5] | 2 [5] |

### 810-635: *N*-methylpyrrolidinium hydrogen maleate

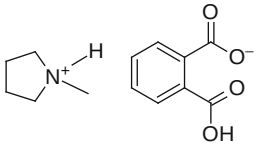
**Abbreviation**: [Hmpy]M
**Molecular Formula**: $C_9H_{15}NO_4$
**Molar Mass**: 201.22
**Structure**:



**Character**:
**Application**: [14]

### 810-636: *N*-methylpyrrolidinium hydrogen phthalate

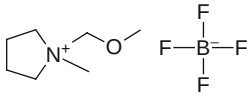
**Abbreviation**: [Hmpy]P
**Molecular Formula**: $C_{13}H_{17}NO_4$
**Molar Mass**: 251.28
**Structure**:



**Character**:
**Application**: [14]

### 811-21: *N*-methoxymethyl-*N*-methylpyrrolidinium tetrafluoroborate

**Abbreviation**: [PY1,1O1][$BF_4$]
**Molecular Formula**: $C_7H_{16}NOBF_4$
**Molar Mass**: 217.01
**Structure**:



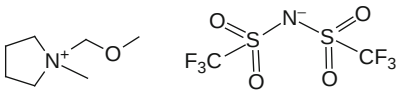
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 255.15 [38] | 159.15 [38] | 563.15 [38] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.2538 [38] | 298.15 | 100 [38] | 298.15 | 0.68 [38] | 298.15 |

### 811-31: *N*-methoxymethyl-*N*-methylpyrrolidinium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [PY1,1O1][TFSI]
**Molecular Formula**: $C_9H_{16}F_6N_2O_5S_2$
**Molar Mass**: 410.36
**Structure**:



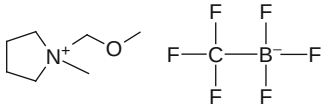
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) | $T_{s\text{-}s}$ (K) |
|---|---|---|
| 252.15 [38] | 542.15 [38] | 225.15 [38] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.4827 [38] | 298.15 | 40 [38] | 298.15 | 0.55 [38] | 298.15 |

### 811-223: *N*-methoxymethyl-*N*-methylpyrrolidinium trifluoromethyltrifluoroborate

**Abbreviation**: [PY1,1O1][$CF_3BF_3$]
**Molecular Formula**: $C_8H_{16}F_6BNO$
**Molar Mass**: 267.02
**Structure**:



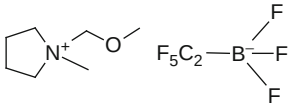
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) | $T_{s\text{-}s}$ (K) |
|---|---|---|
| 269.15 [38] | 500.15 [38] | 240.15, 249.15, 259.15 [38] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.3091 [38] | 298.15 | 46 [38] | 298.15 | 0.77 [38] | 298.15 |

### 811-224: *N*-methoxymethyl-*N*-methylpyrrolidinium pentafluoroethyltrifluoroborate

**Abbreviation**: [PY1,1O1][$C_2F_5BF_3$]
**Molecular Formula**: $C_9H_{16}F_8BNO$
**Molar Mass**: 317.03
**Structure**:



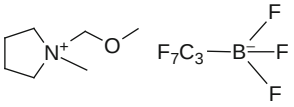
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) | $T_{s\text{-}s}$ (K) |
|---|---|---|
| 299.15 [38] | 572.15 [38] | 222.15, 257.15 [38] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.3776 [38] | 298.15 | 37 [38] | 298.15 | 0.66 [38] | 298.15 |

**811-225: *N*-methoxymethyl-*N*-methylpyrrolidinium (heptafluoro-n-propyl)trifluoroborate**

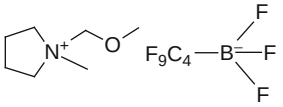
**Abbreviation**: [PY1,1O1][$C_3F_7BF_3$]
**Molecular Formula**: $C_{10}H_{16}F_{10}BNO$
**Molar Mass**: 367.04
**Structure**:



**Character**:
**Application**:

**811-226: *N*-methoxymethyl-*N*-methylpyrrolidinium (nonafluoro-*n*-butyl)trifluoroborate**

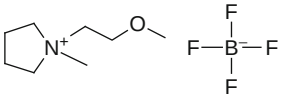
**Abbreviation**: [PY1,1O1][$C_4F_9BF_3$]
**Molecular Formula**: $C_{11}H_{16}F_{12}BNO$
**Molar Mass**: 417.04
**Structure**:



**Character**:
**Application**:

**812-21: *N*-methoxyethyl-*N*-methylpyrrolidinium tetrafluoroborate**

**Abbreviation**: [PY1,1O2][$BF_4$]
**Molecular Formula**: $C_8H_{18}NOBF_4$
**Molar Mass**: 231.04
**Structure**:



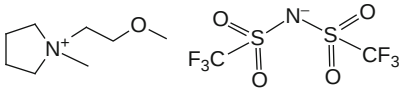
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 285.15 [38] | 180.15 [38] | 663.15 [38] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.2354 [38] | 298.15 | 213 [38] | 298.15 | 0.29 [38] | 298.15 |

**812-31: *N*-methoxyethyl-*N*-methylpyrrolidinium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: [PY1,1O2][TFSI]
**Molecular Formula**: $C_{10}H_{18}F_6N_2O_5S_2$
**Molar Mass**: 424.38
**Structure**:



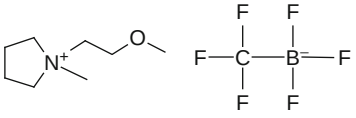
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 182.15 [38] | 689.15 [38] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.4539 [38] | 298.15 | 53 [38] | 298.15 | 0.37 [38] | 298.15 |

**812-223: *N*-methoxyethyl-*N*-methylpyrrolidinium trifluoromethyltrifluoroborate**

**Abbreviation**: [PY1,1O2][$CF_3BF_3$]
**Molecular Formula**: $C_9H_{18}F_6BNO$
**Molar Mass**: 281.05
**Structure**:



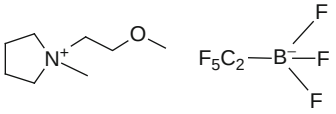
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 257.15 [38] | 505.15 [38] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.2841 [38] | 298.15 | 87 [38] | 298.15 | 0.43 [38] | 298.15 |

**812-224: *N*-methoxyethyl-*N*-methylpyrrolidinium pentafluoroethyltrifluoroborate**

**Abbreviation**: [PY1,1O2][$C_2F_5BF_3$]
**Molecular Formula**: $C_{10}H_{18}F_8BNO$
**Molar Mass**: 331.05
**Structure**:



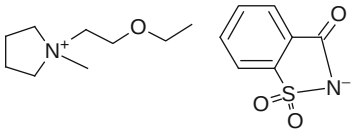
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) | $T_{s\text{-}s}$ (K) |
|---|---|---|
| 270.15 [38] | 562.15 [38] | 157.15 [38] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.349 [38] | 298.15 | 52 [38] | 298.15 | 0.45 [38] | 298.15 |

### 813-312: *N*-ethoxyethyl-*N*-methylpyrrolidinium saccharinate

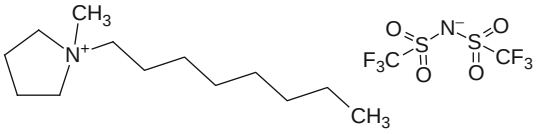
**Abbreviation**: [PY1,2O2][Sac]
**Molecular Formula**: $C_{16}H_{24}N_2O_4S$
**Molar Mass**: 340.44
**Structure**:



**Character**:
**Application**: [16]

### 814-31: 1-Methyl-1-octylpyrrodinium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [P1,8][$NTf_2$]
**Molecular Formula**: $C_{15}H_{28}F_6N_2O_4S_2$
**Molar Mass**: 478.51
**Structure**:



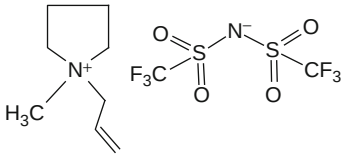
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 192.15 [205] | 598.15 [205] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.441 [205] | 298.15 |

### 815-31: 1-Allyl-1-methylpyrrolidinium bis(trifluoromethanesulfonyl)imide

**Abbreviation**: [AMPyrr][TFSI]
**Molecular Formula**: $C_{10}H_{16}F_6N_2O_4S_2$
**Molar Mass**: 406.36
**Structure**:



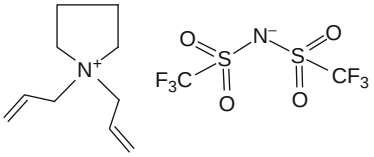
**Character**:
**Application**: [206]

| $T_d$ (K) |
|---|
| 594 |

| $\rho$ (g/cm$^3$) | $\eta_D$ (cp) | $\sigma$ (N/m) |
|---|---|---|
| 1.43 | 52 | 0.57 |

### 816-31: 1,1-Diallylpyrrolidinium bis(trifluoromethanesulfonyl)imide

**Abbreviation**: [AAPyrr][TFSI]
**Molecular Formula**: $C_{12}H_{18}F_6N_2O_4S_2$
**Molar Mass**: 432.4
**Structure**:



**Character**:
**Application**: [206]

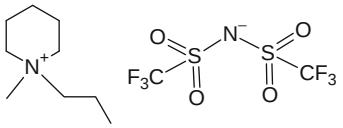
| $T_d$ (K) |
|---|
| 575.15 |

| $\rho$ (g/cm$^3$) | $\eta_D$ (cp) | $\sigma$ (N/m) |
|---|---|---|
| 1.40 | 57 | 0.46 |

# 5 Piperidinium

### 91-31: *N*-methyl-*N*-propylpiperidinium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation:** [PP13][TFSI]
**Molecular Formula:** $C_{11}H_{20}F_6N_2O_4S_2$
**Molar Mass:** 422.41
**Structure:**



**Character:**
**Application:**

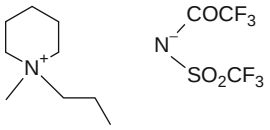
| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 281.85 [210] | 614.15 [205] |
| | 658.15 [206] |

| $\eta_D$ (cp) | $T$ (K) | $\rho$ (g/cm$^3$) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|
| 117 [210] | 298.15 | 1.32 [206] | 0.14 [50] | 298.15 |
| 151 [50] | 298.15 | | 0.29 [206] | |
| 141 [206] | | | 0.151 [210] | 298.15 |

| Electrochemical window (V) | Anodic limit (V) | Cathode limit (V) | $T$ (K) |
|---|---|---|---|
| 5.9 [50] | 2.5 | −3.4 | 298 |

### 91-35: *N*-methyl-*N*-propylpiperidinium 2,2,2-trifluoro-*N*-(trifluoromethylsulfonyl)acetamide

**Abbreviation:** [PP13][TSAC]
**Molecular Formula:** $C_{12}H_{20}F_6N_2O_3S$
**Molar Mass:** 386.36
**Structure:**



**Character:**
**Application:** Electrolyte

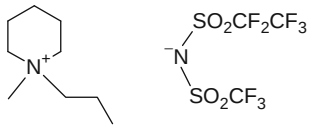
| $T_g$ (K) |
|---|
| 190.15 [59] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.37 [59] | 298.15 | 98 [59] | 298.15 | 0.21 [59] | 298.15 |

| Electrochemical window (V) | Anodic limit (V) | Cathode limit (V) | $T$ (K) |
|---|---|---|---|
| 4.9 [50] | 2.3 | −2.6 | 298 |

### 91-316: *N*-methyl-*N*-propylpiperidinium *N*-(trifluoromethylsulfonyl)pentafluoroethylsulfonamide

**Abbreviation:** [PP13][C1C2]
**Molecular Formula:** $C_{12}H_{20}F_8N_2O_4S_2$
**Molar Mass:** 472.42
**Structure:**



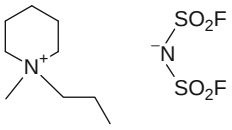
**Character:**
**Application:** Electrolyte

| $T_m$ (K) |
|---|
| 269.15 [59] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.46 [59] | 298.15 | 281 [59] | 298.15 | 0.071 [59] | 298.15 |

### 91-317: *N*-methyl-*N*-propylpiperidinium bis(fluorosulfonyl)imide

**Abbreviation:** [PP13][FSI]
**Molecular Formula:** $C_9H_{20}F_2N_2O_4S_2$
**Molar Mass:** 322.39
**Structure:**



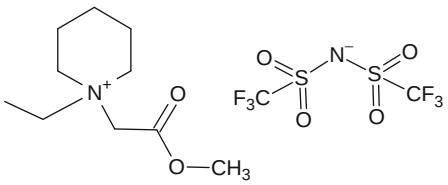
**Character:**
**Application:** Electrolyte

| $K$ (S/m) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 0.37 [50] | 298.15 | 95 [50] | 298.15 |

| Electrochemical window (V) | Anodic limit (V) | Cathode limit (V) | $T$ (K) |
|---|---|---|---|
| 5.6 [50] | 2.4 | −3.2 | 298 |

### 92-31: Methyl *N*-ethyl-piperidinium-*N*-acetate bis((trifluoromethyl)sulfonyl)imide

**Abbreviation:** [EMEPip][TFSI]
**Molecular Formula:** $C_{12}H_{20}F_6N_2O_6S_2$
**Molar Mass:** 466.42
**Structure:**

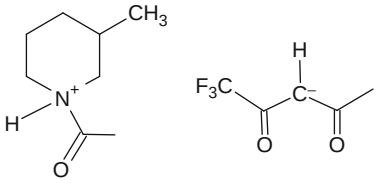


**Character:**
**Application:** Electrolyte

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 230.95 [148] | 608.15 [148] |

### 93-1401: 3-Methyl-*N*-acetyl piperidinium 1,1,1-trifluoro-2,4-pentanedionate

**Abbreviation:** [Me(acetyl)piper][($CF_3CO$)-CH-($COCH_3$)]
**Molecular Formula:** $C_{13}H_{20}F_3NO_3$
**Molar Mass:** 295.30
**Structure:**

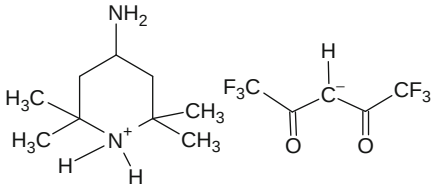


**Character:**
**Application:**

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 0.85 [211] | 298.15 |

### 94-1402: 2,2,6,6-Tetramethyl-4-aminopiperidinium 1,1,1,5,5,5-hexafluoro-2,4-pentanedionate

**Abbreviation:** [(Me)$_4$aminopiper][(CF$_3$CO)$_2$CH]
**Molecular Formula:** $C_{14}H_{22}F_6N_2O_2$
**Molar Mass:** 364.32
**Structure:**



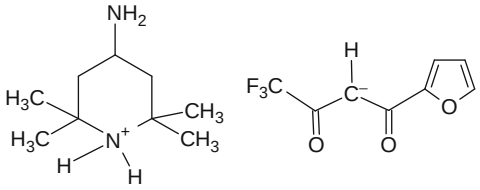
**Character:**
**Application:**

| $T_m$ (K) |
|---|
| 361.15 [211] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.4 [211] | 298.15 |

### 94-1404: 2,2,6,6-Tetramethyl-4-aminopiperidinium 4,4,4-trifluoro-1-(2-furyl)-1,3-butanedionate

**Abbreviation:** [(Me)$_4$aminopiper][(CF$_3$CO)-CH-(COfuran)]
**Molecular Formula:** $C_{17}H_{25}F_3N_2O_3$
**Molar Mass:** 362.38
**Structure:**



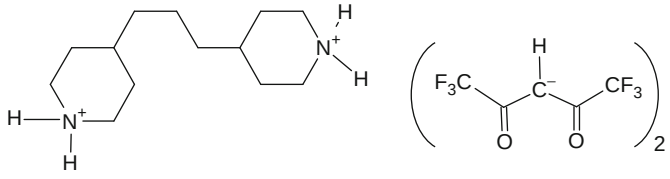
**Character:**
**Application:**

| $T_m$ (K) |
|---|
| 425.15 [211] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.36 [211] | 298.15 |

### 95-1402: 1,3-Bispiperidinepropanium di(1,1,1,5,5,5-hexafluoro-2,4-pentanedionate)

**Abbreviation:** [Bispiperidineprop][(CF$_3$CO)$_2$CH]$_2$
**Molecular Formula:** $C_{23}H_{30}F_{12}N_2O_4$
**Molar Mass:** 626.48
**Structure:**

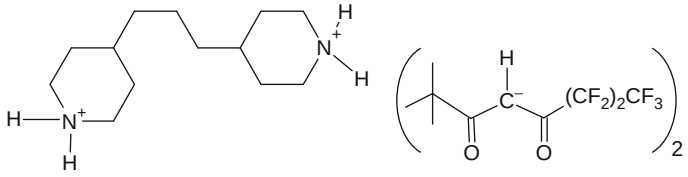


**Character:**
**Application:**

| $T_m$ (K) |
|---|
| 404.15 [211] |

### 95-1403: 1,3-Bispiperidinepropanium di(2,2-dimethyl-6,6,7,7,8,8,8-heptafluoro-3,5-octanedionate)

**Abbreviation:** [Bispiperidineprop][(Me$_3$CCO)-CH-(CO(CF$_2$)$_2$CF$_3$)]$_2$
**Molecular Formula:** $C_{33}H_{48}F_{14}N_2O_4$
**Molar Mass:** 802.72
**Structure:**



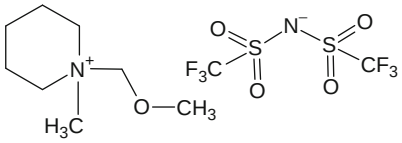
**Character:**
**Application:**

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 425.15 [211] | 215.15 [211] | 440.15 [211] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.31 [211] | 298.15 |

### 96-31: Methyl-*N*-methoxypiperidinium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation:** [PP1.1O1][TFSI]
**Molecular Formula:** $C_{10}H_{18}F_6N_2O_5S_2$
**Molar Mass:** 424.38
**Structure:**



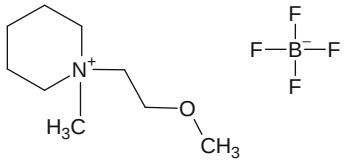
**Character:**
**Application:** Electrolyte

| $T_g$ (K) |
|---|
| 188.15 [59] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.47 [59] | 298.15 | 68 [59] | 298.15 | 0.22 [59] | 298.15 |

### 97-21: Methyl-*N*-(2-methoxyethyl)piperidinium tetrafluoroborate

**Abbreviation:** [PP1.1O2][$BF_4$]
**Molecular Formula:** $C_9H_{20}NOBF_4$
**Molar Mass:** 245.07
**Structure:**



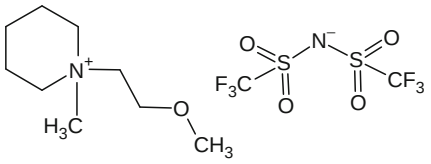
**Character:**
**Application:** Electrolyte

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 196.15 [38] | 660.15 [38] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.2162 [38] | 298.15 | 1240 [38] | 298.15 | 0.06 [38] | 298.15 |

### 97-31: Methyl-*N*-(2-methoxyethyl)piperidinium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation:** [PP1.1O2][TFSI]
**Molecular Formula:** $C_{11}H_{20}F_6N_2O_5S_2$
**Molar Mass:** 438.41
**Structure:**



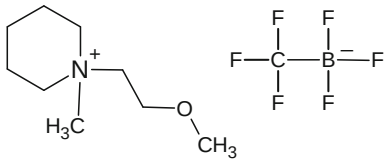
**Character:**
**Application:**

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 191.15 [38] | 690.15 [38] |
| 182.15 [59] | |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.4355 [38] | 298.15 | 102 [38] | 298.15 | 0.2 [38] | 298.15 |
| 1.45 [59] | 298.15 | 55 [59] | 298.15 | 0.27 [59] | 298.15 |

### 97-223: Methyl-*N*-(2-methoxyethyl)piperidinium trifluoromethyltrifluoroborate

**Abbreviation:** [PP1.1O2][$CF_3BF_3$]
**Molecular Formula:** $C_{10}H_{20}F_6BNO$
**Molar Mass:** 295.07
**Structure:**



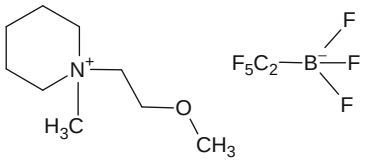
**Character:**
**Application:** Electrolyte

| $T_m$ (K) | $T_{s\text{-}s}$ (K) | $T_d$ (K) |
|---|---|---|
| 257.15 [38] | 227.15 [38] | 507.15 [38] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.2707 [38] | 298.15 | 203 [38] | 298.15 | 0.18 [38] | 298.15 |

### 97-224: Methyl-*N*-(2-methoxyethyl)piperidinium pentafluoroethyltrifluoroborate

**Abbreviation:** [PP1.1O2][$C_2F_5BF_3$]
**Molecular Formula:** $C_{11}H_{20}F_8BNO$
**Molar Mass:** 345.08
**Structure:**



**Character:**
**Application:** Electrolyte

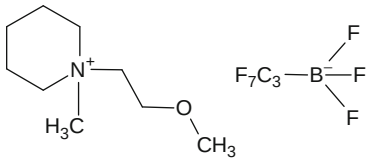
| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 258.15 [38] | 574.15 [38] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.3349 [38] | 298.15 | 112 [38] | 298.15 | 0.22 [38] | 298.15 |

| Electrochemical window (V) | Anodic limit (V) | Cathode limit (V) | $T$ (K) |
|---|---|---|---|
| 5.11 [38] | 2.26 | −2.85 | 298 |

### 97-225: Methyl-*N*-(2-methoxyethyl)piperidinium (heptafluoro-*n*-propyl)trifluoroborate

**Abbreviation:** [PP1.1O2][$C_3F_7BF_3$]
**Molecular Formula:** $C_{12}H_{20}BF_{10}NO$
**Molar Mass:** 395.09
**Structure:**



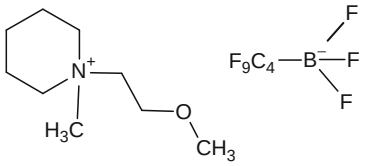
**Character:**
**Application:** Electrolyte

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) | $T_{s\text{-}s}$ (K) |
|---|---|---|---|
| 264.15 [38] | 181.15 [38] | 570.15 [38] | 244.15 [38] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.3884 [38] | 298.15 | 131 [38] | 298.15 | 0.15 [38] | 298.15 |

### 97-226: Methyl-*N*-(2-methoxyethyl)piperidinium (nonafluoro-*n*-butyl)trifluoroborate

**Abbreviation:** [PP1.1O2][$C_4F_9BF_3$]
**Molecular Formula:** $C_{13}H_{20}F_{12}BNO$
**Molar Mass:** 445.10
**Structure:**



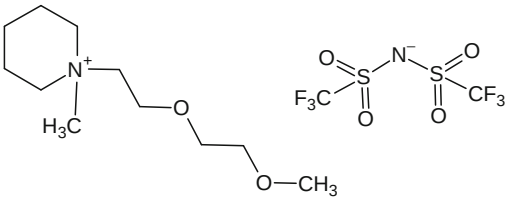
**Character:**
**Application:** Electrolyte

| $T_m$ (K) | $T_d$ (K) | $T_{s\text{-}s}$ (K) |
|---|---|---|
| 293.15 [38] | 571.15 [38] | 195.15 [38]<br>245 [38] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.4341 [38] | 298.15 | 187 [38] | 298.15 | 0.09 [38] | 298.15 |

### 98-31: *N*-methyl-*N*-(2-methoxyethyl-5-oxyethyl) piperidinium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation:** [PP1.1O2O2][TFSI]
**Molecular Formula:** $C_{13}H_{24}F_6N_2O_6S_2$
**Molar Mass:** 482.46
**Structure:**



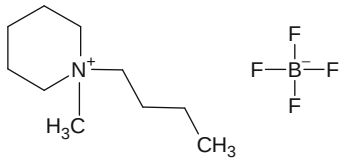
**Character:**
**Application:** Electrolyte

| $T_g$ (K) |
|---|
| 191.15 [59] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.44 [59] | 298.15 | 88 [59] | 298.15 | 0.17 [59] | 298.15 |

### 99-21: *N*-methyl-*N*-butyl-piperidinium tetrafluoroborate

**Abbreviation:** [PP14][$BF_4$]
**Molecular Formula:** $C_{10}H_{22}NBF_4$
**Molar Mass:** 243.09
**Structure:**

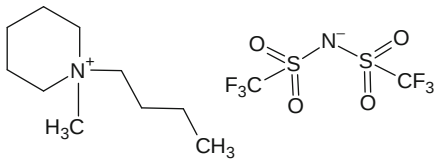


**Character:**
**Application:** Electrolyte

| $T_m$ (K) | $T_{s\text{-}s}$(K) | $T_d$ (K) |
|---|---|---|
| 419.15 [38] | 277.15 [38]<br>354 [38] | 676.15 [38] |

### 99-31: *N*-methyl-*N*-butyl-piperidinium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation:** [PP14][TFSI]
**Molecular Formula:** $C_{12}H_{22}F_6N_2O_4S_2$
**Molar Mass:** 436.44
**Structure:**



**Character:**
**Application:** Electrolyte

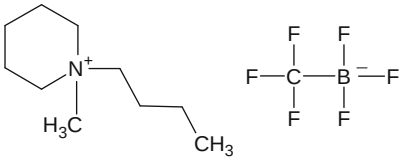
| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| <273.15 [212] | 196.15 [38]<br>200.15 [205] | 696.15 [38]<br>593.15 [205] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.3786 [38] | 298.15 | 182 [38] | 298.15 | 0.22 [212]<br>0.11 [38] | 298.15<br>298.15 |

| Electrochemical window (V) | Anodic limit (V) | Cathode limit (V) |
|---|---|---|
| 5.35 [212] | 5.2 | –0.15 |

### 99-223: *N*-methyl-*N*-butyl-piperidinium trifluoromethyltrifluoroborate

**Abbreviation:** [PP14][$CF_3BF_3$]
**Molecular Formula:** $C_{11}H_{22}F_6BN$
**Molar Mass:** 293.10
**Structure:**



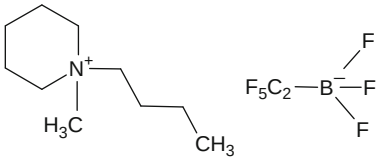
**Character:**
**Application:** Electrolyte

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 285.15 [38] | 517.15 [38] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.2059 [38] | 298.15 | 456 [38] | 298.15 | 0.1 [38] | 298.15 |

### 99-224: *N*-methyl-*N*-butyl-piperidinium pentafluoroethyltrifluoroborate

**Abbreviation:** [PP14][$C_2F_5BF_3$]
**Molecular Formula:** $C_{12}H_{22}F_8BN$
**Molar Mass:** 343.11
**Structure:**



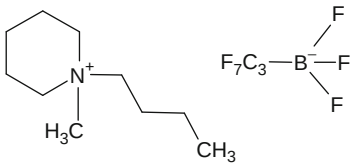
**Character:**
**Application:** Electrolyte

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 314.15 [38] | 581.15 [38] |

| Electrochemical window (V) | Anodic limit (V) | Cathode limit (V) | $T$ (K) |
|---|---|---|---|
| 5.52 [38] | 2.15 | –3.37 | 323 |

**99-225: *N*-methyl-*N*-butyl-piperidinium (heptafluoro-*n*-propyl)trifluoroborate**

**Abbreviation:** [PP14][$C_3F_7BF_3$]
**Molecular Formula:** $C_{13}H_{22}F_{10}BN$
**Molar Mass:** 393.12
**Structure:**

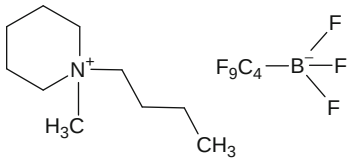


**Character:**
**Application:** Electrolyte

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 354.15 [38] | 598.15 [38] |

**99-226: *N*-methyl-*N*-butyl-piperidinium (nonafluoro-*n*-butyl)trifluoroborate**

**Abbreviation:** [PP14][$C_4F_9BF_3$]
**Molecular Formula:** $C_{14}H_{22}F_{12}BN$
**Molar Mass:** 443.12
**Structure:**

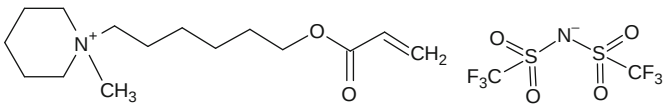


**Character:**
**Application:** Electrolyte

| $T_m$ (K) | $T_{s\text{-}s}$(K) | $T_d$ (K) |
|---|---|---|
| 365.15 [38] | 182.15 [38]<br>189 [38] | 596.15 [38] |

**910-31: *N*-(hexyl acrylate)-*N*-methylpiperidinium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation:** [AcylateC$_6$MPiPer][$NTf_2$]
**Molecular Formula:** $C_{17}H_{28}F_6N_2O_6S_2$
**Molar Mass:** 534.54
**Structure:**



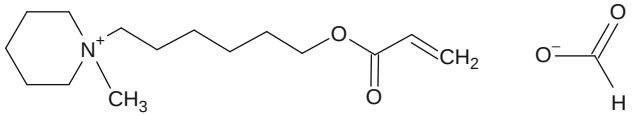
**Character:**
**Application:**

| $T_g$ (K) |
|---|
| 207.15 [157] |

| $K$ (S/m) | $T$ (K) |
|---|---|
| 0.055 [157] | 303.15 |

**910-65: *N*-(hexyl acrylate)-*N*-methylpiperidinium formate**

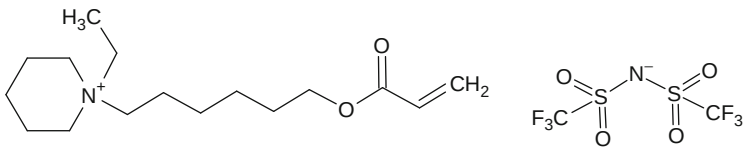
**Abbreviation:** [AcylateC$_6$MPiPer][$HCO_2$]
**Molecular Formula:** $C_{16}H_{29}NO_4$
**Molar Mass:** 299.41
**Structure:**



**Character:**
**Application:** [5]

**911-31: *N*-(hexyl acrylate)-*N*-ethylpiperidinium bis((trifluoromethyl)sulfonyl)imide**

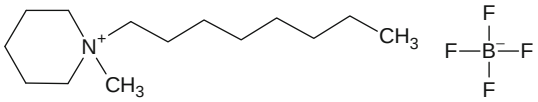
**Abbreviation:** [AcylateC$_6$EPiPer][$NTf_2$]
**Molecular Formula:** $C_{18}H_{30}F_6N_2O_6S_2$
**Molar Mass:** 548.56
**Structure:**



**Character:**
**Application:** [157]

### 912-21: 1-Methyl-1-octylpiperidinium tetrafluoroborate

**Abbreviation:** [PP1,8][$BF_4$]
**Molecular Formula:** $C_{14}H_{30}BF_4N$
**Molar Mass:** 299.12
**Structure:**

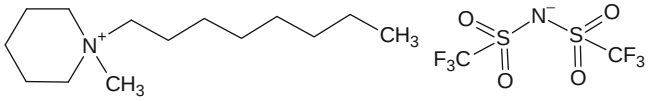


**Character:**
**Application:**

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 365.15 [205] | 598.15 [205] |

### 912-31: 1-Methyl-1-octylpiperidinium bis ((trifluoromethyl)sulfonyl)imide

**Abbreviation:** [PP1,8][$NTf_2$]
**Molecular Formula:** $C_{16}H_{30}F_6N_2O_4S_2$
**Molar Mass:** 492.54
**Structure:**

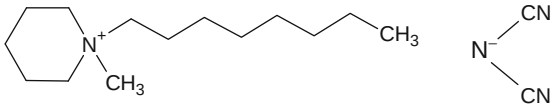


**Character:**
**Application:**

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 197.15 [205] | 588.15 [205] |

### 912-34: 1-Methyl-1-octylpiperidinium dicyanoamide

**Abbreviation:** [PP1,8][DCA]
**Molecular Formula:** $C_{16}H_{30}N_4$
**Molar Mass:** 278.44
**Structure:**

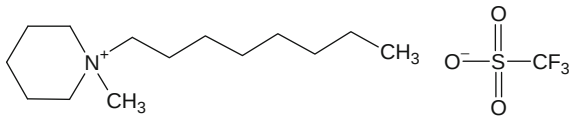


**Character:**
**Application:**

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 203.15 [205] | 473.15 [205] |

### 912-43: 1-Methyl-1-octylpiperidinium trifluoromethanesulfonate

**Abbreviation:** [PP1,8][TfO]
**Molecular Formula:** $C_{15}H_{30}F_3NO_3S$
**Molar Mass:** 361.46
**Structure:**

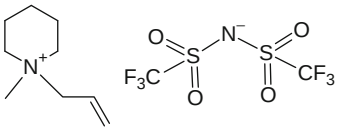


**Character:**
**Application:**

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 320.15 [205] | 573.15 [205] |

### 913-31: 1-Allyl-1-methylpiperidinium bis(trifluoromethanesulfonyl)imide

**Abbreviation:** [AMPip][TFSI]
**Molecular Formula:** $C_{11}H_{18}F_6N_2O_4S_2$
**Molar Mass:** 420.39
**Structure:**



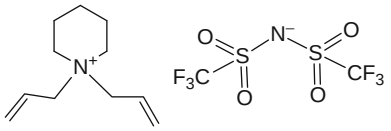
**Character:**
**Application:** [206]

| $T_d$ (K) |
|---|
| 618.15 |

| $\rho$ (g/cm$^3$) | $\eta_D$ (cp) | $\sigma$ (N/m) |
|---|---|---|
| 1.42 | 108 | 0.35 |

### 914-31: 1,1-Diallylpiperidinium bis(trifluoromethanesulfonyl)imide

**Abbreviation:** [AAPip][TFSI]
**Molecular Formula:** $C_{13}H_{20}F_6N_2O_4S_2$
**Molar Mass:** 446.43
**Structure:**



**Character:**
**Application:** [206]

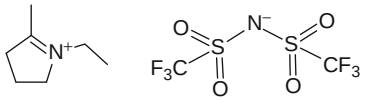
| $T_d$ (K) |
|---|
| 612.15 |

| $\rho$ (g/cm$^3$) | $\eta_D$ (cp) | $\sigma$ (N/m) |
|---|---|---|
| 1.45 | 113 | 0.23 |

# 6 Pyrroline

**1001-31: 1-Ethyl-2-methylpyrrolinium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation:** [MP2][TFSI]
**Molecular Formula:** $C_9H_{14}F_6N_2O_4S_2$
**Molar Mass:** 392.34
**Structure:**



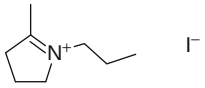
**Character:**
**Application:**

| $T_m$ (K) |
|---|
| 318.15 ± 1 [204] |

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 57 ± 5% [204] | 298.15 |

**1002-13: 1-Propyl-2-methylpyrrolinium iodine**

**Abbreviation:** [MP3]I
**Molecular Formula:** $C_8H_{16}IN$
**Molar Mass:** 253.13
**Structure:**

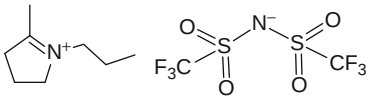


**Character:**
**Application:**

| $T_m$ (K) |
|---|
| 358.15 ± 1 [204] |

### 1002-31: 1-Propyl-2-methylpyrrolinium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation:** [MP3][TFSI]
**Molecular Formula:** $C_{10}H_{16}F_6N_2O_4S_2$
**Molar Mass:** 406.37
**Structure:**



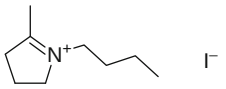
**Character:**
**Application:**

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 292.15 ± 1 [204] | 201.15 ± 2 [204] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.46 ± 5% [204] | 293.15 | 57 ± 5% [204] | 298.15 |

### 1003-13: 1-Butyl-2-methylpyrrolinium iodine

**Abbreviation:** [MP4]I
**Molecular Formula:** $C_9H_{18}IN$
**Molar Mass:** 267.15
**Structure:**

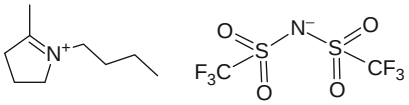


**Character:**
**Application:**

| $T_m$ (K) |
|---|
| 384.15 ± 1 [204] |

### 1003-31: 1-Butyl-2-methylpyrrolinium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation:** [MP4][TFSI]
**Molecular Formula:** $C_{11}H_{18}F_6N_2O_4S_2$
**Molar Mass:** 420.39
**Structure:**



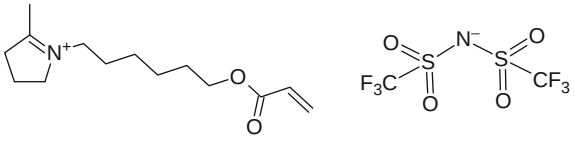
**Character:**
**Application:**

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 309.15 ± 1 [204] | 209.15 ± 2 [204] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.43 ± 5% [204] | 293.15 | 58 [204] | 298.15 |

### 1004-31: 1-(hexyl acrylate)-2-methyl-pyrrolinium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation:** [AcrylateC$_6$P1][TFSI]
**Molecular Formula:** $C_{16}H_{24}F_6N_2O_6S_2$
**Molar Mass:** 518.49
**Structure:**



**Character:**
**Application:**

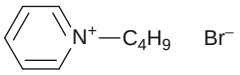
| $T_g$ (K) |
|---|
| 198.15 [157] |

| $K$ (S/m) | $T$ (K) |
|---|---|
| 0.12 [157] | 303.15 |

# 7 Pyridinium

### 1101-12: N-butyl pyridinium bromide

**Abbreviation**: [Bpy]Br
**Molecular Formula**: $C_9H_{14}NBr$
**Molar Mass**: 216.12
**Structure**:

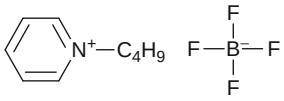



**Character**:
**Application**:

| $T_m$ (K) | $T_f$ (K) |
|---|---|
| 378 [128] | 315 [128] |

### 1101-21: N-butyl pyridinium tetrafluoroborate

**Abbreviation**: [Bpy][$BF_4$]
**Molecular Formula**: $C_9H_{14}BF_4N$
**Molar Mass**: 223.02
**Structure**:




**Character**:
**Application**:

| $T_m$ (K) | $T_f$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|---|
| 272 [25] | 261.25 [27] | 206.45 [27] | 615 [25] |
| 288.45 [27] | 251 [25] | 202 [25] | |

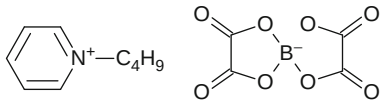
| $\rho$ (g/cm$^3$) | $T$ (K) | $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|---|---|
| 1.224 [25] | 293.15 | 1.212 [25] | 308.15 |
| 1.22 [25] | 298.15 | 1.208 [25] | 313.15 |
| 1.216 [25] | 303.15 | 1.214 [74] | |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|---|---|
| 1.2144 ± 0.0072 [4] | 293.15 | 1.1988 ± 0.0071 [4] | 323.15 |
| 1.2118 ± 0.0072 [4] | 303.15 | 1.1922 ± 0.0071 [4] | 333.15 |
| 1.2053 ± 0.0071 [4] | 313.15 | 1.1856 ± 0.0071 [4] | 343.15 |

| Fusion enthalpy (kJ mol$^{-1}$) | Crystallization entropy (J mol$^{-1}$ K$^{-1}$) | $Hc$ (kJ mol$^{-1}$) | Fusion entropy (J mol$^{-1}$ K$^{-1}$) |
|---|---|---|---|
| 10.214 [27] | 31.22 [27] | 8.36 [27] | 35.68 [27] |

### 1101-210: N-butyl pyridinium bis(oxalato)borate

**Abbreviation**: [Bpy][BOB]
**Molecular Formula**: $C_{13}H_{14}BNO_8$
**Molar Mass**: 323.07
**Structure**:

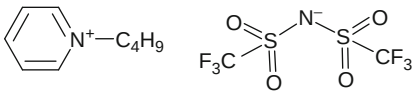


**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 252.65 [91] |

### 1101-31: N-butyl pyridinium bis((trifluoromethyl) sulfonyl)imide

**Abbreviation**: [Bpy][TFSI]
**Molecular Formula**: $C_{11}H_{14}F_6N_2O_4S_2$
**Molar Mass**: 416.37
**Structure**:



**Character**:
**Application**:

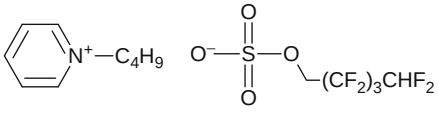
| $T_m$ (K) | $T_f$ (K) | $T_d$ (K) |
|---|---|---|
| 299 [25] | 224 [25] | 677 [25] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|---|---|
| 1.453 [25] | 293.15 | 1.444 [25] | 303.15 | 9.9 [130] | 353.15 |
| 1.449 [25] | 298.15 | 1.44 [25] | 308.15 | | |
| 1.449 [10] | 298.15 | 1.436 [25] | 313.15 | | |

| $C_p$ (J mol$^{-1}$ K$^{-1}$) | $T$ (K) | $C_p$ (J mol$^{-1}$ K$^{-1}$) | $T$ (K) | $C_p$ (J mol$^{-1}$ K$^{-1}$) | $T$ (K) | $C_p$ (J mol$^{-1}$ K$^{-1}$) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 590 [61] | 335 | 635 [61] | 415 | 603 [61] | 343 | 615 [61] | 353 |
| 614 [61] | 363 | 587 [61] | 330 | 600 [61] | 338 | 616 [61] | 348 |
| 627 [61] | 400 | 635 [61] | 423 | 596 [61] | 333 | 610 [61] | 343 |
| 624 [61] | 395 | 636 [61] | 418 | 595 [61] | 328 | 610 [61] | 338 |
| 622 [61] | 390 | 633 [61] | 413 | 592 [61] | 323 | 607 [61] | 333 |
| 619 [61] | 385 | 626 [61] | 393 | 645 [61] | 418 | 604 [61] | 328 |
| 616 [61] | 380 | 623 [61] | 388 | 644 [61] | 413 | 641 [61] | 425 |
| 613 [61] | 375 | 621 [61] | 383 | 642 [61] | 408 | 639 [61] | 420 |
| 610 [61] | 370 | 618 [61] | 378 | 640 [61] | 403 | 636 [61] | 393 |
| 607 [61] | 365 | 617 [61] | 373 | 636 [61] | 398 | 631 [61] | 403 |
| 605 [61] | 360 | 617 [61] | 368 | 628 [61] | 378 | 630 [61] | 398 |
| 603 [61] | 355 | 596 [61] | 345 | 628 [61] | 373 | 635 [61] | 388 |
| 600 [61] | 350 | 631 [61] | 383 | 623 [61] | 368 | 609 [61] | 358 |
| 633 [61] | 410 | 604 [61] | 353 | 624 [61] | 363 | 632 [61] | 408 |
| 594 [61] | 340 | 603 [61] | 348 | 621 [61] | 358 | 630 [61] | 405 |

### 1101-414: N-butyl pyridinium 2,2,3,3,4,4,5,5-octafluoropentyl sulfate

**Abbreviation**: [Bpy][$C_5F_8$]
**Molecular Formula**: $C_{14}H_{17}F_8NSO_4$
**Molar Mass**: 447.35
**Structure**:



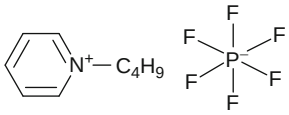

**Character**: Hydrophobic
**Application**: Medium for lipase-catalyzed reaction

| $T_m$ (K) |
|---|
| 276.25 [62] |

| $\eta_D$ (cp) | $K$ (S/m) |
|---|---|
| 1900 [62] | 0.022 [62] |

### 1101-51: N-butyl pyridinium hexafluorophosphate

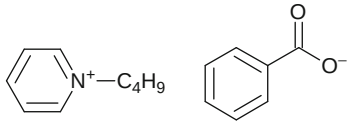
**Abbreviation**: [Bpy][$PF_6$]
**Molecular Formula**: $C_9H_{14}F_6NP$
**Molar Mass**: 281.18
**Structure**:




**Character**:
**Application**: [4]

### 1101-64: N-butyl pyridinium benzoate

**Abbreviation**: [Bpy][ba]
**Molecular Formula**: $C_{16}H_{19}NO_2$
**Molar Mass**: 257.33
**Structure**:

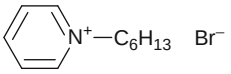


**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 283.85 [121] | 199.91 [121] | 507.05 [121] |

### 1102-12: N-hexyl pyridinium bromide

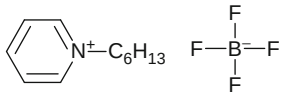
**Abbreviation**: [Hpy]Br
**Molecular Formula**: $C_{11}H_{18}NBr$
**Molar Mass**: 244.17
**Structure**:



**Character**:
**Application**: [128]

### 1102-21: N-hexyl pyridinium tetrafluoroborate

**Abbreviation**: [Hpy][$BF_4$]
**Molecular Formula**: $C_{11}H_{18}BF_4N$
**Molar Mass**: 251.08
**Structure**:

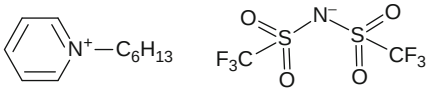


**Character**:
**Application**:

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 240.9 [130] | 293.15 |
| 15.7 [130] | 353.15 |

### 1102-31: N-hexyl pyridinium bis((trifluoromethyl) sulfonyl)imide

**Abbreviation**: [Hpy][TFSI]
**Molecular Formula**: $C_{13}H_{18}F_6N_2O_4S_2$
**Molar Mass**: 444.42
**Structure**:



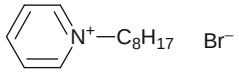
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 273 [128] | 196 [128] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.430 [10] | 298.15 | 53.8 [130] | 293.15 |
| | | 5.9 [130] | 353.15 |

### 1103-12: N-octyl pyridinium bromide

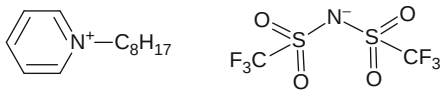
**Abbreviation**: [Opy]Br
**Molecular Formula**: $C_{13}H_{22}NBr$
**Molar Mass**: 272.22
**Structure**:



**Character**:
**Application**:

**1103-31: N-octyl pyridinium bis((trifluoromethyl) sulfonyl)imide**

**Abbreviation**: [Opy][TFSI]
**Molecular Formula**: $C_{15}H_{22}F_6N_2O_4S_2$
**Molar Mass**: 472.47
**Structure**:

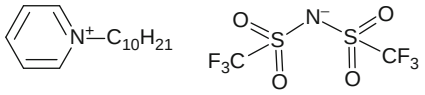


**Character**:
**Application**:

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.3327 [102] | 293.15 | 134.4 [130] | 293.15 |
| 1.364 [10] | 298.15 | 26.7 [102] | 293.15 |
| | | 13.5 [130] | 353.15 |

**1104-31: N-decyl pyridinium bis((trifluoromethyl) sulfonyl)imide**

**Abbreviation**: [$C_{10}$py][TFSI]
**Molecular Formula**: $C_{17}H_{26}F_6N_2O_4S_2$
**Molar Mass**: 500.53
**Structure**:

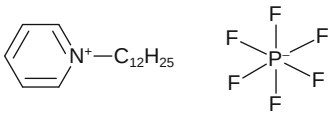


**Character**:
**Application**:

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 160.1 [130] | 293.15 |
| 15 [130] | 353.15 |

**1105-51: N-dodecyl pyridinium hexafluorophosphate**

**Abbreviation**: [$C_{12}$py][$PF_6$]
**Molecular Formula**: $C_{17}H_{30}F_6NP$
**Molar Mass**: 393.40
**Structure**:

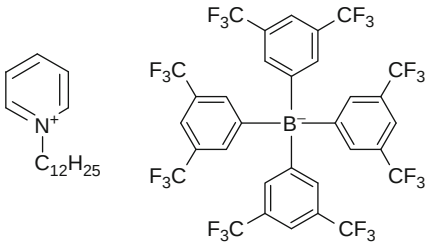


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 379.15 [140] |

**1105-217: N-dodecyl pyridinium tetrakis (3,5-bis(trifluoromethyl)phenyl)borate**

**Abbreviation**: [$C_{12}$py][TFPB]
**Molecular Formula**: $C_{49}H_{42}BF_{24}N$
**Molar Mass**: 1111.64
**Structure**:

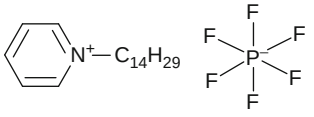


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 337.15 [98] |

**1106-51: N-tetradecyl pyridinium hexafluorophosphate**

**Abbreviation**: [$C_{14}$py][$PF_6$]
**Molecular Formula**: $C_{19}H_{34}F_6NP$
**Molar Mass**: 421.45
**Structure**:

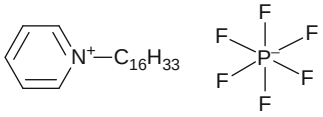


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 397.15 [140] |

**1107-51: N-hexadecyl pyridinium hexafluorophosphate**

**Abbreviation**: [$C_{16}$py][$PF_6$]
**Molecular Formula**: $C_{21}H_{38}F_6NP$
**Molar Mass**: 449.5
**Structure**:

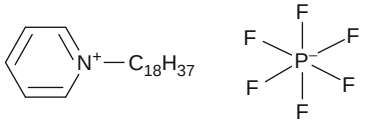


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 399.15 [140] |

### 1108-51: N-octadecyl pyridinium hexafluorophosphate

**Abbreviation**: $[C_{18}py][PF_6]$
**Molecular Formula**: $C_{23}H_{42}F_6NP$
**Molar Mass**: 477.56
**Structure**:

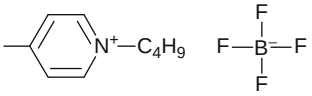


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 399.15 [140] |

### 1109-21: 4-Methyl-*N*-butyl pyridinium tetrafluoroborate

**Abbreviation**: [4-MBpy][$BF_4$]
**Molecular Formula**: $C_{10}H_{16}BF_4N$
**Molar Mass**: 237.05
**Structure**:

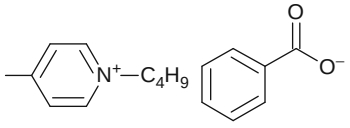


**Character**:
**Application**:

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.1811 [213] | 298.15 | 80.85 [213] | 313.15 |
| 1.17194 [213] | 313.15 | 50.22 [213] | 323.15 |
| 1.1654 [213] | 323.15 | | |

### 1109-64: 4-Methyl-*N*-butyl pyridinium benzoate

**Abbreviation**: [C4M′-py][ba]
**Molecular Formula**: $C_{17}H_{21}NO_2$
**Molar Mass**: 271.35
**Structure**:

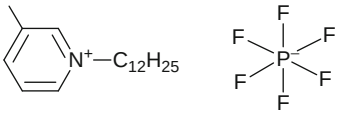


**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 283.61 [121] | 208.42 [121] | 502.55 [121] |

### 1110-51: 1-Dodecyl-3-methylpyridinium hexafluorophosphate

**Abbreviation**: $[C_{12}Mpy][PF_6]$
**Molecular Formula**: $C_{18}H_{32}F_6NP$
**Molar Mass**: 407.42
**Structure**:

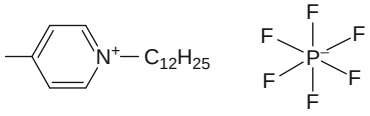


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 328.15 [140] |

### 1111-51: 1-Dodecyl-4-methylpyridinium hexafluorophosphate

**Abbreviation**: $[C_{12}M'py][PF_6]$
**Molecular Formula**: $C_{18}H_{32}F_6NP$
**Molar Mass**: 407.42
**Structure**:

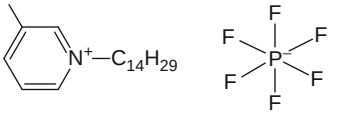


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 329.15 [140] |

### 1112-51: 1-Tetradecyl-3-methylpyridinium hexafluorophosphate

**Abbreviation**: $[C_{14}Mpy][PF_6]$
**Molecular Formula**: $C_{20}H_{36}F_6NP$
**Molar Mass**: 435.48
**Structure**:

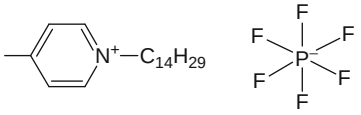


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 341.15 [140] |

### 1113-51: 1-Tetradecyl-4-methylpyridinium hexafluorophosphate

**Abbreviation**: $[C_{14}M'py][PF_6]$
**Molecular Formula**: $C_{20}H_{36}F_6NP$
**Molar Mass**: 435.48
**Structure**:

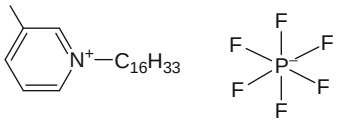


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 344.15 [140] |

### 1114-51: 1-Hexadecyl-3-methylpyridinium hexafluorophosphate

**Abbreviation**: $[C_{16}Mpy][PF_6]$
**Molecular Formula**: $C_{22}H_{40}F_6NP$
**Molar Mass**: 463.53
**Structure**:

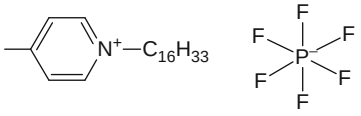


**Character**:
**Application**:

| $T_m$ (K) | $T_f$ (K) |
|---|---|
| 347.15 [140] | 334.15 [140] |
| | 331.15 [140] |

### 1115-51: 1-Hexadecyl-4-methylpyridinium hexafluorophosphate

**Abbreviation**: $[C_{16}M'py][PF_6]$
**Molecular Formula**: $C_{22}H_{40}F_6NP$
**Molar Mass**: 463.53
**Structure**:

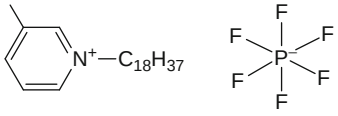


**Character**:
**Application**:

| $T_m$ (K) | $T_f$ (K) |
|---|---|
| 348.15 [140] | 333.15 [140] |
| | 328.15 [140] |

### 1116-51: 1-Octadecyl-3-methylpyridinium hexafluorophosphate

**Abbreviation**: $[C_{18}Mpy][PF_6]$
**Molecular Formula**: $C_{24}H_{44}F_6NP$
**Molar Mass**: 491.58
**Structure**:

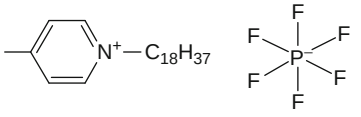


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 360.15 [140] |

### 1117-51: 1-Octadecyl-4-methylpyridinium hexafluorophosphate

**Abbreviation**: $[C18M'py][PF_6]$
**Molecular Formula**: $C_{24}H_{44}F_6NP$
**Molar Mass**: 491.58
**Structure**:

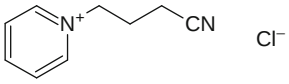


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 361.15 [140] |

### 1118-11: *N*-butyronitrile pyridinium chloride

**Abbreviation**: $[C_3CNpy]Cl$
**Molecular Formula**: $C_9H_{11}N_2Cl$
**Molar Mass**: 182.65
**Structure**:

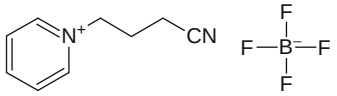


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 374.15 [214] |

### 1118-21: *N*-butyronitrile pyridinium tetrafluoroborate

**Abbreviation**: $[C_3CNpy][BF_4]$
**Molecular Formula**: $C_9H_{11}N_2BF_4$
**Molar Mass**: 234
**Structure**:

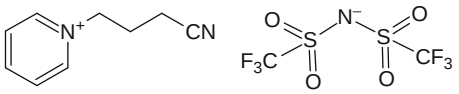


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 335.15 [214] |

### 1118-31: *N*-butyronitrile pyridinium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: $[C_3CNpy][NTf_2]$
**Molecular Formula**: $C_{11}H_{11}F_6N_3O_4S_2$
**Molar Mass**: 427.35
**Structure**:

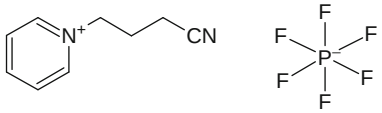


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 208.65 [214] |

### 1118-51: *N*-butyronitrile pyridinium hexafluorophosphate

**Abbreviation**: $[C_3CNpy][PF_6]$
**Molecular Formula**: $C_9H_{11}N_2PF_6$
**Molar Mass**: 292.16
**Structure**:

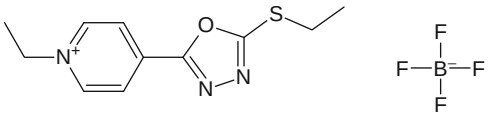


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 368.15 [214] |

### 1119-21: 1-Ethyl-4-[5-(ethylsulfanyl)-1,3,4-oxadiazol-2-yl] pyridinium tetrafluoroborate

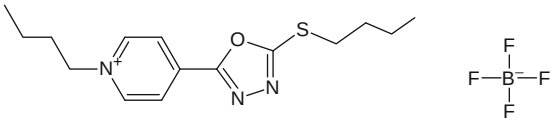
**Abbreviation**: $[C_2C_2SOPy][BF_4]$
**Molecular Formula**: $C_{11}H_{14}N_3OSBF_4$
**Molar Mass**: 323.12
**Structure**:



**Character**:
**Application**: [215]

### 1120-21: 1-Butyl-4-[5-(butylsulfanyl)-1,3,4-oxadiazol-2-yl] pyridinium tetrafluoroborate

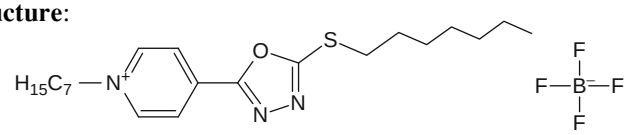
**Abbreviation**: $[C_4C_4SOPy][BF_4]$
**Molecular Formula**: $C_{15}H_{22}N_3OSBF_4$
**Molar Mass**: 379.23
**Structure**:



**Character**: Tribological
**Application**: [215]

### 1121-21: 1-Heptyl-4-[5-(heptylsulfanyl)-1,3,4-oxadiazol-2-yl] pyridinium tetrafluoroborate

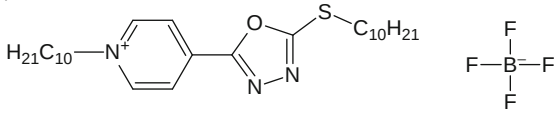
**Abbreviation**: $[C_7C_7SOPy][BF_4]$
**Molecular Formula**: $C_{21}H_{34}N_3OSBF_4$
**Molar Mass**: 463.38
**Structure**:



**Character**: Tribological
**Application**: [215]

### 1122-21: 1-Decyl-4-[5-(decylsulfanyl)-1,3,4-oxadiazol-2-yl] pyridinium tetrafluoroborate

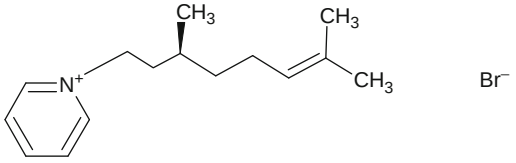
**Abbreviation**: $[C_{10}C_{10}SOPy][BF_4]$
**Molecular Formula**: $C_{27}H_{46}N_3OSBF_4$
**Molar Mass**: 547.54
**Structure**:



**Character**: Tribological
**Application**: [215]

### 1124-12: 1-[(3*R*)-3,7-dimethyloct-6-enyl]pyridinium bromide or 1-citronellyl-pyridinium bromide

**Abbreviation**: [CironellylPy]Br
**Molecular Formula**: $C_{15}H_{24}NBr$
**Molar Mass**: 298.26
**Structure**:



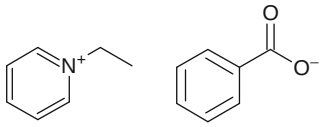
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 226.15 [155] |

| $\alpha$ | Concentration | $T$ (K) | Solvent |
|---|---|---|---|
| −4.7 [155] | 1 | 295.15 | $CHC1_3$ |

### 1125-64: Ethylpyridinium benzoate

**Abbreviation**: [Ep][ba]
**Molecular Formula**: $C_{14}H_{15}NO_2$
**Molar Mass**: 229.27
**Structure**:

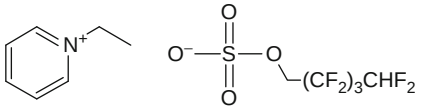


**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 208.74 [121] | 500.35 [121] |

### 1125-414: Ethylpyridinium 2,2,3,3,4,4,5,5-octafluoropentyl sulfate

**Abbreviation**: $[C_2py][C_5F_8]$
**Molecular Formula**: $C_{12}H_{13}F_8NSO_4$
**Molar Mass**: 419.29
**Structure**:



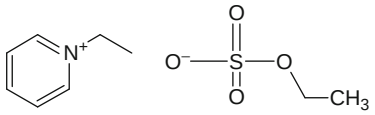
**Character**: Hydrophobic
**Application**: Medium for lipase-catalyzed reaction

| $T_m$ (K) |
|---|
| 262.15 [62] |

| $\eta_D$ (cp) | $K$ (S/m) |
|---|---|
| 250 [62] | 0.028 [62] |

### 1125-418: Ethylpyridinium ethylsulfate

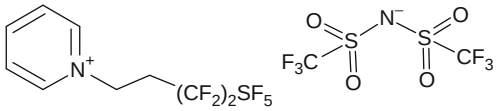
**Abbreviation**: $[C_2py][EtSO_4]$
**Molecular Formula**: $C_9H_{15}NO_4S$
**Molar Mass**: 233.29
**Structure**:



**Character**:
**Application**: [128]

**1126-31: *N*-$SF_5CF_2CF_2CH_2CH_2$-pyridinium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: $[SF_5(CF_2)_2(CH_2)_2Py][NTf_2]$
**Molecular Formula**: $C_{11}H_9F_{15}N_2O_4S_3$
**Molar Mass**: 614.37
**Structure**:



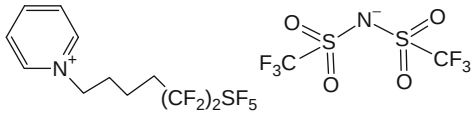
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 306.15 [156] |

| $\rho$ (g/cm$^3$) |
|---|
| 1.96 [156] |

**1127-31: $SF_5CF_2CF_2CH_2CH_2CH_2CH_2$-pyridinium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: $[SF_5(CF_2)_2(CH_2)_4Py][NTf_2]$
**Molecular Formula**: $C_{13}H_{13}F_{15}N_2O_4S_3$
**Molar Mass**: 642.43
**Structure**:



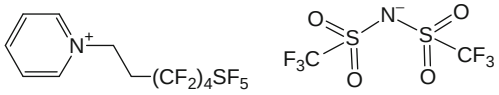
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 291.15 [156] |

| $\rho$ (g/cm$^3$) |
|---|
| 2.02 [156] |

**1128-31: $SF_5CF_2CF_2CF_2CF_2CH_2CH_2$-pyridinium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: $[SF_5(CF_2)_4(CH_2)_2Py][NTf_2]$
**Molecular Formula**: $C_{13}H_9F_{19}N_2O_4S_3$
**Molar Mass**: 714.39
**Structure**:



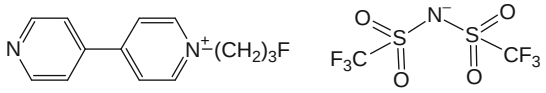
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 309.25 [156] | 233.45 [156] |

| $\rho$ (g/cm$^3$) |
|---|
| 1.97 [156] |

**1129-31: *N*-fluoro-propyl-4,4′-bipyridinium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: $[F(CH_2)_3BiPy][NTf_2]$
**Molecular Formula**: $C_{15}H_{14}F_7N_3O_4S_2$
**Molar Mass**: 497.41
**Structure**:

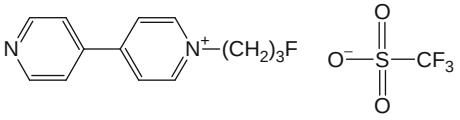


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 335.15 [216] |

**1129-43: *N*-fluoro-propyl-4,4′-bipyridinium trifluoromethanesulfonate**

**Abbreviation**: [F(CH$_2$)$_3$BiPy][TfO]
**Molecular Formula**: $C_{14}H_{14}F_4N_2SO_3$
**Molar Mass**: 366.33
**Structure**:

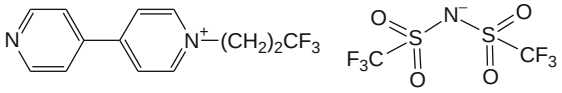


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 361.15 [216] |

**1130-31: *N*-trifluoro-propyl-4,4′-bipyridinium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: [CF$_3$(CH$_2$)$_2$BiPy][NTf$_2$]
**Molecular Formula**: $C_{15}H_{12}F_9N_3O_4S_2$
**Molar Mass**: 533.39
**Structure**:

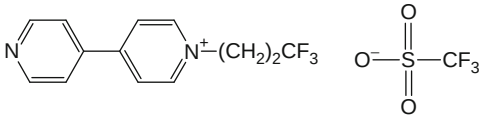


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 340.15 [216] |

**1130-43: *N*-trifluoro-propyl-4,4′-bipyridinium trifluoromethanesulfonate**

**Abbreviation**: [CF$_3$(CH$_2$)$_2$BiPy][TfO]
**Molecular Formula**: $C_{14}H_{12}F_6N_2SO_3$
**Molar Mass**: 402.31
**Structure**:

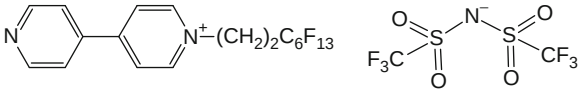


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 371.15 [216] |

**1131-31: *N*-tridecylfluoro-octyl-4,4′-bipyridinium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: [C$_6$F$_{13}$(CH$_2$)$_2$BiPy][NTf$_2$]
**Molecular Formula**: $C_{20}H_{12}F_{19}N_3O_4S_2$
**Molar Mass**: 783.43
**Structure**:

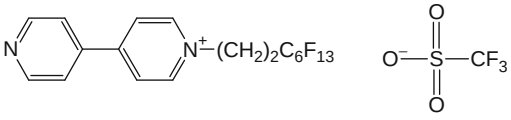


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 325.15 [216] |

**1131-43: *N*-tridecylfluoro-octyl-4,4′-bipyridinium trifluoromethanesulfonate**

**Abbreviation**: [C$_6$F$_{13}$(CH$_2$)$_2$BiPy][TfO]
**Molecular Formula**: $C_{19}H_{12}F_{16}N_2SO_3$
**Molar Mass**: 652.35
**Structure**:

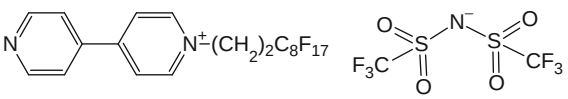


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 377.15 [216] |

**1132-31: *N*-heptadecylfluoro-decyl-4,4′-bipyridinium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: [C$_8$F$_{17}$(CH)$_2$BiPy][NTf$_2$]
**Molecular Formula**: $C_{22}H_{12}F_{23}N_3O_4S_2$
**Molar Mass**: 883.44
**Structure**:

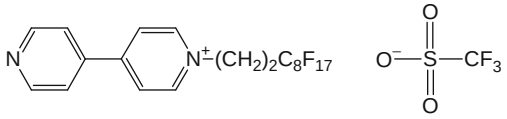


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 367.15 [216] |

**1132-43: *N*-heptadecylfluoro-decyl-4,4′-bipyridinium trifluoromethanesulfonate**

**Abbreviation**: $[C_8F_{17}(CH)_2BiPy][TfO]$
**Molecular Formula**: $C_{21}H_{12}F_{20}N_2SO_3$
**Molar Mass**: 752.37
**Structure**:

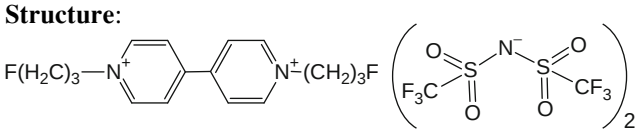


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 382.15 [216] |

**1133-31: *N,N′*-di(fluoro-propyl)-4,4′-bipyridinium di[bis((trifluoromethane)sulfonyl)imide]**

**Abbreviation**: $[CH_2F(CH_2)_2Py]_2[NTf_2]_2$
**Molecular Formula**: $C_{20}H_{20}F_{14}N_4O_8S_4$
**Molar Mass**: 838.64
**Structure**:

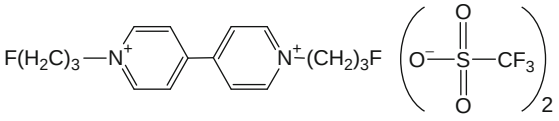


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 337.15 [216] |

**1133-43: *N,N′*-di(fluoro-propyl)-4,4′-bipyridinium di[trifluoromethanesulfonate]**

**Abbreviation**: $[CH_2F(CH_2)_2Py]_2[TfO]_2$
**Molecular Formula**: $C_{18}H_{20}F_8N_2S_2O_6$
**Molar Mass**: 576.48
**Structure**:

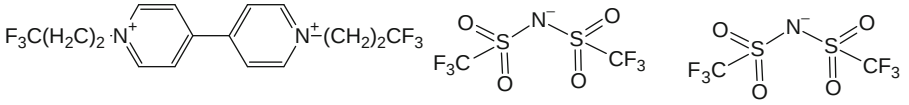


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 362.15 [216] |

**1134-31: *N,N′*-di(trifluoro-propyl)-4,4′-bipyridinium di[bis((trifluoromethane)sulfonyl)imide]**

**Abbreviation**: $[CF_3(CH_2)_2Py]_2[NTf_2]_2$
**Molecular Formula**: $C_{20}H_{16}F_{18}N_4O_8S_4$
**Molar Mass**: 910.60
**Structure**:

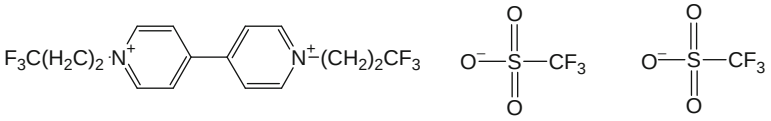


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 369.15 [216] |

**1134-43: *N,N′*-di(trifluoro-propyl)-4,4′-bipyridinium di[trifluoromethanesulfonate]**

**Abbreviation**: $[CF_3(CH_2)_2Py]_2[TfO]_2$
**Molecular Formula**: $C_{18}H_{16}F_{12}N_2S_2O_6$
**Molar Mass**: 648.44
**Structure**:

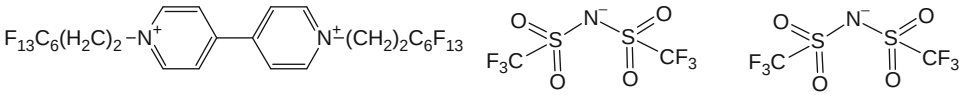


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 376.15 [216] |

**1135-31: *N,N′*-di(tridecylfluoro-propyl)-4,4′-bipyridinium di[bis((trifluoromethane)sulfonyl)imide]**

**Abbreviation**: $[C_6F_{13}(CH_2)_2Py]_2[NTf_2]_2$
**Molecular Formula**: $C_{30}H_{16}F_{38}N_4O_8S_4$
**Molar Mass**: 1410.67
**Structure**:

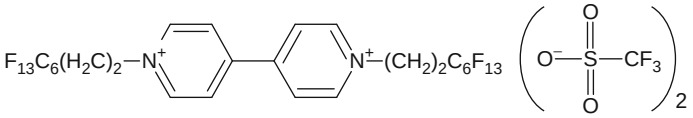


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 422.15 [216] |

**1135-43: *N,N′*-di(tridecylfluoro-propyl)-4,4′-bipyridinium di[trifluoromethanesulfonate]**

**Abbreviation**: $[C_6F_{13}(CH_2)_2Py]_2[TfO]_2$
**Molecular Formula**: $C_{28}H_{16}F_{32}N_2S_2O_6$
**Molar Mass**: 1148.52
**Structure**:

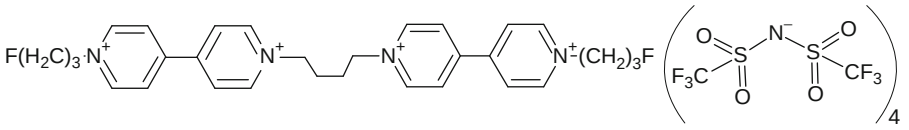


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 438.15 [216] |

**1136-31: di(*N*-fluoro-propyl bipyridinium)-butylene tetra[bis((trifluoromethane)sulfonyl)imide]**

**Abbreviation**: $[(F(CH_2)_3BiPy)_2(CH_2)_4][NTf_2]_4$
**Molecular Formula**: $C_{38}H_{36}F_{26}N_8O_{16}S_8$
**Molar Mass**: 1611.22
**Structure**:

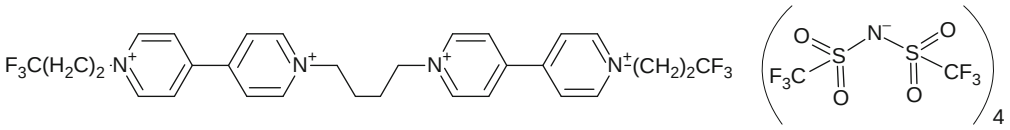


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 394.15 [216] |

**1137-31: di(*N*-trifluoro-propyl bipyridinium)-butylene tetra[bis((trifluoromethane)sulfonyl)imide]**

**Abbreviation**: $[CF_3(CH_2)_2BiPy)_2(CH_2)_4][NTf_2]_4$
**Molecular Formula**: $C_{38}H_{32}F_{30}N_8O_{16}S_8$
**Molar Mass**: 1683.19
**Structure**:

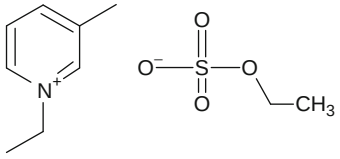


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 398.15 [216] |

**1138-418: 1-Ethyl-3-methylpyridinium Ethylsulfate**

**Abbreviation**: [empy][$EtSO_4$]
**Molecular Formula**: $C_{10}H_{17}NO_4S$
**Molar Mass**: 247.31
**Structure**:

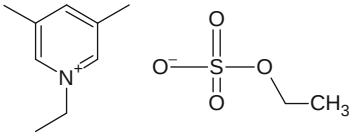


**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 202 [128] |

**1139-418: 1-Ethyl-3,5-dimethylpyridinium Ethylsulfate**

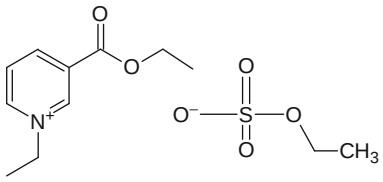
**Abbreviation**: [emmpy][$EtSO_4$]
**Molecular Formula**: $C_{11}H_{19}NO_4S$
**Molar Mass**: 261.34
**Structure**:



**Character**:
**Application**: [128]

### 1140-418: 1-Ethyl-nicotinic acid ethyl ester Ethylsulfate

**Abbreviation**: $[Et_2Nic][EtSO_4]$
**Molecular Formula**: $C_{12}H_{19}NO_6S$
**Molar Mass**: 305.35
**Structure**:

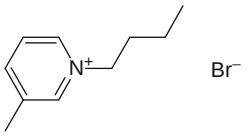


**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 229 [128] |

### 1141-12: 1-Butyl-3-methylpyridinium bromide

**Abbreviation**: [bmpy]Br
**Molecular Formula**: $C_{10}H_{16}NBr$
**Molar Mass**: 230.14
**Structure**:

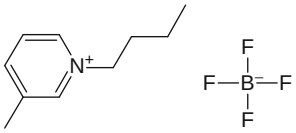


**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 237 [128] |

### 1141-21: 1-Butyl-3-methylpyridinium tetrafluoroborate

**Abbreviation**: $[bmpy][BF_4]$
**Molecular Formula**: $C_{10}H_{16}NBF_4$
**Molar Mass**: 237.05
**Structure**:

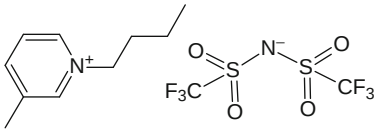


**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 197 [128] |

### 1141-31: 1-Butyl-3-methylpyridinium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [bmpy][TFSI]
**Molecular Formula**: $C_{12}H_{16}F_6N_2O_4S_2$
**Molar Mass**: 430.39
**Structure**:

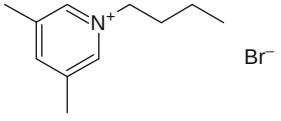


**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 189 [128] |

### 1142-12: 1-Butyl-3,5-dimethylpyridinium bromide

**Abbreviation**: [bmmpy]Br
**Molecular Formula**: $C_{11}H_{18}NBr$
**Molar Mass**: 244.17
**Structure**:

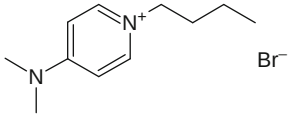


**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 368 [128] | 249 [128] |

### 1143-12: 1-Butyl-4-(dimethylamino)pyridinium bromide

**Abbreviation**: [bDMApy]Br
**Molecular Formula**: $C_{11}H_{19}N_2Br$
**Molar Mass**: 259.19
**Structure**:

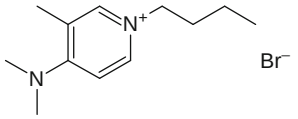


**Character**:
**Application**:

| $T_m$ (K) | $T_f$ (K) |
|---|---|
| 495 [128] | 433 [128] |

### 1144-12: 1-Butyl-3-methyl-4-(dimethylamino)pyridinium bromide

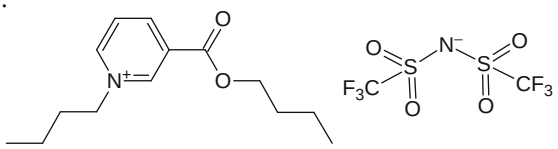
**Abbreviation**: [bmDMApy]Br
**Molecular Formula**: $C_{12}H_{21}N_2Br$
**Molar Mass**: 273.21
**Structure**:



**Character**:
**Application**: [128]

### 1145-31: 1-Butyl-nicotinic acid butyl ester bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [$b_2$Nic][TFSI]
**Molecular Formula**: $C_{16}H_{22}F_6N_2O_6S_2$
**Molar Mass**: 516.47
**Structure**:

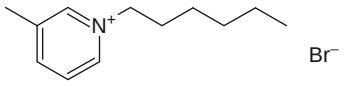


**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 288 [128] | 215 [128] |

### 1146-12: 1-Hexyl-3-methylpyridinium bromide

**Abbreviation**: [hmpy]Br
**Molecular Formula**: $C_{12}H_{20}NBr$
**Molar Mass**: 258.20
**Structure**:

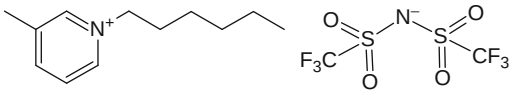


**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 236 [128] |

### 1146-31: 1-Hexyl-3-methylpyridinium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [hmpy][TFSI]
**Molecular Formula**: $C_{14}H_{20}F_6N_2O_4S_2$
**Molar Mass**: 458.44
**Structure**:

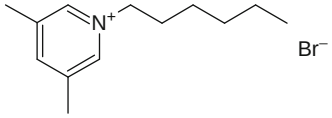


**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 191 [128] |

### 1147-12: 1-Hexyl-3,5-dimethylpyridinium bromide

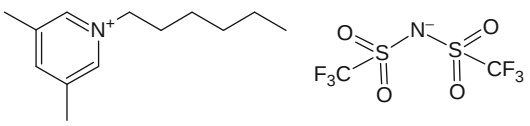
**Abbreviation**: [hmmpy]Br
**Molecular Formula**: $C_{13}H_{22}NBr$
**Molar Mass**: 272.22
**Structure**:



**Character**:
**Application**: [128]

### 1147-31: 1-Hexyl-3,5-dimethylpyridinium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [hmmpy][TFSI]
**Molecular Formula**: $C_{15}H_{22}F_6N_2O_4S_2$
**Molar Mass**: 472.47
**Structure**:

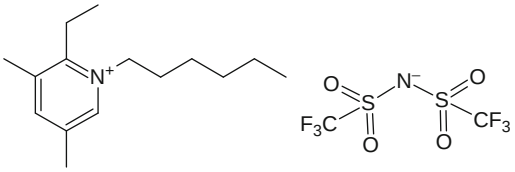


**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 283 [128] | 197 [128] |

**1148-31: 1-Hexyl-2-ethyl-3,5-dimethylpyridinium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: [hemmpy][TFSI]
**Molecular Formula**: $C_{17}H_{26}F_6N_2O_4S_2$
**Molar Mass**: 500.52
**Structure**:

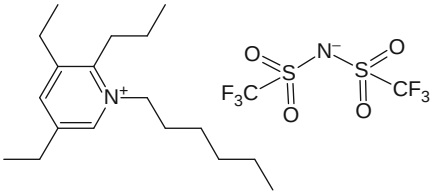


**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 207 [128] |

**1149-31: 1-Hexyl-2-propyl-3,5-diethylpyridinium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: [hpeepy][TFSI]
**Molecular Formula**: $C_{20}H_{32}F_6N_2O_4S_2$
**Molar Mass**: 542.60
**Structure**:

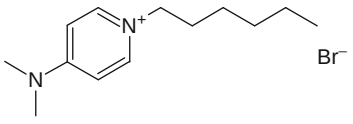


**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 206 [128] |

**1150-12: 1-Hexyl-4-(dimethylamino) pyridinium bromide**

**Abbreviation**: [hDMApy]Br
**Molecular Formula**: $C_{13}H_{23}N_2Br$
**Molar Mass**: 287.24
**Structure**:

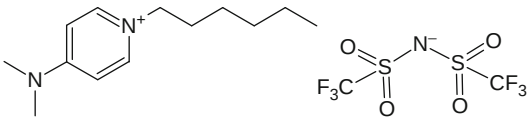


**Character**:
**Application**:

| $T_m$ (K) | $T_f$ (K) |
|---|---|
| 469 [128] | 416 [128] |

**1150-31: 1-Hexyl-4-(dimethylamino) pyridinium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: [hDMApy][TFSI]
**Molecular Formula**: $C_{15}H_{23}F_6N_3O_4S_2$
**Molar Mass**: 487.48
**Structure**:

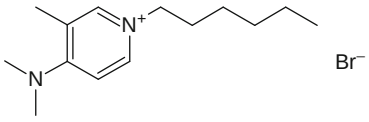


**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 204 [128] |

**1151-12: 1-Hexyl-3-methyl-4-(dimethylamino)pyridinium bromide**

**Abbreviation**: [hmDMApy]Br
**Molecular Formula**: $C_{14}H_{25}N_2Br$
**Molar Mass**: 301.27
**Structure**:

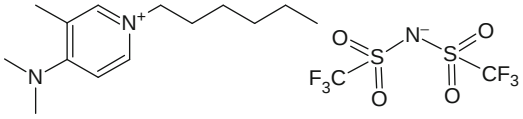


**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 392 [128] | 271 [128] |

**1151-31: 1-Hexyl-3-methyl-4-(dimethylamino)pyridinium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: [hmDMApy][TFSI]
**Molecular Formula**: $C_{16}H_{25}F_6N_3O_4S_2$
**Molar Mass**: 501.51
**Structure**:

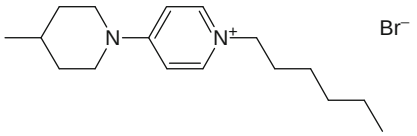


**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 271 [128] | 201 [128] |

### 1152-12: 1-Hexyl-4-(4-methylpiperidino) pyridinium bromide

**Abbreviation**: [h(mPip)py]Br
**Molecular Formula**: $C_{17}H_{29}N_2Br$
**Molar Mass**: 341.33
**Structure**:

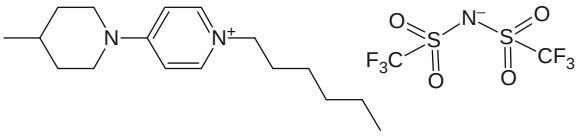



**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 306 [128] |

### 1152-31: 1-Hexyl-4-(4-methylpiperidino) pyridinium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [h(mPip)py][TFSI]
**Molecular Formula**: $C_{19}H_{29}F_6N_3O_4S_2$
**Molar Mass**: 541.57
**Structure**:

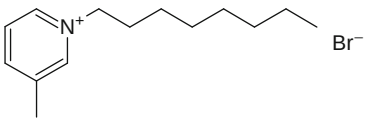



**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 310 [128] | 218 [128] |

### 1153-12: 1-Octyl-3-methylpyridinium bromide

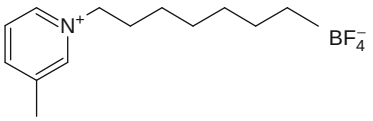
**Abbreviation**: [ompy]Br
**Molecular Formula**: $C_{14}H_{24}NBr$
**Molar Mass**: 286.25
**Structure**:




**Character**:
**Application**: [128]

### 1153-21: 1-Octyl-3-methylpyridinium tetrafluoroborate

**Abbreviation**: [ompy][$BF_4$]
**Molecular Formula**: $C_{14}H_{24}NBF_4$
**Molar Mass**: 293.15
**Structure**:

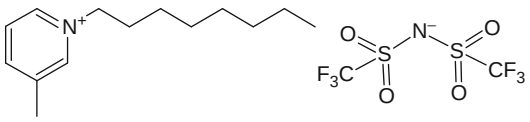



**Character**:
**Application**:

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.133 [10] | 295 |

### 1153-31: 1-Octyl-3-methylpyridinium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [ompy][TFSI]
**Molecular Formula**: $C_{16}H_{24}F_6N_2O_4S_2$
**Molar Mass**: 486.49
**Structure**:



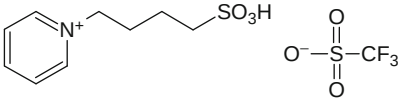

**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 193 [128] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.317 [10] | 295 |

### 1154-43: 1-(4-Sulfonylbutyl)pyridinium trifluoromethanesulfonate

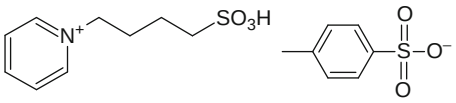
**Abbreviation**: [$HSO_3C_4PY$][TfO]
**Molecular Formula**: $C_{10}H_{14}F_3NO_6S_2$
**Molar Mass**: 365.35
**Structure**:




**Character**:
**Application**: Media and catalyst in acid-catalyzed reactions [159]

### 1154-47: 1-(4-Sulfonylbutyl)pyridinium Tosylate

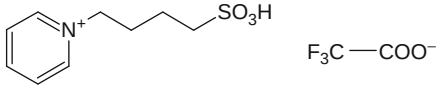
**Abbreviation**: [$HSO_3C_4PY$][Tos]
**Molecular Formula**: $C_{16}H_{21}NO_6S_2$
**Molar Mass**: 387.47
**Structure**:



**Character**:
**Application**: Media and catalyst in acid-catalyzed reactions [159]

### 1154-61: 1-(4-Sulfonylbutyl)pyridinium trifluoroacetate

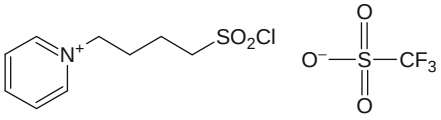
**Abbreviation**: [$HSO_3C_4PY$][TA]
**Molecular Formula**: $C_{11}H_{14}F_3NO_5S$
**Molar Mass**: 329.29
**Structure**:



**Character**:
**Application**: Media and catalyst in acid-catalyzed reactions [159]

### 1155-43: 1-(4-Chlorosulfonylbutyl)pyridinium trifluoromethanesulfonate

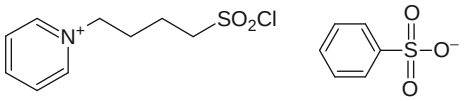
**Abbreviation**: [$ClSO_2C_4PY$][TfO]
**Molecular Formula**: $C_{10}H_{13}F_3NO_5S_2Cl$
**Molar Mass**: 383.79
**Structure**:



**Character**:
**Application**: Media and catalyst in acid-catalyzed reactions [159]

### 1155-47: 1-(4-Chlorosulfonylbutyl)pyridinium Tosylate

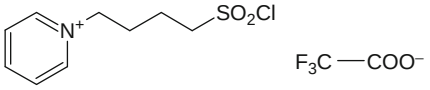
**Abbreviation**: [$ClSO_2C_4PY$][Tos]
**Molecular Formula**: $C_{15}H_{18}NO_5S_2Cl$
**Molar Mass**: 391.89
**Structure**:



**Character**:
**Application**: Media and catalyst in acid-catalyzed reactions [159]

### 1155-61: 1-(4-Chlorosulfonylbutyl)pyridinium trifluoroacetate

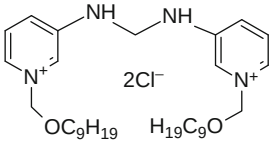
**Abbreviation**: [$ClSO_2C_4PY$][TA]
**Molecular Formula**: $C_{11}H_{13}F_3NO_4SCl$
**Molar Mass**: 347.74
**Structure**:



**Character**:
**Application**: Media and catalyst in acid-catalyzed reactions [159]

### 1156-11: *N*,*N*′-bis[3-(1-nonyloxymethyl)pyridinium chloride]methylenediamine

**Abbreviation**: [$(C_9H_{19}OCH_2Py)_2NHCH_2NH]Cl_2$
**Molecular Formula**: $C_{31}H_{54}N_4O_2Cl_2$
**Molar Mass**: 585.69
**Structure**:

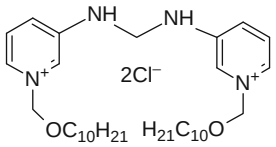


**Character**:
**Application**: Antimicrobial

| $T_m$ (K) |
|---|
| 341.15-344.15 [217] |

**1157-11: *N,N′*-bis[3-(1-decyloxymethyl)pyridinium chloride]methylenediamine**

**Abbreviation**: $[(C_{10}H_{21}OCH_2Py)_2NHCH_2NH]Cl_2$
**Molecular Formula**: $C_{33}H_{58}N_4O_2Cl_2$
**Molar Mass**: 613.74
**Structure**:

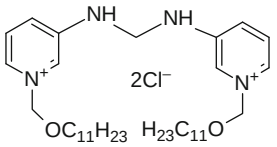



**Character**:
**Application**: Antimicrobial

| $T_m$ (K) |
|---|
| 343.15-346.15 [217] |

**1158-11: *N,N′*-bis[3-(1-undecyloxymethyl)pyridinium chloride]methylenediamine**

**Abbreviation**: $[(C_{11}H_{23}OCH_2Py)_2NHCH_2NH]Cl_2$
**Molecular Formula**: $C_{35}H_{62}N_4O_2Cl_2$
**Molar Mass**: 641.80
**Structure**:

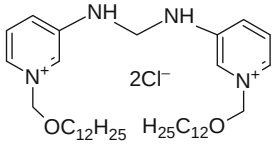



**Character**:
**Application**: Antimicrobial

| $T_m$ (K) |
|---|
| 343.15-346.15 [217] |

**1159-11: *N,N′*-bis[3-(1-dodecyloxymethyl)pyridinium chloride]methylenediamine**

**Abbreviation**: $[(C_{12}H_{25}OCH_2Py)_2NHCH_2NH]Cl_2$
**Molecular Formula**: $C_{37}H_{66}N_4O_2Cl_2$
**Molar Mass**: 669.85
**Structure**:

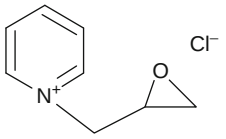



**Character**:
**Application**: Antimicrobial

| $T_m$ (K) |
|---|
| 342.15-345.15 [217] |

**1160-11: *N*-glycidylpyridinium chloride**

**Abbreviation**: [GlPy]Cl
**Molecular Formula**: $C_8H_{10}ClNO$
**Molar Mass**: 171.62
**Structure**:

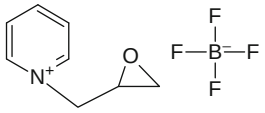



**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 239.72 [218] |

**1160-21: *N*-glycidylpyridinium tetrafluoroborate**

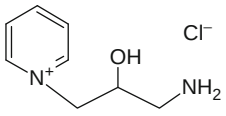
**Abbreviation**: $[GlPy][BF_4]$
**Molecular Formula**: $C_8H_{10}BF_4NO$
**Molar Mass**: 222.98
**Structure**:




**Character**:
**Application**: [218]

**1161-11: *N*-(3-amino-2-hydroxypropyl)-pyridinium chloride**

**Abbreviation**: $[NH_2CH_2CH(OH)CH_2Py]Cl$
**Molecular Formula**: $C_8H_{13}ClN_2O$
**Molar Mass**: 188.65
**Structure**:

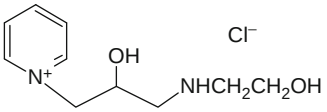



**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 213.49 [218] |

**1162-11: *N*-(3-amino-ethoxyl-2-hydroxypropyl)-pyridinium chloride**

**Abbreviation**: $[HO(CH_2)_2NHCH_2CH(OH)CH_2Py]Cl$
**Molecular Formula**: $C_{10}H_{17}ClN_2O_2$
**Molar Mass**: 232.71
**Structure**:

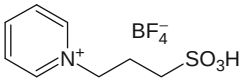



**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 217.72 [218] |

**1163-21: *N*-Propane sulfonic pyridinium tetrafluoroborate**

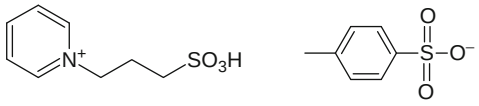
**Abbreviation**: $[PSPy][BF_4]$
**Molecular Formula**: $C_8H_{12}BF_4NO_3S$
**Molar Mass**: 289.05
**Structure**:




**Character**:
**Application**: [219]

**1163-47: *N*-Propane sulfonic pyridinium Tosylate**

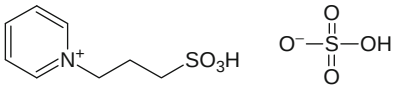
**Abbreviation**: [PSPy][Tos]
**Molecular Formula**: $C_{15}H_{19}NO_6S_2$
**Molar Mass**: 373.44
**Structure**:




**Character**:
**Application**: [219]

**1163-421: *N*-Propane sulfonic pyridinium hydrosulfate**

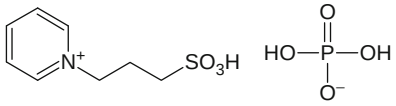
**Abbreviation**: $[PSPy][HSO_4]$
**Molecular Formula**: $C_8H_{13}NO_7S_2$
**Molar Mass**: 299.32
**Structure**:




**Character**:
**Application**: [219]

**1163-510: *N*-Propane sulfonic pyridinium Dihydrogen phosphate**

**Abbreviation**: [PSPy][dhp]
**Molecular Formula**: $C_8H_{14}NO_7PS$
**Molar Mass**: 299.24
**Structure**:

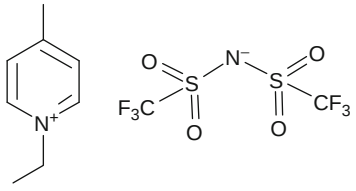



**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 363.15 [219] |

**1164-31: 1-Ethyl-4-methylpyridinium bis(trifluoromethanesulfonyl)amide**

**Abbreviation**: $[C_2MPy][NTf_2]$
**Molecular Formula**: $C_{10}H_{12}F_6N_2O_4S_2$
**Molar Mass**: 402.33
**Structure**:

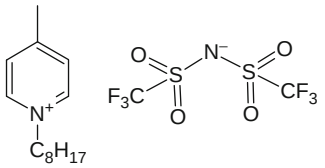



**Character**:
**Application**:

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.520 [10] | 295 |

### 1165-31: 1-Octyl-4-methylpyridinium bis(trifluoromethanesulfonyl)amide

**Abbreviation**: $[C_8MPy][NTf_2]$
**Molecular Formula**: $C_{16}H_{24}F_6N_2O_4S_2$
**Molar Mass**: 486.49
**Structure**:

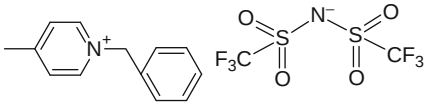


**Character**:
**Application**:

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.376 [10] | 295 |

### 1166-31: 1-Benzyl-4-methylpyridinium bis(trifluoromethanesulfonyl)amide

**Abbreviation**: $[phCH_2MPy][NTf_2]$
**Molecular Formula**: $C_{15}H_{14}F_6N_2O_4S_2$
**Molar Mass**: 464.40
**Structure**:

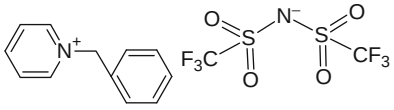


**Character**:
**Application**:

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.505 [10] | 295 |

### 1167-31: *N*-benzylpyridinium bis (trifluoromethanesulfonyl)amide

**Abbreviation**: $[phCH_2Py][NTf_2]$
**Molecular Formula**: $C_{14}H_{12}F_6N_2O_4S_2$
**Molar Mass**: 450.38
**Structure**:

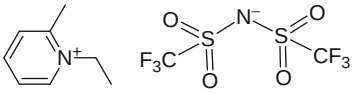


**Character**:
**Application**:

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.516 [10] | 295 |

### 1168-31: *N*-ethyl-2-methylpyridinium bis(trifluoromethanesulfonyl)amide

**Abbreviation**: $[C_2M'Py][NTf_2]$
**Molecular Formula**: $C_{10}H_{12}F_6N_2O_4S_2$
**Molar Mass**: 402.33
**Structure**:

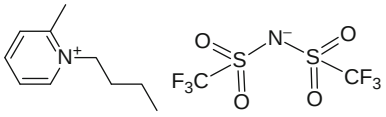


**Character**:
**Application**:

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.521 [10] | 295 |

### 1169-31: *N*-butyl-2-methylpyridinium bis(trifluoromethanesulfonyl)amide

**Abbreviation**: $[C_4M'Py][NTf_2]$
**Molecular Formula**: $C_{12}H_{16}F_6N_2O_4S_2$
**Molar Mass**: 430.39
**Structure**:

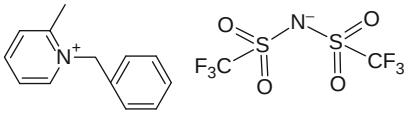


**Character**:
**Application**:

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.440 [10] | 295 |

### 1170-31: *N*-benzyl-2-methylpyridinium bis(trifluoromethanesulfonyl)amide

**Abbreviation**: $[phCH_2M'Py][NTf_2]$
**Molecular Formula**: $C_{15}H_{14}F_6N_2O_4S_2$
**Molar Mass**: 464.40
**Structure**:

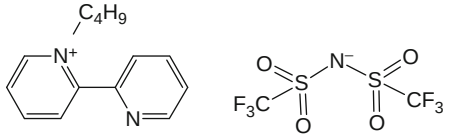


**Character**:
**Application**:

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.474 [10] | 295 |

### 1171-31: 1-Butyl-2,2′-bipyridinium bis(trifluoromethanesulfonyl)amide

**Abbreviation**: $[C_4(Py)Py][NTf_2]$
**Molecular Formula**: $C_{16}H_{17}F_6N_3O_4S_2$
**Molar Mass**: 493.44
**Structure**:

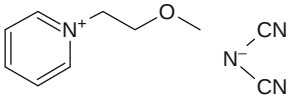



**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 214.36 [220] | 581.15 [220] |

### 1172-34: 1-Methoxyethylpyridinium Dicyanoamide

**Abbreviation**: [MOEPY][DCA]
**Molecular Formula**: $C_{10}H_{12}N_4O$
**Molar Mass**: 204.23
**Structure**:

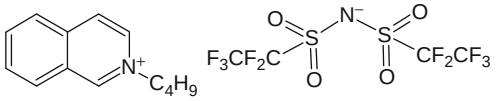



**Character**:
**Application**: [221]

# 8 Isoquinolinium

**1201-33: *N*-butyl-isoquinolinium bis((perfluoroethane)sulfonyl)imide**

**Abbreviation**: [$C_4$isoq][BETI]
**Molecular Formula**: $C_{17}H_{16}F_{10}N_2O_4S_2$
**Molar Mass**: 566.44
**Structure**:

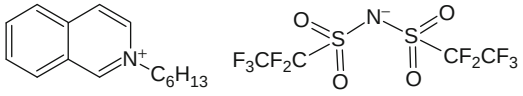


**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 187.95 [222] |

**1202-33: *N*-hexyl-isoquinolinium bis((perfluoroethane)sulfonyl)imide**

**Abbreviation**: [$C_6$isoq][BETI]
**Molecular Formula**: $C_{19}H_{20}F_{10}N_2O_4S_2$
**Molar Mass**: 594.49
**Structure**:

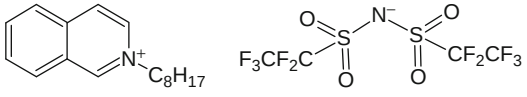


**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 189.15 [222] |

**1203-33: *N*-octyl-isoquinolinium bis((perfluoroethane)sulfonyl)imide**

**Abbreviation**: [$C_8$isoq][BETI]
**Molecular Formula**: $C_{21}H_{24}F_{10}N_2O_4S_2$
**Molar Mass**: 622.55
**Structure**:

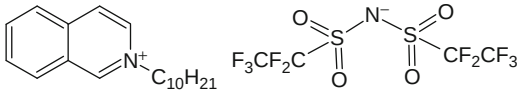


**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 218.15 [223] |
| 193.75 [222] |

**1204-33: *N*-decyl-isoquinolinium bis((perfluoroethane)sulfonyl)imide**

**Abbreviation**: [$C_{10}$isoq][BETI]
**Molecular Formula**: $C_{23}H_{28}F_{10}N_2O_4S_2$
**Molar Mass**: 650.6
**Structure**:

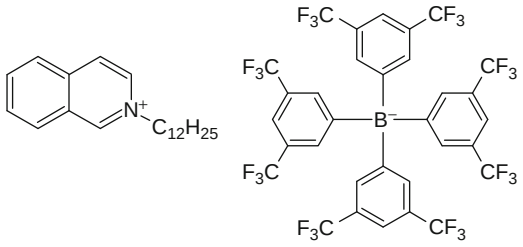


**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 195.35 [222] |

### 1205-217: *N*-dodecyl-isoquinolinium tetrakis (3,5-bis(trifluoromethyl)phenyl)borate

**Abbreviation**: [$C_{12}$isoq][TFPB]
**Molecular Formula**: $C_{53}H_{44}BF_{24}N$
**Molar Mass**: 1161.70
**Structure**:

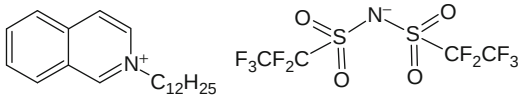


**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 345.15 [98] | 253.15 [98] |

### 1205-33: *N*-dodecyl-isoquinolinium bis((perfluoroethane)sulfonyl)imide

**Abbreviation**: [$C_{12}$isoq][BETI]
**Molecular Formula**: $C_{25}H_{32}F_{10}N_2O_4S_2$
**Molar Mass**: 678.66
**Structure**:

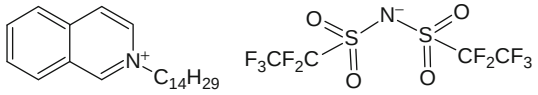


**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 197.15 [222] |

### 1206-33: *N*-tetradecyl-isoquinolinium bis((perfluoroethane)sulfonyl)imide

**Abbreviation**: [$C_{14}$isoq][BETI]
**Molecular Formula**: $C_{27}H_{36}F_{10}N_2O_4S_2$
**Molar Mass**: 706.71
**Structure**:

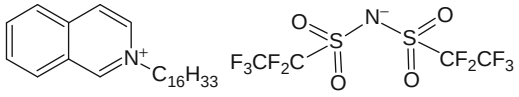


**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 206.45 [222] |

### 1207-33: *N*-hexadecyl-isoquinolinium bis((perfluoroethane)sulfonyl)imide

**Abbreviation**: [$C_{16}$isoq][BETI]
**Molecular Formula**: $C_{29}H_{40}F_{10}N_2O_4S_2$
**Molar Mass**: 734.76
**Structure**:

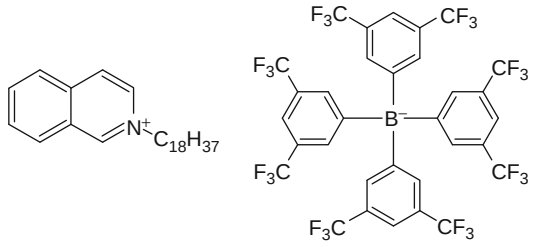


**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 211.35 [222] |

### 1208-217: *N*-octadecyl-isoquinolinium tetrakis (3,5-bis(trifluoromethyl)phenyl)borate

**Abbreviation**: [$C_{18}$isoq][TFPB]
**Molecular Formula**: $C_{59}H_{56}BF_{24}N$
**Molar Mass**: 1245.85
**Structure**:



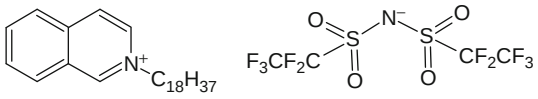
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 304.15 [98] | 248.15 [98] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.302 [98] | 298.15 | 557 [98] | 329.15 | 0.0087 [98] | 329.15 |

### 1208-33: *N*-octadecyl-isoquinolinium bis((perfluoroethane)sulfonyl)imide

**Abbreviation**: [$C_{18}$isoq][BETI]
**Molecular Formula**: $C_{31}H_{44}F_{10}N_2O_4S_2$
**Molar Mass**: 762.82
**Structure**:



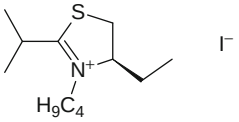
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 213.85 [222] |

# 9 Thiazolium

**1301-13: (*R*)-3-butyl-4-ethyl-2-isopropyl-2-thiazolinium iodine**

**Abbreviation:** [thia(1)]I
**Molecular Formula**: $C_{12}H_{24}INS$
**Molar Mass:** 341.3
**Structure:**

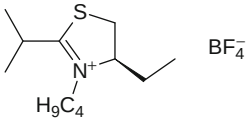



**Character:**
**Application:**

| $T_m$ (K) |
|---|
| 410.15 [224] |

**1301-21: (*R*)-3-butyl-4-ethyl-2-isopropyl-2-thiazolinium tetrafluoroborate**

**Abbreviation:** [thia(1)][$BF_4$]
**Molecular Formula**: $C_{12}H_{24}BF_4NS$
**Molar Mass:** 301.2
**Structure:**

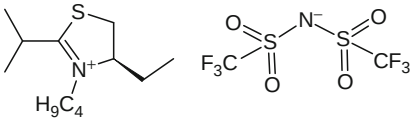



**Character:**
**Application:**

| $T_m$ (K) |
|---|
| 384.15 [224] |

**1301-31: (*R*)-3-butyl-4-ethyl-2-isopropyl-2-thiazolinium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation:** [thia(1)][TFSI]
**Molecular Formula**: $C_{14}H_{24}F_6N_2O_4S_3$
**Molar Mass:** 494.54
**Structure:**

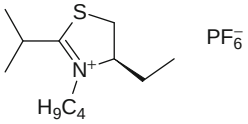



**Character:**
**Application:**

| $T_g$ (K) |
|---|
| 205.15 [224] |

**1301-51: (*R*)-3-butyl-4-ethyl-2-isopropyl-2-thiazolinium hexafluorophosphate**

**Abbreviation:** [thia(1)][$PF_6$]
**Molecular Formula**: $C_{12}H_{24}F_6NPS$
**Molar Mass:** 359.36
**Structure:**

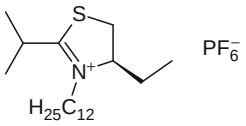



**Character:**
**Application:**

| $T_m$ (K) |
|---|
| 409.15 [224] |

**1302-51: (*R*)-3-dodecyl-4-ethyl-2-isopropyl-2-thiazolinium hexafluorophosphate**

**Abbreviation:** [thia(2)][$PF_6$]
**Molecular Formula**: $C_{20}H_{40}F_6NPS$
**Molar Mass:** 471.57
**Structure:**



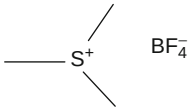

**Character:**
**Application:**

| $T_m$ (K) |
|---|
| 315.15 [224] |

# 10 Sulfonium

### 1401-21: Tri-methylsulfonium tetrafluoroborate

**Abbreviation**: [S111][$BF_4$]
**Molecular Formula**: $C_3H_9BF_4S$
**Molar Mass**: 163.98
**Structure**:

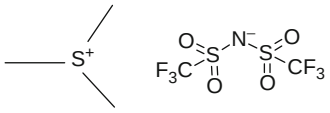


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 490.15 [43] |

### 1401-31: Tri-methylsulfonium bis((trifluoromethyl) sulfonyl)imide

**Abbreviation**: [S111][TFSI]
**Molecular Formula**: $C_5H_9F_6NO_4S_3$
**Molar Mass**: 357.32
**Structure**:



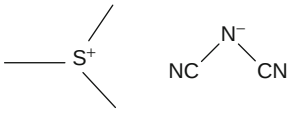
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 317.65 [225] |
| 317.65 [43] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.58 [225] | 318.15 | 44 [225] | 318.15 | 0.82 [225] | 318.15 |

### 1401-34: Tri-methylsulfonium dicyanoamide

**Abbreviation**: [S111][dca]
**Molecular Formula**: $C_5H_9N_3S$
**Molar Mass**: 143.21
**Structure**:



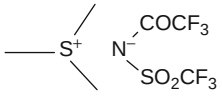
**Character**:
**Application**: Separation process, electrolyte

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 272.15 [226] | 456.15 [226] |

| $\eta_D$ (cp) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 76.2 [226] | 273.15 | 17.1 [226] | 313.15 | 7.2 [226] | 353.15 | 2.08 [226] | 293.15 |
| 27.2 [226] | 293.15 | 10.5 [226] | 333.15 | | | | |

### 1401-35: Tri-methylsulfonium 2,2,2-trifluoro-*N*-(trifluoromethylsulfonyl)acetamide

**Abbreviation**: [S111][TSAC]
**Molecular Formula**: $C_6H_9F_6NO_3S_2$
**Molar Mass**: 321.26
**Structure**:

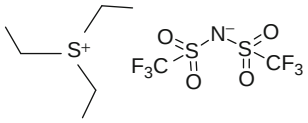


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 305.15 [43] |

### 1402-31: Tri-ethylsulfonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [S222][TFSI]
**Molecular Formula**: $C_8H_{15}F_6NO_4S_3$
**Molar Mass**: 399.4
**Structure**:



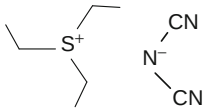
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 259.15 [59] |
| 237.65 [225] |
| 237.65 [43] |
| 238.15 [89] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | Molar conductivity (S·cm$^2$·mol$^{-1}$) | $T$ (K) |
|---|---|---|---|---|---|
| 1.49 [59] | 298.15 | 33 [59] | 298.15 | 3.66 [225] | 298.15 |
| 1.46 [225] | 298.15 | 30 [89] | 298.15 | | |
| | | 30 [225] | 298.15 | | |

### 1402-34: Tri-ethylsulfonium dicyanoamide

**Abbreviation**: [S222][dca]
**Molecular Formula**: $C_8H_{15}N_3S$
**Molar Mass**: 185.29
**Structure**:



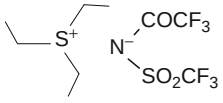
**Character**:
**Application**: Separation process, electrolyte

| $T_d$ (K) |
|---|
| 453.15 [226] |

| $\eta_D$ (cp) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 94.9 [226] | 253.15 | 20.9 [226] | 293.15 | 7.9 [226] | 333.15 | 2.24 [226] | 293.15 |
| 43.3 [226] | 273.15 | 12.1 [226] | 313.15 | 5.7 [226] | 353.15 | | |

### 1402-35: Tri-ethylsulfonium 2,2,2-trifluoro-*N*-(trifluoromethylsulfonyl)acetamide

**Abbreviation**: [S222][TSAC]
**Molecular Formula**: $C_9H_{15}F_6NO_3S_2$
**Molar Mass**: 363.35
**Structure**:



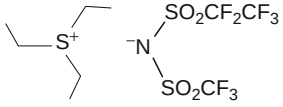
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 305.15 [43] | 171.15 [59] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.42 [59] | 298.15 | 80 [43] | 298.15 | 0.9 [59] | 298.15 |
| | | 28 [59] | 298.15 | | |

### 1402-316: Tri-ethylsulfonium *N*-(trifluoromethylsulfonyl) pentafluoroethylsulfonamide

**Abbreviation**: [S222][C1C2]
**Molecular Formula**: $C_9H_{15}F_8NO_4S_3$
**Molar Mass**: 449.4
**Structure**:



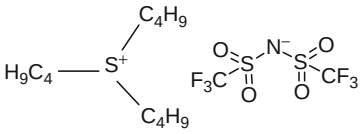
**Character**:
**Application**: Electrolyte

| $T_g$ (K) |
|---|
| 180.15 [59] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.53 [59] | 298.15 | 55 [59] | 298.15 | 0.37 [59] | 298.15 |

### 1403-31: Tri-butylsulfonium bis((trifluoromethyl) sulfonyl)imide

**Abbreviation**: [S444][TFSI]
**Molecular Formula**: $C_{14}H_{27}F_6NO_4S_3$
**Molar Mass**: 483.56
**Structure**:



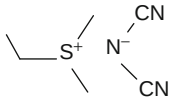
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 265.65 [225] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) | Molar conductivity (S·cm$^2$·mol$^{-1}$) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1.29 [225] | 298.15 | 75 [225] | 298.15 | 0.14 [225] | 298.15 | 2.66 [225] | 298.15 |

### 1405-34: Ethyldimethylsulfonium dicyanoamide

**Abbreviation**: [EtMe$_2$S][dca]
**Molecular Formula**: $C_6H_{11}N_3S$
**Molar Mass**: 157.24
**Structure**:



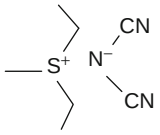
**Character**:
**Application**: Separation process, electrolyte

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 245.15 [226] | 455.15 [226] |

| $\eta_D$ (cp) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 120 [226] | 253.15 | 25.3 [226] | 293.15 | 9.1 [226] | 333.15 | 2.21 [226] | 293.15 |
| 55.7 [226] | 273.15 | 14.1 [226] | 313.15 | 6.4 [226] | 353.15 | | |

### 1406-34: Methyldiethylsulfonium dicyanoamide

**Abbreviation**: [MeEt$_2$S][dca]
**Molecular Formula**: $C_7H_{13}N_3S$
**Molar Mass**: 171.26
**Structure**:



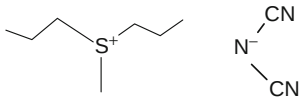
**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 449.15 [226] |

| $\eta_D$ (cp) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 102 [226] | 253.15 | 22.9 [226] | 293.15 | 8.7 [226] | 333.15 | 2.68 [226] | 293.15 |
| 47.9 [226] | 273.15 | 13.2 [226] | 313.15 | 6.2 [226] | 353.15 | | |

### 1407-34: Methyldipropylsulfonium dicyanoamide

**Abbreviation**: [$MePr_2S$][dca]
**Molecular Formula**: $C_9H_{17}N_3S$
**Molar Mass**: 199.32
**Structure**:



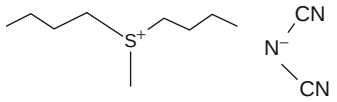
**Character**:
**Application**: Separation process, electrolyte

| $T_d$ (K) |
|---|
| 451.15 [226] |

| $\eta_D$ (cp) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 185 [226] | 253.15 | 29.5 [226] | 293.15 | 9.7 [226] | 333.15 | 1.5 [226] | 293.15 |
| 70.7 [226] | 273.15 | 15.7 [226] | 313.15 | 6.6 [226] | 353.15 | | |

### 1408-34: Methyldibutylsulfonium dicyanoamide

**Abbreviation**: [$MeBu_2S$][dca]
**Molecular Formula**: $C_{11}H_{21}N_3S$
**Molar Mass**: 227.37
**Structure**:



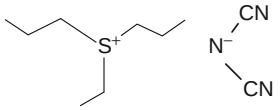
**Character**:
**Application**: Separation process, electrolyte

| $T_d$ (K) |
|---|
| 451.15 [226] |

| $\eta_D$ (cp) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 509 [226] | 253.15 | 60.0 [226] | 293.15 | 15.4 [226] | 333.15 | 0.59 [226] | 293.15 |
| 169 [226] | 273.15 | 27.8 [226] | 313.15 | 9.7 [226] | 353.15 | | |

### 1409-34: Ethyldipropylsulfonium dicyanoamide

**Abbreviation**: [$EtPr_2S$][dca]
**Molecular Formula**: $C_{10}H_{19}N_3S$
**Molar Mass**: 213.34
**Structure**:



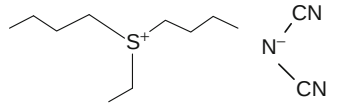
**Character**:
**Application**: Separation process, electrolyte

| $T_d$ (K) | $T_m$ (K) |
|---|---|
| 449.15 [226] | 239.15 [226] |

| $\eta_D$ (cp) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 173 [226] | 253.15 | 29.4 [226] | 293.15 | 9.6 [226] | 333.15 | 1.47 [226] | 293.15 |
| 68.6 [226] | 273.15 | 15.6 [226] | 313.15 | 6.5 [226] | 353.15 | | |

### 1410-34: Ethyldibutylsulfonium dicyanoamide

**Abbreviation**: [$EtBu_2S$][dca]
**Molecular Formula**: $C_{12}H_{23}N_3S$
**Molar Mass**: 241.4
**Structure**:



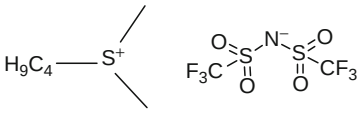
**Character**:
**Application**: Separation process, electrolyte

| $T_d$ (K) |
|---|
| 452.15 [226] |

| $\eta_D$ (cp) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 494 [226] | 253.15 | 51.7 [226] | 293.15 | 14 [226] | 333.15 | 0.69 [226] | 293.15 |
| 143 [226] | 273.15 | 24.8 [226] | 313.15 | 8.8 [226] | 353.15 | | |

**1411-31: Butyldimethylsulfonium bis((trifluoromethyl)sulfonyl)amide**

**Abbreviation**: [S114][TFSI]
**Molecular Formula**: $C_8H_{15}F_6NO_4S_3$
**Molar Mass**: 399.39
**Structure**:

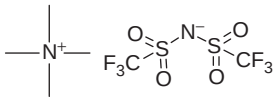



**Character**:
**Application**: [227]

# 11 Ammonium

### 1501-31: Tetramethylammonium bis((trifluoromethyl) sulfonyl)imide

**Abbreviation**: [N1111][TFSI]
**Molecular Formula**: $C_6H_{12}F_6N_2O_4S_2$
**Molar Mass**: 354.29
**Structure**:

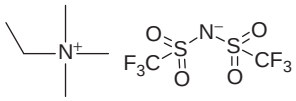


**Character**:
**Application**:

| $T_m$ (K) | $T_m$ (K) | $T_d$ (K) |
|---|---|---|
| 409.5 ± 1 [228] | 406.15 ± 1 [201] | 653.15 [228] |
| 403.15 ± 1 [43] | 406.15 ± 1 [229] | |

### 1502-31: Trimethylethylammonium bis((trifluoromethyl) sulfonyl)imide

**Abbreviation**: [N1112][TFSI]
**Molecular Formula**: $C_7H_{14}F_6N_2O_4S_2$
**Molar Mass**: 368.32
**Structure**:

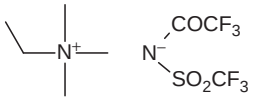


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 382.15 ± 1 [201] |
| 378.15 [43] |

### 1502-35: Trimethylethylammonium 2,2,2-trifluoro-*N*-(trifluoromethylsulfonyl)acetamide

**Abbreviation**: [N1112][TSAC]
**Molecular Formula**: $C_8H_{14}F_6N_2O_3S$
**Molar Mass**: 332.27
**Structure**:



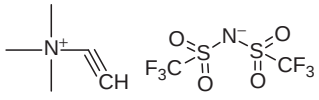
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 263.15 [43] |

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 51 [43] | 298.15 |

### 1503-31: Trimethyl-ethynylammonium bis((trifluoromethyl)sulfonyl)imide

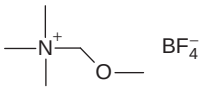
**Abbreviation**: [N111$C_2$H][TFSI]
**Molecular Formula**: $C_7H_{10}F_6N_2O_4S_2$
**Molar Mass**: 364.29
**Structure**:



**Character**:
**Application**:

### 1504-21: Trimethyl-methoxymethylammonium tetrafluoroborate

**Abbreviation**: [N111C$_2$O][BF$_4$], [N111,1O1][BF$_4$]
**Molecular Formula**: $C_5H_{14}BF_4NO$
**Molar Mass**: 190.98
**Structure**:

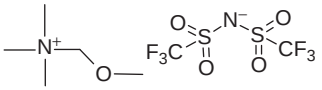


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 319.15 [230] |

### 1504-31: Trimethyl-methoxymethylammonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [N111C$_2$O][TFSI]
**Molecular Formula**: $C_7H_{14}F_6N_2O_5S_2$
**Molar Mass**: 384.32
**Structure**:



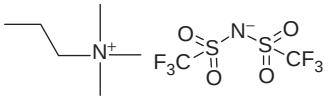
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 277.65 [45] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.51 [45] | 298.15 | 50 [45] | 298.15 | 0.47 [45] | 298.15 |

### 1505-31: Trimethylpropylammonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [TMPA][TFSI], [N1113][TFSI]
**Molecular Formula**: $C_8H_{16}F_6N_2O_4S_2$
**Molar Mass**: 382.35
**Structure**:



**Character**:
**Application**:

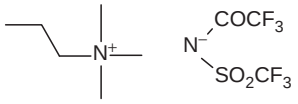
| $T_m$ (K) |
|---|
| 295.15 [231] |
| 290.15 [45] |
| 292.15 [43] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) | Molar conductivity (S·cm$^2$·mol$^{-1}$) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1.44 [231] | 293.15 | 72 [231] | 298.15 | 0.327 [231] | 298.15 | 3.75 [43] | 298.15 |
| 1.44 [45] | 298.15 | 72 [45] | 298.15 | 0.33 [45] | 298.15 | 3.75 [45] | 298.15 |
| 1.44 [43] | | 72, 69 [43] | 298.15 | 0.33 [43] | 298.15 | | |

| Electrochemical window (V) | Anodic limit (V) | Cathode limit (V) | $T$ (K) |
|---|---|---|---|
| 5.8 [50] | 2.5 | −3.3 | 298 |

### 1505-35: Trimethylpropylammonium 2,2,2-trifluoro-*N*-(trifluoromethylsulfonyl)acetamide

**Abbreviation**: [TMPA][TSAC], [N1113][TSAC]
**Molecular Formula**: $C_9H_{16}F_6N_2O_3S$
**Molar Mass**: 346.29
**Structure**:



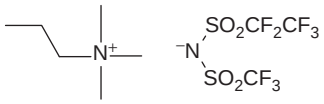

**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 283.15 [43] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) | Molar conductivity (S·cm$^2$·mol$^{-1}$) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1.38 [43] | 298.15 | 45 [43] | 298.15 | 0.434 [43] | 298.15 | 3.98 [43] | 298.15 |

### 1505-316: Trimethylpropylammonium *N*-(trifluoromethylsulfonyl)pentafluoroethylsulfonamide

**Abbreviation**: [N1113][C1C2]
**Molecular Formula**: $C_9H_{16}F_8N_2O_4S_2$
**Molar Mass**: 432.35
**Structure**:



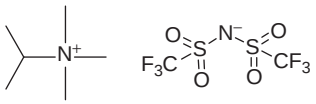

**Character**:
**Application**: Electrolyte

| $T_m$ (K) |
|---|
| 292.15 [59] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.48 [59] | 298.15 | 174 [59] | 298.15 | 0.12 [59] | 298.15 |

### 1506-31: Trimethyl-isopropylammonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [N1113′][TFSI]
**Molecular Formula**: $C_8H_{16}F_6N_2O_4S_2$
**Molar Mass**: 382.35
**Structure**:

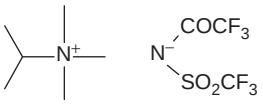



**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 402.15 [43] |

### 1506-35: Trimethyl-isopropylammonium 2,2,2-trifluoro-*N*-(trifluoromethylsulfonyl)acetamide

**Abbreviation**: [N1113′][TSAC]
**Molecular Formula**: $C_9H_{16}F_6N_2O_3S$
**Molar Mass**: 346.29
**Structure**:

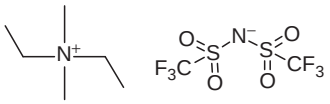


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 302.15 [43] |

### 1507-31: Dimethyl-diethylammonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [N1122][TFSI]
**Molecular Formula**: $C_8H_{16}F_6N_2O_4S_2$
**Molar Mass**: 382.35
**Structure**:

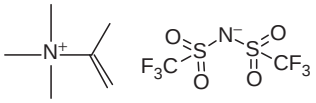


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 369.15 ± 1 [201] |

### 1508-31: Trimethyl-allylammonium bis((trifluoromethyl) sulfonyl)imide

**Abbreviation**: [N111C3][TFSI]
**Molecular Formula**: $C_8H_{14}F_6N_2O_4S_2$
**Molar Mass**: 380.33
**Structure**:

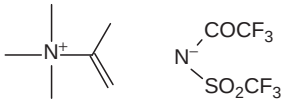


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 314.15 [43] |

### 1508-35: Trimethyl-allylammonium 2,2,2-trifluoro-*N*-(trifluoromethylsulfonyl)acetamide

**Abbreviation**: [N111C3][TSAC]
**Molecular Formula**: $C_9H_{14}F_6N_2O_3S$
**Molar Mass**: 344.28
**Structure**:

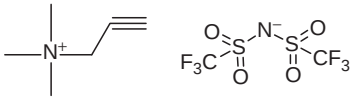


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 270.25 [43] |

### 1509-31: Trimethyl-propargylammonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [N111C3′][TFSI]
**Molecular Formula**: $C_8H_{12}F_6N_2O_4S_2$
**Molar Mass**: 378.32
**Structure**:

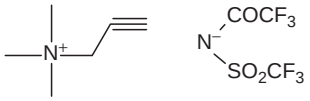


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 318.15 [43] |

### 1509-35: Trimethyl-propargylammonium 2,2,2-trifluoro-*N*-(trifluoromethylsulfonyl)acetamide

**Abbreviation**: [N111C3′][TSAC]
**Molecular Formula**: $C_9H_{12}F_6N_2O_3S$
**Molar Mass**: 342.26
**Structure**:

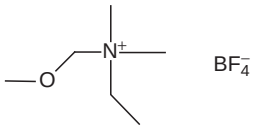


**Character**:
**Application**:

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 65 [43] | 298.15 |

### 1511-21: Methoxymethylenedimethylethylammonium tetrafluoroborate

**Abbreviation**: [N112,1O1][$BF_4$]
**Molecular Formula**: $C_6H_{16}BF_4NO$
**Molar Mass**: 205
**Structure**:

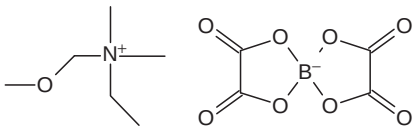


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 257.15 [230] |

### 1511-210: Methoxymethylenedimethylethylammonium bis(oxalato)borate

**Abbreviation**: [MOMNM$_2$E][BOB], [N112,1O1][BOB]
**Molecular Formula**: $C_{10}H_{16}BNO_9$
**Molar Mass**: 305.05
**Structure**:

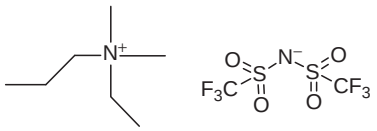


**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 323.95 [91] | 240.75 [91] |

### 1512-31: Dimethyl-ethyl-propylammonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [N1123][TFSI]
**Molecular Formula**: $C_9H_{18}F_6N_2O_4S_2$
**Molar Mass**: 396.38
**Structure**:



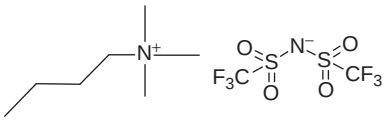
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 259.15 ± 1 [201] | 178.15 ± 2 [201] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) | Molar conductivity (S·cm$^2$·mol$^{-1}$) |
|---|---|---|---|---|---|---|
| 1.41 [201] | 293.15 | 83 ± 5% [201] | 298.15 | 0.12 ± 5% [201] | 298.15 | 0.33 [201] |

### 1513-31: Trimethyl-butylammonium bis((trifluoromethyl) sulfonyl)imide

**Abbreviation**: [N1114][TFSI]
**Molecular Formula**: $C_9H_{18}F_6N_2O_4S_2$
**Molar Mass**: 396.38
**Structure**:



**Character**:
**Application**:

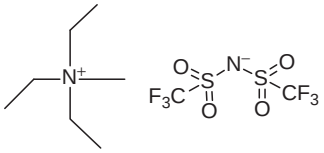
| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 280.15 ± 1 [201] | 192.15 ± 2 [201] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) | Molar conductivity (S·cm$^2$·mol$^{-1}$) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1.41 [201] | 293.15 | 116 ± 5% [201] | 298.15 | 0.14 ± 5% [201] | 298.15 | 0.39 [201] | 298.15 |
| 1.3686 [48] | 303.15 | | | | | | |

| Electrochemical window (V) | Anodic limit (V) | Cathode limit (V) |
|---|---|---|
| 5.85 [232] | 2.5 | −3.35 |

### 1514-31: Triethyl-methylammonium bis((trifluoromethyl) sulfonyl)imide

**Abbreviation**: [N1222][TFSI]
**Molecular Formula**: $C_9H_{18}F_6N_2O_4S_2$
**Molar Mass**: 396.38
**Structure**:

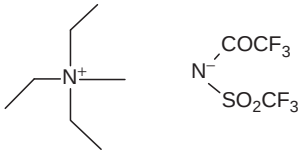


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 402.15 [43] |

### 1514-35: Triethyl-methylammonium 2,2,2-trifluoro-*N*-(trifluoromethylsulfonyl)acetamide

**Abbreviation**: [N1222][TSAC]
**Molecular Formula**: $C_{10}H_{18}F_6N_2O_3S$
**Molar Mass**: 360.32
**Structure**:



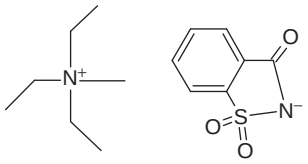
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 293.15 [43] |

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 61 [43] | 298.15 |

### 1514-312: Triethyl-methylammonium Saccharinate

**Abbreviation**: [N1222][Sac]
**Molecular Formula**: $C_{14}H_{22}N_2O_3S$
**Molar Mass**: 298.40
**Structure**:

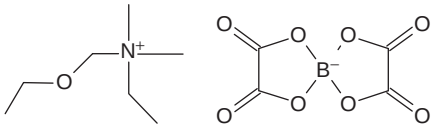


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 299.15 [16] |

### 1515-210: Ethoxymethylene-dimethyl-ethylammonium bis(oxalato)borate

**Abbreviation**: [EOMNM$_2$E][BOB], [N112,1O2][BOB]
**Molecular Formula**: $C_{11}H_{18}BNO_9$
**Molar Mass**: 319.08
**Structure**:

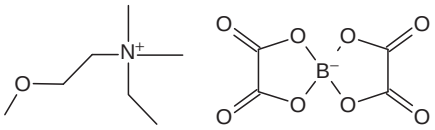


**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 319.85 [91] | 232.95 [91] |

### 1516-210: Methoxyethyl-dimethyl-ethylammonium bis(oxalato)borate

**Abbreviation**: [MOENM$_2$E][BOB], [N112,2O1][BOB]
**Molecular Formula**: $C_{11}H_{18}BNO_9$
**Molar Mass**: 319.08
**Structure**:

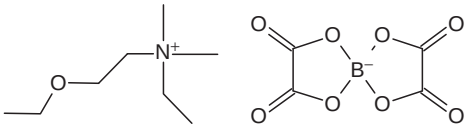


**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 321.45 [91] | 237.25 [91] |

### 1517-210: Ethoxyethyl-dimethyl-ethylammonium bis(oxalato)borate

**Abbreviation**: [EOENM$_2$E][BOB], [N112,2O2][BOB]
**Molecular Formula**: $C_{12}H_{20}BNO_9$
**Molar Mass**: 333.10
**Structure**:

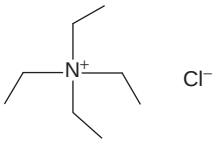


**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 228.35 [91] |

### 1518-11: Tetraethylammonium chloride

**Abbreviation**: [TEA]Cl, [N2222]Cl
**Molecular Formula**: $C_8H_{20}ClN$
**Molar Mass**: 165.71
**Structure**:

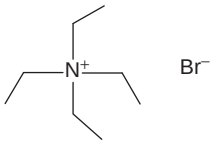



**Character**:
**Application**:

| $T_f$ (K) | $T_d$ (K) |
|---|---|
| 364.15 ± 1 [233] | 537.15 [17] |

### 1518-12: Tetraethylammonium bromide

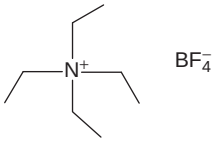
**Abbreviation**: [TEA]Br
**Molecular Formula**: $C_8H_{20}BrN$
**Molar Mass**: 210.16
**Structure**:




**Character**:
**Application**:

### 1518-21: Tetraethylammonium tetrafluoroborate

**Abbreviation**: [TEA][$BF_4$]
**Molecular Formula**: $C_8H_{20}BF_4N$
**Molar Mass**: 217.06
**Structure**:

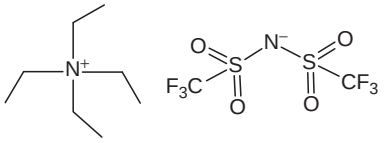



**Character**:
**Application**:

| $T_m$ (K) | $T_f$ (K) |
|---|---|
| 345.15 [17] | 318.15 [17] |

### 1518-31: Tetraethylammonium bis((trifluoromethyl) sulfonyl)imide

**Abbreviation**: [TEA][TFSI], [N2222][TFSI]
**Molecular Formula**: $C_{10}H_{20}F_6N_2O_4S_2$
**Molar Mass**: 410.40
**Structure**:

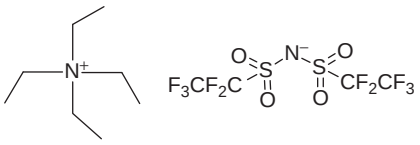



**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) | $T_f$ (K) |
|---|---|---|
| 378.15 [43] | 712.15 [17] | 371.15 [17] |
| 383.15 [43] | 672.15 [17] | |
| 378.15 [129] | | |
| 378.15 [89] | | |
| 377.15 [17] | | |
| 382.15 ± 1 [201] | | |

### 1518-33: Tetraethylammonium bis((perfluoroethane) sulfonyl)imide

**Abbreviation**: [TEA][BETI], [N2222][BETI]
**Molecular Formula**: $C_{12}H_{20}F_{10}N_2O_4S_2$
**Molar Mass**: 510.42
**Structure**:

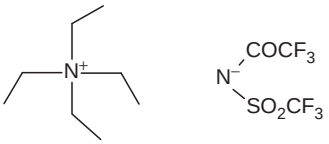


**Character**:
**Application**:

| $T_m$ (K) | $T_f$ (K) | $T_d$ (K) |
|---|---|---|
| 356.15 [17] | 348.15 [17] | 670.15 [17] |
| | | 696.15 [17] |

### 1518-35: Tetraethylammonium 2,2,2-trifluoro-*N*-(trifluoromethylsulfonyl)acetamide

**Abbreviation**: [TEA][TSAC], [N2222][TSAC]
**Molecular Formula**: $C_{11}H_{20}F_6N_2O_3S$
**Molar Mass**: 374.35
**Structure**:

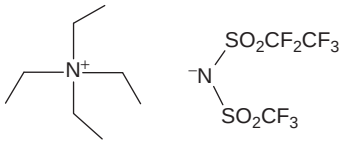


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 293.15 [43] |
| 296.15 [43] |

### 1518-316: Tetraethylammonium *N*-(trifluoromethylsulfonyl)pentafluoroethylsulfonamide

**Abbreviation**: [N2222][C1C2]
**Molecular Formula**: $C_{11}H_{20}F_8N_2O_4S_2$
**Molar Mass**: 460.41
**Structure**:

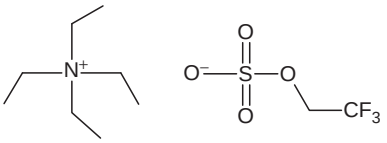


**Character**:
**Application**: Electrolyte

| $T_m$ (K) |
|---|
| 342.15 [59] |

### 1518-410: Tetraethylammonium 2,2,2-trifluoroethyl sulfate

**Abbreviation**: [TEA][$C_2F_3$], [N2222][$C_2F_3$]
**Molecular Formula**: $C_{10}H_{22}F_3NSO_4$
**Molar Mass**: 309.35
**Structure**:



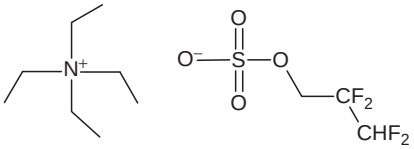
**Character**: Hydrophilic
**Application**: Medium for lipase-catalyzed reaction

| $T_m$ (K) |
|---|
| 278.15 [62] |

| $\eta_D$ (cp) | $K$ (S/m) |
|---|---|
| 1300 [62] | 0.035 [62] |

### 1518-411: Tetraethylammonium 2,2,3,3-tetrafluoropropyl sulfate

**Abbreviation**: [TEA][$C_3F_4$], [N2222][$C_3F_4$]
**Molecular Formula**: $C_{11}H_{23}F_4NSO_4$
**Molar Mass**: 341.36
**Structure**:



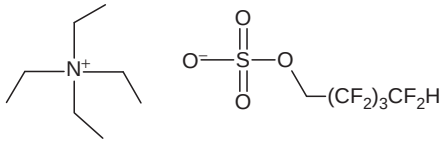
**Character**:
**Application**: Medium for lipase-catalyzed reaction

| $T_m$ (K) |
|---|
| 264.15 [62] |

| $\eta_D$ (cp) | $K$ (S/m) |
|---|---|
| 820 [62] | 0.028 [62] |

### 1518-414: Tetraethylammonium 2,2,3,3,4,4,5,5-octafluoropentyl sulfate

**Abbreviation**: [TEA][$C_5F_8$], [N2222][$C_5F_8$]
**Molecular Formula**: $C_{13}H_{23}F_8NSO_4$
**Molar Mass**: 441.38
**Structure**:



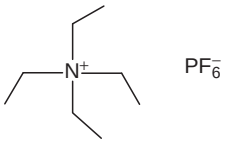
**Character**:
**Application**: Medium for lipase-catalyzed reaction

| $T_m$ (K) |
|---|
| 260.15 [62] |

| $\eta_D$ (cp) | $K$ (S/m) |
|---|---|
| 900 [62] | 0.026 [62] |

### 1518-51: Tetraethylammonium hexafluorophosphate

**Abbreviation**: [TEA][$PF_6$], [N2222][$PF_6$]
**Molecular Formula**: $C_8H_{20}F_6NP$
**Molar Mass**: 275.22
**Structure**:

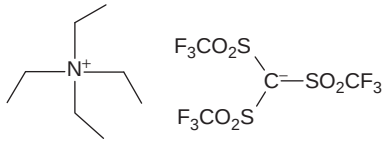


**Character**:
**Application**:

| $T_m$ (K) | $T_f$ (K) | $T_d$ (K) |
|---|---|---|
| 343.15 [17] | 215.15 [17] | 661.15 [17] |

### 1518-71: Tetraethylammonium tris(trifluoromethylsulfonyl)methide

**Abbreviation**: [TEA][Me], [N2222][Me]
**Molecular Formula**: $C_{12}H_{20}F_9NO_6S_3$
**Molar Mass**: 541.48
**Structure**:

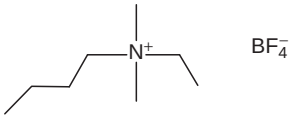


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 319.15 [17] | 670.15 [17] |
| | 684.15 [17] |

### 1519-21: Dimethyl-ethyl-butylammonium tetrafluoroborate

**Abbreviation**: [N1124][$BF_4$]
**Molecular Formula**: $C_8H_{20}BF_4N$
**Molar Mass**: 217.06
**Structure**:

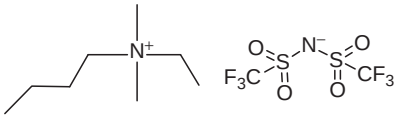


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 431.15 [230] |

### 1519-31: Dimethyl-ethyl-butylammonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [N1124][TFSI]
**Molecular Formula**: $C_{10}H_{20}F_6N_2O_4S_2$
**Molar Mass**: 410.40
**Structure**:



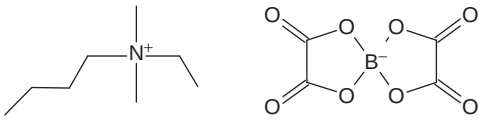
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 265.15 [201] | 181.15 ± 2 [201] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) | Molar conductivity (S·cm$^2$·mol$^{-1}$) |
|---|---|---|---|---|---|---|
| 1.37 [201] | 293.15 | 110 ± 5% [201] | 298.15 | 0.12 ± 5% [201] | 298.15 | 0.38 [201] |

### 1519-210: Dimethyl-ethyl-butylammonium bis(oxalato)borate

**Abbreviation**: [N1124][BOB]
**Molecular Formula**: $C_{12}H_{20}BNO_8$
**Molar Mass**: 317.10
**Structure**:

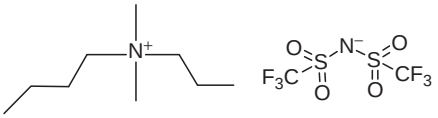


**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 228.75 [91] |

### 1520-31: Dimethyl-propyl-butylammonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [N1134][TFSI]
**Molecular Formula**: $C_{11}H_{22}F_6N_2O_4S_2$
**Molar Mass**: 424.43
**Structure**:



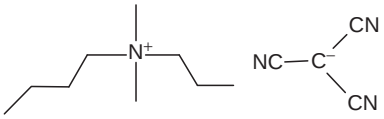
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 288.15 ± 1 [201] | 190.15 ± 2 [201] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) | Molar conductivity (S·cm$^2$·mol$^{-1}$) |
|---|---|---|---|---|---|---|
| 1.34 [201] | 293.15 | 170 ± 5% [201] | 298.15 | 0.082 ± 5% [201] | 298.15 | 0.26 [201] |
| 1.3457 [48] | 303.15 | | | | | |

### 1520-72: Dimethyl-propyl-butylammonium tricyanomethanide

**Abbreviation**: [N1134][TCM], [N1134][C(CN)$_3$]
**Molecular Formula**: $C_{13}H_{22}N_4$
**Molar Mass**: 234.34
**Structure**:



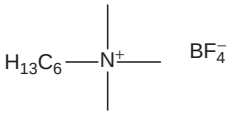
**Character**:
**Application**: [56]

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 279.65 | 186.15 |

| $\eta_D$ (cp) | $K$ (S/m) | $T$ (K) |
|---|---|---|
| 28.61 | 0.8 | 298.15 |

### 1521-21: Trimethyl-hexylammonium tetrafluoroborate

**Abbreviation**: [N6111][BF$_4$]
**Molecular Formula**: $C_9H_{22}BF_4N$
**Molar Mass**: 231.08
**Structure**:

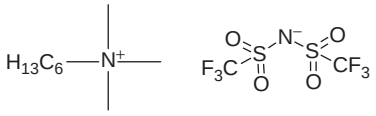


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 399.15 [230] |

### 1521-31: Trimethyl-hexylammonium bis ((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [N6111][TFSI]
**Molecular Formula**: $C_{11}H_{22}F_6N_2O_4S_2$
**Molar Mass**: 424.43
**Structure**:



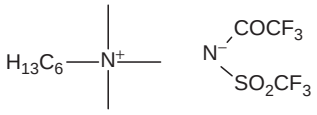
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 300.15 [43] | 199.15 ± 2 [201, 229] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) | Molar conductivity (S·cm$^2$·mol$^{-1}$) |
|---|---|---|---|---|---|---|
| 1.33 [31, 201, 229] | 293.15 | 153 ± 5% [31, 201, 229] | 298.15 | 0.043 ± 5% [201, 229] | 298.15 | 0.14 [201, 229] |
| 1.3078 [48] | 303.15 | | | | | |

### 1521-35: Trimethyl-hexylammonium 2,2,2-trifluoro-*N*-(trifluoromethylsulfonyl)acetamide

**Abbreviation**: [N6111][TSAC]
**Molecular Formula**: $C_{12}H_{22}F_6N_2O_3S$
**Molar Mass**: 388.37
**Structure**:

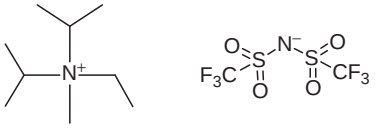


**Character**:
**Application**:

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 119 [43] | 298.15 |

### 1522-31: Methyl-ethyl-di(i-propyl)ammonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [N123′3′][TFSI]
**Molecular Formula**: $C_{11}H_{22}F_6N_2O_4S_2$
**Molar Mass**: 424.43
**Structure**:

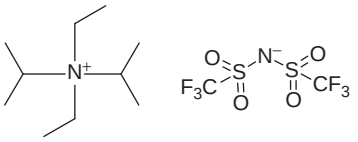


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 413.15 ± 1 [201, 206] |

### 1523-31: Diethyl-di(iso)propylammonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [N223′3′][TFSI]
**Molecular Formula**: $C_{12}H_{24}F_6N_2O_4S_2$
**Molar Mass**: 438.46
**Structure**:

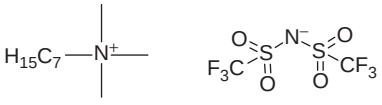


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 421.15 ± 1 [201, 206] |

### 1524-31: Trimethyl-heptylammonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [N7111][TFSI]
**Molecular Formula**: $C_{12}H_{24}F_6N_2O_4S_2$
**Molar Mass**: 438.46
**Structure**:



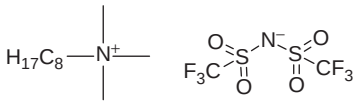
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 200.15 ± 2 [201, 229] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) | Molar conductivity (S·cm$^2$·mol$^{-1}$) |
|---|---|---|---|---|---|---|
| 1.28 [201, 229] | 293.15 | 153 ± 5% [201, 229] | 298.15 | 0.04 ± 5% [201, 206] | 298.15 | 0.14 [201, 229] |

### 1525-31: Trimethyl-octylammonium bis((trifluoromethyl) sulfonyl)imide

**Abbreviation**: [N8111][TFSI]
**Molecular Formula**: $C_{13}H_{26}F_6N_2O_4S_2$
**Molar Mass**: 452.48
**Structure**:



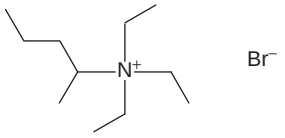
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 278.15 [43] | 200.15 ± 2 [201, 229] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) | Molar conductivity (S·cm$^2$·mol$^{-1}$) |
|---|---|---|---|---|---|---|
| 1.27 [201, 229] | 293.15 | 181 ± 5% [201, 229]<br>156 [43] | 298.15<br>298.15 | 0.035 ± 5% [201, 229] | 298.15 | 0.13 [201, 229] |

### 1526-12: Triethyl-(2-methylbutyl)-ammonium bromide

**Abbreviation**: [N2225′]Br
**Molecular Formula**: $C_{11}H_{26}BrN$
**Molar Mass**: 252.24
**Structure**:

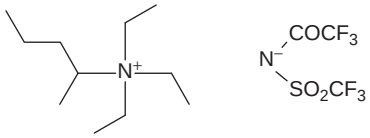


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 373.15 [234] |

### 1526-35: Triethyl-(2-methylbutyl)-ammonium 2,2,2-trifluoro-*N*-(trifluoromethylsulfonyl)acetamide

**Abbreviation**: [N2225′][TSAC]
**Molecular Formula**: $C_{14}H_{26}F_6N_2O_3S$
**Molar Mass**: 416.43
**Structure**:

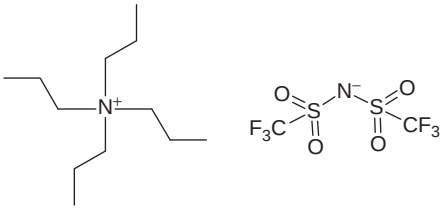


**Character**:
**Application**:

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 80 [43] | 298.15 |

### 1527-31: Tetrapropylammonium bis((trifluoromethyl) sulfonyl)imide

**Abbreviation**: [N3333][TFSI]
**Molecular Formula**: $C_{14}H_{28}F_6N_2O_4S_2$
**Molar Mass**: 466.51
**Structure**:

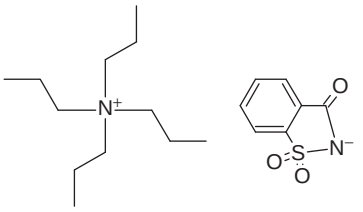


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 378.15 ± 1 [229] |

### 1527-312: Tetrapropylammonium Saccharinate

**Abbreviation**: [N3333][Sac]
**Molecular Formula**: $C_{19}H_{32}N_2O_3S$
**Molar Mass**: 368.53
**Structure**:

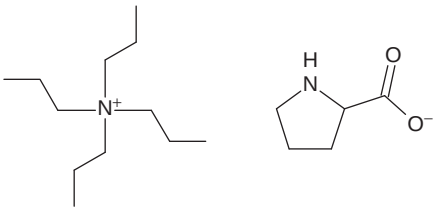


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 369.15 [16] |

### 1527-625: Tetrapropyl ammonium L-proline

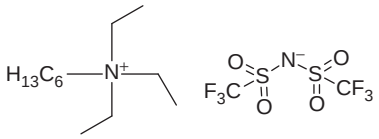
**Abbreviation**: [N3333][Pro]
**Molecular Formula**: $C_{17}H_{36}N_2O_2$
**Molar Mass**: 300.48
**Structure**:



**Character**:
**Application**: An efficient and reusable reaction medium for the synthesis of β–keto-sulfones [235]

### 1528-31: Triethyl-hexylammonium bis((trifluoromethyl) sulfonyl)imide

**Abbreviation**: [N6222][TFSI]
**Molecular Formula**: $C_{14}H_{28}F_6N_2O_4S_2$
**Molar Mass**: 466.51
**Structure**:



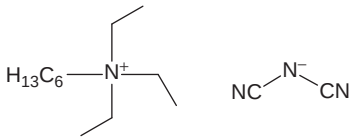
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 293.15 ± 1 [201] | 192.15 ± 2 [201, 229] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) | Molar conductivity (S·cm$^2$·mol$^{-1}$) |
|---|---|---|---|---|---|---|
| 1.27 [201, 229] | 293.15 | 220 [49] | 293.15 | 0.067 ± 5% [201, 229] | 298.15 | 0.25 [201, 229] |
| 1.2754 [48] | 303.15 | 167 ± 5% [201, 229] | 298.15 | | | |

### 1528-34: Triethyl-hexylammonium dicyanoamide

**Abbreviation**: [N6222][dca]
**Molecular Formula**: $C_{14}H_{28}N_4$
**Molar Mass**: 252.40
**Structure**:

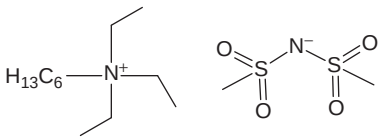


**Character**:
**Application**:

| $T_g$ (K) | $T_m$ (K) |
|---|---|
| 191.15 ± 2 [201] | 230.15 [12] |

### 1528-37: Triethyl-hexylammonium bis(methylsulfonyl) imide

**Abbreviation**: [N6222][MSI]
**Molecular Formula**: $C_{14}H_{34}N_2O_4S_2$
**Molar Mass**: 358.57
**Structure**:

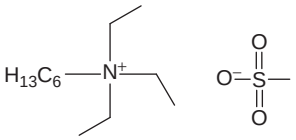


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 219.15 [57] |

### 1528-42: Triethyl-hexylammonium mesylate

**Abbreviation**: [N6222][mesy]
**Molecular Formula**: $C_{13}H_{31}NO_3S$
**Molar Mass**: 281.456
**Structure**:



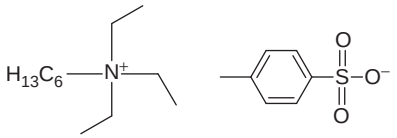
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 335.15 ± 2 [202] |

| Fusion entropy ($J \cdot mol^{-1} \cdot K^{-1}$) |
|---|
| 44 [202] |

### 1528-47: Triethyl-hexylammonium Tosylate

**Abbreviation**: [N6222][Tos]
**Molecular Formula**: $C_{19}H_{35}NO_3S$
**Molar Mass**: 357.56
**Structure**:



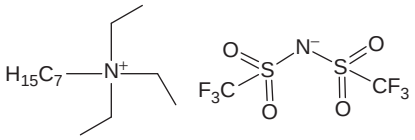
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 382.15 ± 2 [202] |

| Fusion entropy ($J \cdot mol^{-1} \cdot K^{-1}$) |
|---|
| 75 [202] |

### 1529-31: Triethyl-heptylammonium bis((trifluoromethyl) sulfonyl)imide

**Abbreviation**: [N7222][TFSI]
**Molecular Formula**: $C_{15}H_{30}F_6N_2O_4S_2$
**Molar Mass**: 480.54
**Structure**:



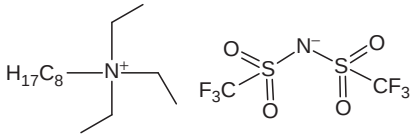
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 194.15 ± 2 [201, 229] |

| $\rho$ ($g/cm^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) | Molar conductivity ($S \cdot cm^2 \cdot mol^{-1}$) |
|---|---|---|---|---|---|---|
| 1.26 [201, 229] | 293.15 | 75.5 [201, 229] | 298.15 | 0.051 ± 5% [201, 229] | 298.15 | 0.19 [201, 229] |

### 1530-31: Triethyl-octylammonium bis((trifluoromethyl) sulfonyl)imide

**Abbreviation**: [N8222][TFSI]
**Molecular Formula**: $C_{16}H_{32}F_6N_2O_4S_2$
**Molar Mass**: 494.56
**Structure**:



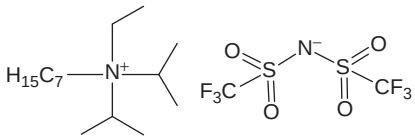
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| < 223.15 [236] | 199.15 ± 2 [201, 229] | 670.15 [236] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) | Molar conductivity (S·cm$^2$·mol$^{-1}$) |
|---|---|---|---|---|---|---|
| 1.25 [201, 229] | 293.15 | 202 [201, 229] | 298.15 | 0.033 ± 5% [201, 229] | 298.15 | 0.13 [201, 229] |
| 1.28 [236] | 298.15 | 217 [236] | 298.15 | 0.056 [236] | 298.15 | 0.21 [236] |

### 1531-31: di(iso)Propylethylheptylammonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [N723′3′][TFSI]
**Molecular Formula**: $C_{17}H_{34}F_6N_2O_4S_2$
**Molar Mass**: 508.59
**Structure**:



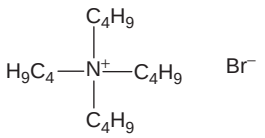
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 191.15 ± 2 [201, 229] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) | Molar conductivity (S·cm$^2$·mol$^{-1}$) |
|---|---|---|---|---|---|---|
| 1.27 [201, 229] | 293.15 | 362 ± 5% [201, 229] | 298.15 | 0.031 ± 5% [201, 229] | 298.15 | 0.12 [201, 229] |

### 1532-12: Tetrabutylammonium bromide

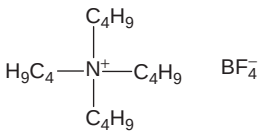
**Abbreviation**: [TBA]Br, [N4444]Br
**Molecular Formula**: $C_{16}H_{36}BrN$
**Molar Mass**: 322.37
**Structure**:



**Character**:
**Application**:

### 1532-21: Tetrabutylammonium tetrafluoroborate

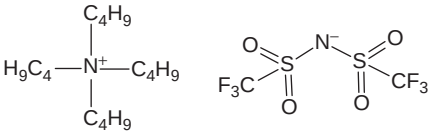
**Abbreviation**: [TBA][$BF_4$], [N4444][$BF_4$]
**Molecular Formula**: $C_{16}H_{36}BF_4N$
**Molar Mass**: 329.27
**Structure**:



**Character**:
**Application**:

### 1532-31: Tetrabutylammonium bis((trifluoromethyl) sulfonyl)imide

**Abbreviation**: [TBA][TFSI], [N4444][TFSI]
**Molecular Formula**: $C_{18}H_{36}F_6N_2O_4S_2$
**Molar Mass**: 522.62
**Structure**:

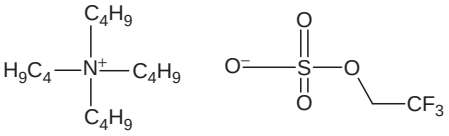


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) | $T_f$ (K) |
|---|---|---|
| 363.15 [17] | 661.15 [17] | 341.15 [17] |
| 369.15 ± 1 [201, 229] | 676.15 [17] | |
| 364.15 [129] | | |

### 1532-410: Tetrabutylammonium 2,2,2-trifluoroethyl sulfate

**Abbreviation**: $[TBA][C_2F_3]$, $[N4444][C_2F_3]$
**Molecular Formula**: $C_{18}H_{38}F_3NSO_4$
**Molar Mass**: 421.52
**Structure**:

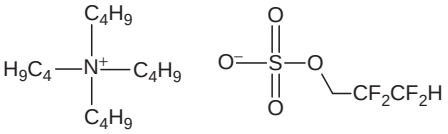


**Character**: Hydrophilic
**Application**: Medium for lipase-catalyzed reaction

| $T_m$ (K) |
|---|
| 349.15-356.15 [62] |

### 1532-411: Tetrabutylammonium 2,2,3,3-tetrafluoropropyl sulfate

**Abbreviation**: $[TBA][C_3F_4]$, $[N4444][C_3F_4]$
**Molecular Formula**: $C_{19}H_{39}F_4NSO_4$
**Molar Mass**: 453.58
**Structure**:



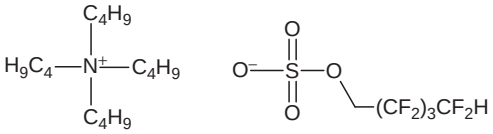
**Character**: Half-hydrophobic
**Application**: Medium for lipase-catalyzed reaction

| $T_m$ (K) |
|---|
| 269.15 [62] |

| $K$ (S/m) | $\eta_D$(cp) |
|---|---|
| 0.0046 [62] | 580 [62] |

### 1532-414: Tetrabutylammonium 2,2,3,3,4,4,5,5-octafluoropentyl sulfate

**Abbreviation**: $[TBA][C_5F_8]$, $[N4444][C_5F_8]$
**Molecular Formula**: $C_{21}H_{39}F_8NSO_4$
**Molar Mass**: 553.59
**Structure**:



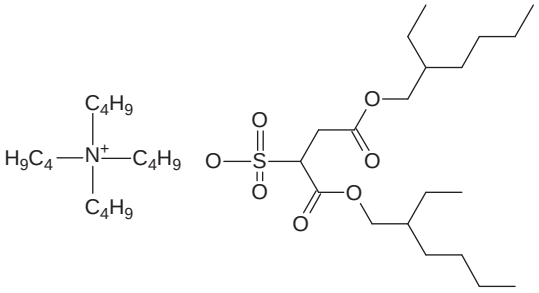
**Character**: Hydrophobic
**Application**: Medium for lipase-catalyzed reaction

| $T_m$ (K) |
|---|
| 265.15 [62] |

| $K$ (S/m) | $\eta_D$ (cp) |
|---|---|
| 0.0036 [62] | 180 [62] |

### 1532-420: Tetrabutylammonium docustate

**Abbreviation**: [N4444][doc], [N4444][BEHSS]
**Molecular Formula**: $C_{36}H_{73}NO_7S$
**Molar Mass**: 664.03
**Structure**:



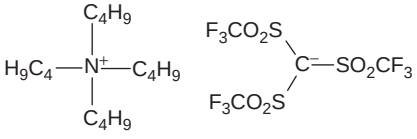
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 211 [128] |
| 202.15 [237] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 0.993 [237] | 298.15 | 373 [237] | 298.15 | 0.00868 [237] | 298.15 |

### 1532-71: Tetrabutylammonium tris (trifluoromethylsulfonyl)methide

**Abbreviation**: [TBA][Me], [N4444][Me]
**Molecular Formula**: $C_{20}H_{36}F_9NO_6S_3$
**Molar Mass**: 653.69
**Structure**:

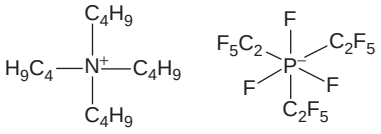


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 332.15 [17] | 676.15 [17] |
| | 671.15 [17] |

### 1532-54: Tetrabutylammonium tris(pentafluoroethyl) trifluorophosphate

**Abbreviation**: [TBA][$(C_2F_5)_3PF_3$], [N4444] [$(C_2F_5)_3PF_3$]
**Molecular Formula**: $C_{22}H_{36}F_{18}NP$
**Molar Mass**: 687.47
**Structure**:

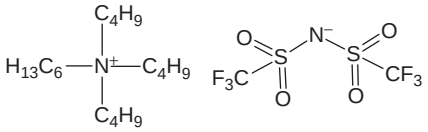


**Character**:
**Application**:

| Electrochemical window (V) | Anodic limit (V) | Cathode limit (V) |
|---|---|---|
| 7 [36] | 3.7 | −3.3 |

### 1533-31: Tributyl-hexylammonium bis((trifluoromethyl) sulfonyl)imide

**Abbreviation**: [N6444][TFSI]
**Molecular Formula**: $C_{20}H_{40}F_6N_2O_4S_2$
**Molar Mass**: 550.67
**Structure**:



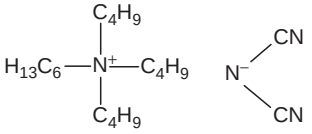
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 299.15 ± 1 [201, 229] | 205.15 ± 2 [201, 229] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) | Molar conductivity (S·cm$^2$·mol$^{-1}$) |
|---|---|---|---|---|---|---|
| 1.15 [201, 229] | 293.15 | 595 ± 5% [201, 229] | 298.15 | 0.016 ± 5% [201, 229] | 298.15 | 0.08 [201, 229] |

### 1533-34: Tributyl-hexylammonium dicyanoamide

**Abbreviation**: [N6444][dca]
**Molecular Formula**: $C_{20}H_{40}N_4$
**Molar Mass**: 336.56
**Structure**:

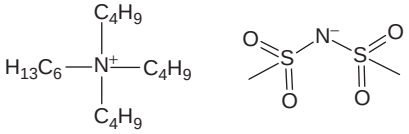


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 230.15 [55] |

### 1533-37: Tributyl-hexylammonium bis(methylsulfonyl) imide

**Abbreviation**: [N6444][MSI]
**Molecular Formula**: $C_{20}H_{46}N_2O_4S_2$
**Molar Mass**: 442.73
**Structure**:



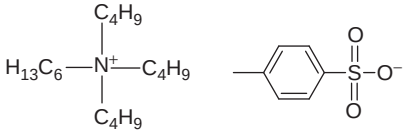
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 231.15 [57] |

| $K$ (S/m) | $T$ (K) |
|---|---|
| 0.0005 [57] | 298.15 |

### 1533-47: Tributyl-hexylammonium Tosylate

**Abbreviation**: [N6444][Tos]
**Molecular Formula**: $C_{25}H_{47}NO_3S$
**Molar Mass**: 441.72
**Structure**:



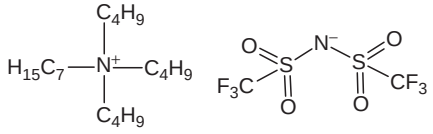
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 323.15 ± 2 [202] | 233.15 ± 2 [202] |

| Fusion entropy ($J \cdot mol^{-1} \cdot K^{-1}$) |
|---|
| 48 [202] |

### 1534-31: Tributyl-heptylammonium bis((trifluoromethyl) sulfonyl)imide

**Abbreviation**: [N7444][TFSI]
**Molecular Formula**: $C_{21}H_{42}F_6N_2O_4S_2$
**Molar Mass**: 564.70
**Structure**:



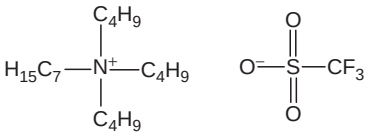
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 206.15 ± 2 [201, 229] |

| $\rho$ ($g/cm^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) | Molar conductivity ($S \cdot cm^2 \cdot mol^{-1}$) |
|---|---|---|---|---|---|---|
| 1.17 [201, 229] | 293.15 | 606 ± 5% [201, 229] | 298.15 | 0.016 ± 5% [201, 229] | 298.15 | 0.08 [201, 229] |

### 1534-43: Tributyl-heptylammonium trifluoromethanesulfonate

**Abbreviation**: [N7444][TfO]
**Molecular Formula**: $C_{20}H_{42}F_3NO_3S$
**Molar Mass**: 433.62
**Structure**:

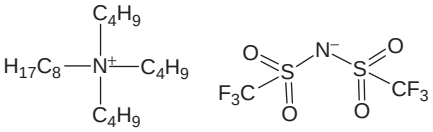


**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 218.15 ± 2 [201, 229] |

### 1535-31: Tributyl-octylammonium bis((trifluoromethyl) sulfonyl)imide

**Abbreviation**: [N8444][TFSI]
**Molecular Formula**: $C_{22}H_{44}F_6N_2O_4S_2$
**Molar Mass**: 578.72
**Structure**:



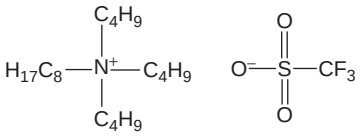
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 210.15 ± 2 [201, 229] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) | Molar conductivity (S·cm$^2$·mol$^{-1}$) |
|---|---|---|---|---|---|---|
| 1.12 [201, 229] | 293.15 | 574 ± 5% [201, 229] | 298.15 | 0.013 ± 5% [201, 229] | 298.15 | 0.07 [201, 229] |

### 1535-43: Tributyl-octylammonium trifluoromethanesulfonate

**Abbreviation**: [N8444][TfO]
**Molecular Formula**: $C_{21}H_{44}F_3NO_3S$
**Molar Mass**: 447.65
**Structure**:



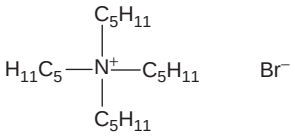
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 216.15 ± 2 [201, 229] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) | Molar conductivity (S·cm$^2$·mol$^{-1}$) |
|---|---|---|---|---|---|---|
| 1.02 [201, 229] | 293.15 | 2030 ± 5% [201, 229] | 298.15 | 0.0017 ± 5% [201, 229] | 298.15 | 0.07 [201, 229] |

### 1536-12: Tetrapentylammonium bromide

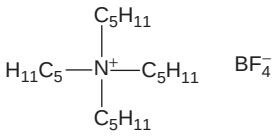
**Abbreviation**: [TPA]Br, [N5555]Br
**Molecular Formula**: $C_{20}H_{44}BrN$
**Molar Mass**: 378.48
**Structure**:



**Character**:
**Application**: [129]

### 1536-21: Tetrapentylammonium tetrafluoroborate

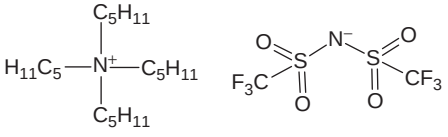
**Abbreviation**: [TPA][$BF_4$]
**Molecular Formula**: $C_{20}H_{44}BF_4N$
**Molar Mass**: 385.38
**Structure**:



**Character**:
**Application**: [129]

### 1536-31: Tetrapentylammonium bis((trifluoromethyl) sulfonyl)imide

**Abbreviation**: [TPA][TFSI], [N5555][TFSI]
**Molecular Formula**: $C_{22}H_{44}F_6N_2O_4S_2$
**Molar Mass**: 578.72
**Structure**:



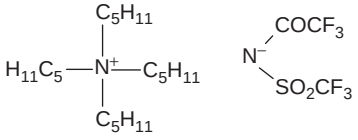
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 298.35 [129] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | Molar conductivity (S·cm$^2$·mol$^{-1}$) | $T$ (K) |
|---|---|---|---|---|---|
| 1.16 [129] | 298.15 | 430 [129] | 298.15 | 2.01 [129] | 298.15 |

### 1536-35: Tetrapentylammonium 2,2,2-trifluoro-*N*-(trifluoromethylsulfonyl)acetamide

**Abbreviation**: [N5555][TSAC]
**Molecular Formula**: $C_{23}H_{44}F_6N_2O_3S$
**Molar Mass**: 542.66
**Structure**:



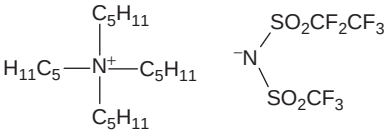
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 289.15 [59] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.11 [59] | 298.15 | 391 [59] | 298.15 | 0.02 [59] | 298.15 |

### 1536-316: Tetrapentylammonium *N*-(trifluoromethylsulfonyl)pentafluoroethylsulfonamide

**Abbreviation**: [N5555][C1C2]
**Molecular Formula**: $C_{23}H_{44}F_8N_2O_4S_2$
**Molar Mass**: 628.73
**Structure**:



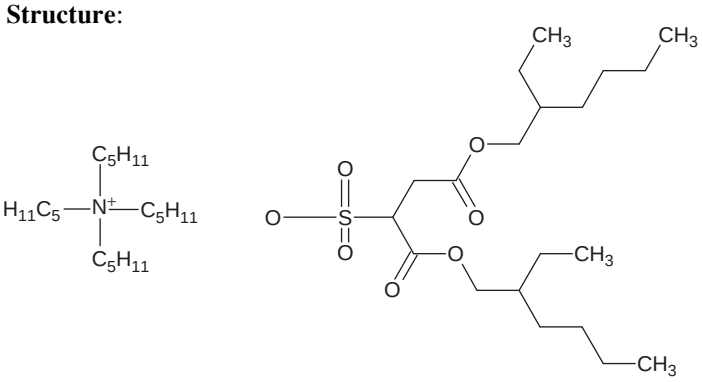
**Character**:
**Application**: Electrolyte

| $T_m$ (K) |
|---|
| 298.15 [59] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.18 [59] | 298.15 | 650 [59] | 298.15 | 0.011 [59] | 298.15 |

### 1536-420: Tetrapentylammonium bis(2-ethylhexyl) sulfosuccinate

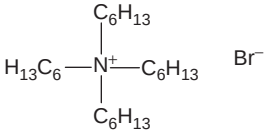
**Abbreviation**: [TPA][BEHSS], [N5555][doc]
**Molecular Formula**: $C_{40}H_{81}NO_7S$
**Molar Mass**: 720.14
**Structure**:



**Character**:
**Application**: Liquid–liquid extraction [237]

### 1537-12: Tetrahexylammonium bromide

**Abbreviation**: [THA]Br, [N6666]Br
**Molecular Formula**: $C_{24}H_{52}BrN$
**Molar Mass**: 434.59
**Structure**:

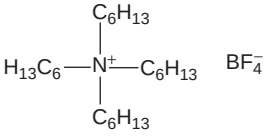


**Character**:
**Application**:

| Molar conductivity (S·cm$^2$·mol$^{-1}$) | $T$ (K) |
|---|---|
| 1.75 [129] | 298.15 |

### 1537-21: Tetrahexylammonium tetrafluoroborate

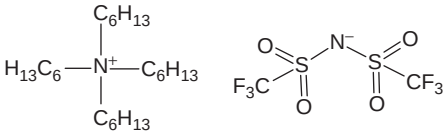
**Abbreviation**: [THA][$BF_4$], [N6666][$BF_4$]
**Molecular Formula**: $C_{24}H_{52}BF_4N$
**Molar Mass**: 441.49
**Structure**:



**Character**:
**Application**: [129]

### 1537-31: Tetrahexylammonium bis((trifluoromethyl) sulfonyl)imide

**Abbreviation**: [THA][TFSI], [N6666][TFSI]
**Molecular Formula**: $C_{26}H_{52}F_6N_2O_4S_2$
**Molar Mass**: 634.83
**Structure**:



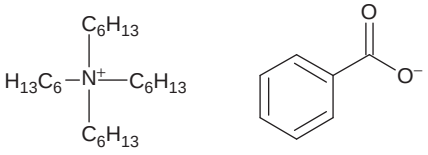
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 265.15 [237] | 196.15 [237] |
| 266.35 [129] | |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.11 [129] | 298.15 | 435 [129] | 298.15 |
| 1.186 [237] | 298.15 | 388 [237] | 298.15 |

### 1537-64: Tetrahexylammonium benzoate

**Abbreviation**: [N6666][Bzt], [N6666][ba]
**Molecular Formula**: $C_{31}H_{57}NO_2$
**Molar Mass**: 475.79
**Structure**:



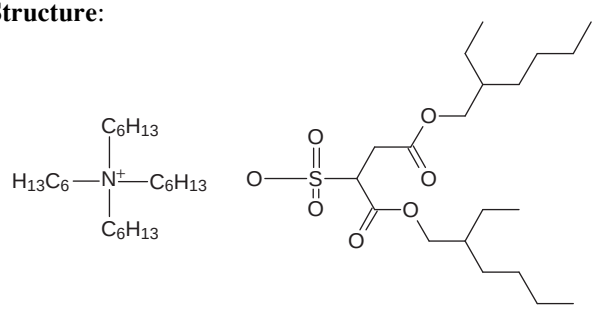
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 223.15 [12] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 0.938 [12] | 298.15 | 895 [12] | 298.15 |

### 1537-420: Tetrahexylammonium bis(2-ethylhexyl) sulfosuccinate

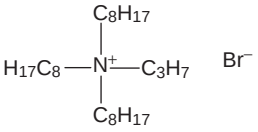
**Abbreviation**: [THA][BEHSS], [N6666][doc]
**Molecular Formula**: $C_{44}H_{89}NO_7S$
**Molar Mass**: 776.25
**Structure**:



**Character**:
**Application**: Liquid–liquid extraction [237]

### 1538-12: Trioctyl-propylammonium bromide

**Abbreviation**: [N3888]Br
**Molecular Formula**: $C_{27}H_{58}BrN$
**Molar Mass**: 476.67
**Structure**:

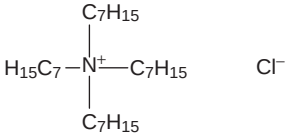


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 347.15 [234] |

### 1539-11: Tetraheptylammonium chloride

**Abbreviation**: [N7777]Cl
**Molecular Formula**: $C_{28}H_{60}NCl$
**Molar Mass**: 446.24
**Structure**:



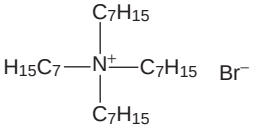
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 264.15 [12] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 0.882 [12] | 298.15 | 598 [12] | 298.15 |

### 1539-12: Tetraheptylammonium bromide

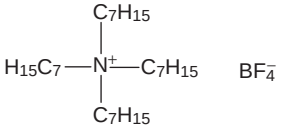
**Abbreviation**: [THpA]Br, [N7777]Br
**Molecular Formula**: $C_{28}H_{60}BrN$
**Molar Mass**: 490.70
**Structure**:



**Character**:
**Application**: [129]

### 1539-21: Tetraheptylammonium tetrafluoroborate

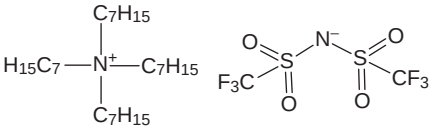
**Abbreviation**: [THpA][$BF_4$], [N7777][$BF_4$]
**Molecular Formula**: $C_{28}H_{60}BF_4N$
**Molar Mass**: 497.60
**Structure**:



**Character**:
**Application**: [129]

### 1539-31: Tetraheptylammonium bis((trifluoromethyl) sulfonyl)imide

**Abbreviation**: [THpA][TFSI], [N7777][TFSI]
**Molecular Formula**: $C_{30}H_{60}F_6N_2O_4S_2$
**Molar Mass**: 690.94
**Structure**:



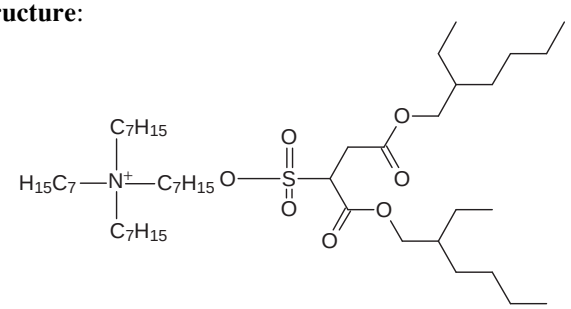
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 284.35 [129] |

| $\rho$ (g/cm$^3$) | $T$ (K) | Molar conductivity (S·cm$^2$·mol$^{-1}$) | $T$ (K) |
|---|---|---|---|
| 1.1 [129] | 298.15 | 1.59 [129] | 298.15 |

### 1539-420: Tetraheptylammonium bis(2-ethylhexyl) sulfosuccinate

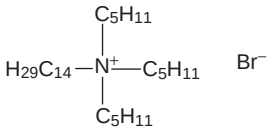
**Abbreviation**: [THpA][BEHSS], [N7777][doc]
**Molecular Formula**: $C_{48}H_{97}NO_7S$
**Molar Mass**: 832.35
**Structure**:



**Character**:
**Application**: Liquid–liquid extraction [237]

### 1540-12: Tripentyl-tetradecylammonium bromide

**Abbreviation**: [N555,14]Br
**Molecular Formula**: $C_{29}H_{62}BrN$
**Molar Mass**: 504.72
**Structure**:

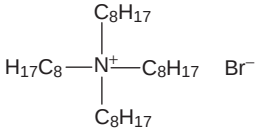


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 336.15 [234] |

### 1541-12: Tetraoctylammonium bromide

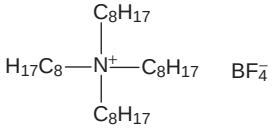
**Abbreviation**: [TOA]Br, [N8888]Br
**Molecular Formula**: $C_{32}H_{68}BrN$
**Molar Mass**: 546.80
**Structure**:



**Character**:
**Application**: [129]

### 1541-21: Tetraoctylammonium tetrafluoroborate

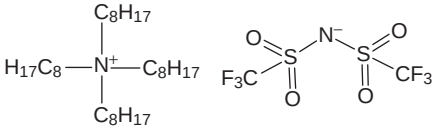
**Abbreviation**: [TOA][$BF_4$], [N8888][$BF_4$]
**Molecular Formula**: $C_{32}H_{68}BF_4N$
**Molar Mass**: 553.70
**Structure**:



**Character**:
**Application**: [129]

### 1541-31: Tetraoctylammonium bis((trifluoromethyl) sulfonyl)imide

**Abbreviation**: [TOA][TFSI], [N8888][TFSI]
**Molecular Formula**: $C_{34}H_{68}F_6N_2O_4S_2$
**Molar Mass**: 747.05
**Structure**:



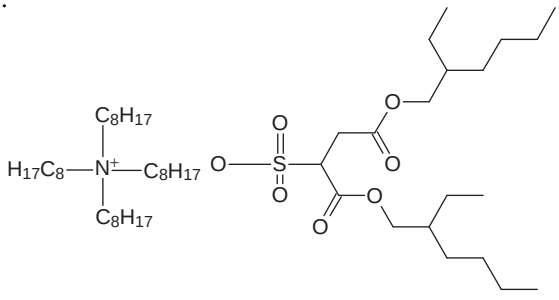
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 304.35 [129] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | Molar conductivity (S·cm$^2$·mol$^{-1}$) | $T$ (K) |
|---|---|---|---|---|---|
| 1.06 [129] | 298.15 | >500 [129] | 298.15 | 1.41 [129] | 298.15 |

### 1541-420: Tetraoctylammonium bis(2-ethylhexyl) sulfosuccinate

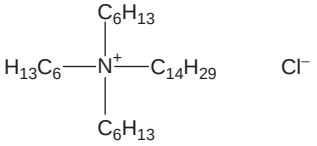
**Abbreviation**: [TOA][BEHSS], [N8888][doc]
**Molecular Formula**: $C_{52}H_{105}NO_7S$
**Molar Mass**: 888.46
**Structure**:



**Character**:
**Application**: Liquid–liquid extraction [237]

### 1542-11: Trihexyl-tetradecylammonium chloride

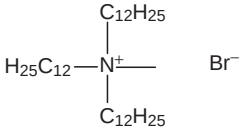
**Abbreviation**: [N666,14]Cl
**Molecular Formula**: $C_{32}H_{68}ClN$
**Molar Mass**: 502.35
**Structure**:




**Character**:
**Application**:

### 1543-12: Tridodecyl-methylammonium bromide

**Abbreviation**: [N1,12$_3$]Br
**Molecular Formula**: $C_{37}H_{78}BrN$
**Molar Mass**: 616.94
**Structure**:

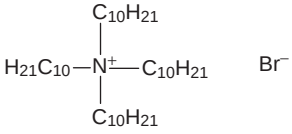



**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 348.15 [234] |

### 1544-12: Tetradecylammonium bromide

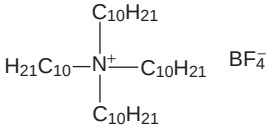
**Abbreviation**: [TDA]Br, [N10$_4$]Br, [N10, 10, 10, 10]Br
**Molecular Formula**: $C_{40}H_{84}BrN$
**Molar Mass**: 659.02
**Structure**:




**Character**:
**Application**: [129]

### 1544-21: Tetradecylammonium tetrafluoroborate

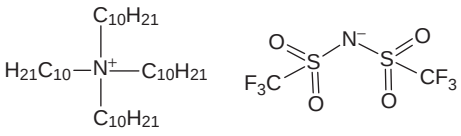
**Abbreviation**: [TDA][BF$_4$], [N10$_4$][BF$_4$]
**Molecular Formula**: $C_{40}H_{84}BF_4N$
**Molar Mass**: 665.92
**Structure**:




**Character**:
**Application**: [129]

### 1544-31: Tetradecylammonium bis((trifluoromethyl) sulfonyl)imide

**Abbreviation**: [TDA][TFSI], [N10$_4$][TFSI]
**Molecular Formula**: $C_{42}H_{84}F_6N_2O_4S_2$
**Molar Mass**: 859.25
**Structure**:



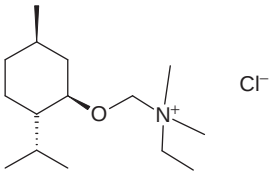

**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 303.95 [129] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | Molar conductivity (S·cm$^2$·mol$^{-1}$) | $T$ (K) |
|---|---|---|---|---|---|
| 1.04 [129] | 298.15 | >500 [129] | 298.15 | 1.21 [129] | 298.15 |

### 1545-11: Ethyldimethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl] ammonium chloride

**Abbreviation**: [N211,mom]Cl
**Molecular Formula**: $C_{15}H_{32}NOCl$
**Molar Mass**: 277.87
**Structure**:

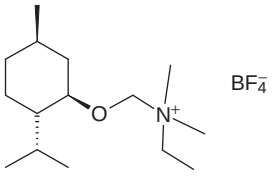



**Character**:
**Application**: Antielectrostatic

| MIC (μM) | MBC (μM) |
|---|---|
| 112 [238] | 450 [238] |

### 1545-21: Ethyldimethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl] ammonium tetrafluoroborate

**Abbreviation**: [N211,mom][$BF_4$]
**Molecular Formula**: $C_{15}H_{32}NOBF_4$
**Molar Mass**: 329.23
**Structure**:

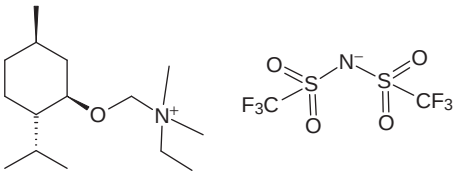



**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 434.65-437.15 [238] |

### 1545-31: Ethyldimethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl] ammonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [N211,mom][$NTf_2$]
**Molecular Formula**: $C_{17}H_{32}F_6N_2O_5S_2$
**Molar Mass**: 522.57
**Structure**:



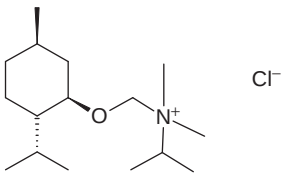

**Character**:
**Application**: Antielectrostatic

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 223.25 [238] | 472.15 [238] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.27 [238] | 303.15 | 714 [238] | 303.15 |

### 1546-11: Isopropyldimethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl]ammonium chloride

**Abbreviation**: [N11,i-3,mom]Cl
**Molecular Formula**: $C_{16}H_{34}NOCl$
**Molar Mass**: 291.90
**Structure**:

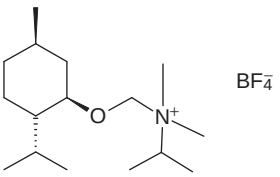



**Character**:
**Application**: Antielectrostatic

| MIC (μM) | MBC (μM) |
|---|---|
| 55 [238] | 213 [238] |

### 1546-21: Isopropyldimethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl]ammonium tetrafluoroborate

**Abbreviation**: [N11,i-3,mom][$BF_4$]
**Molecular Formula**: $C_{16}H_{34}NOBF_4$
**Molar Mass**: 343.25
**Structure**:

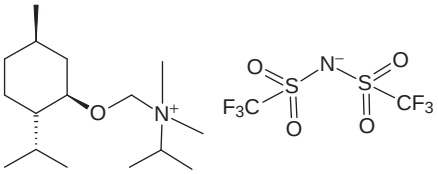



**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 476.15–479.15 [238] |

**1546-31: Isopropyldimethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl]ammonium bis((trifluoromethyl) sulfonyl)imide**

**Abbreviation**: [N11,i-3,mom][$NTf_2$]
**Molecular Formula**: $C_{18}H_{34}F_6N_2O_5S_2$
**Molar Mass**: 536.60
**Structure**:

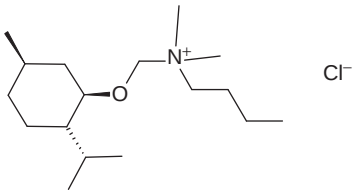


**Character**:
**Application**: Antielectrostatic

| $T_m$ (K) |
|---|
| 313.15-315.15 [238] |

**1547-11: Butyldimethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl] ammonium chloride**

**Abbreviation**: [N411,mom]Cl
**Molecular Formula**: $C_{17}H_{36}NOCl$
**Molar Mass**: 305.93
**Structure**:

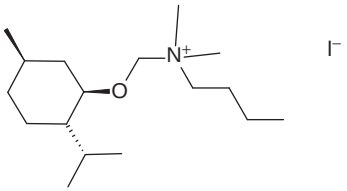


**Character**:
**Application**: Antielectrostatic

| MIC (μM) | MBC (μM) |
|---|---|
| 26 [238] | 52 [238] |

**1547-13: Butyldimethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl] ammonium iodine**

**Abbreviation**: [N411,mom]I
**Molecular Formula**: $C_{17}H_{36}NOI$
**Molar Mass**: 397.38
**Structure**:

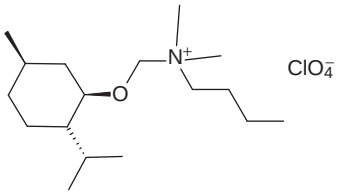


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 354.15-356.15 [238] |

**1547-14: Butyldimethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl] ammonium perchlorate**

**Abbreviation**: [N411,mom][$ClO_4$]
**Molecular Formula**: $C_{17}H_{36}NO_5Cl$
**Molar Mass**: 369.92
**Structure**:

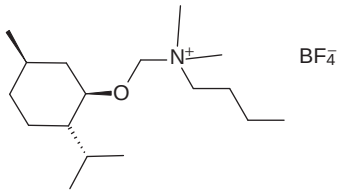


**Character**:
**Application**: Antielectrostatic

| $T_m$ (K) |
|---|
| 350.15-351.65 [238] |

### 1547-21: Butyldimethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl] ammonium tetrafluoroborate

**Abbreviation**: [N411,mom][$BF_4$]
**Molecular Formula**: $C_{17}H_{36}NOBF_4$
**Molar Mass**: 357.28
**Structure**:

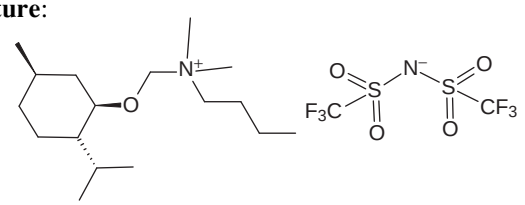


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 341.65-344.15 [238] |

### 1547-31: Butyldimethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl] ammonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [N411,mom][$NTf_2$]
**Molecular Formula**: $C_{19}H_{36}F_6N_2O_5S_2$
**Molar Mass**: 550.62
**Structure**:



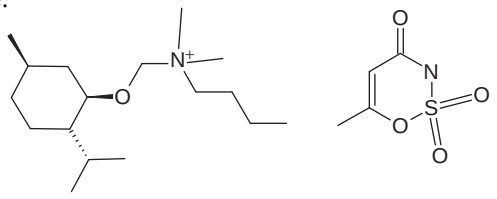
**Character**:
**Application**: Antielectrostatic

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 223.05 [238] | 473.15 [238] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.24 [238] | 303.15 | 745 [238] | 303.15 |

### 1547-315: Butyldimethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl]ammonium Acesulfamate

**Abbreviation**: [N411,mom][Ace]
**Molecular Formula**: $C_{21}H_{40}N_2O_5S$
**Molar Mass**: 432.62
**Structure**:

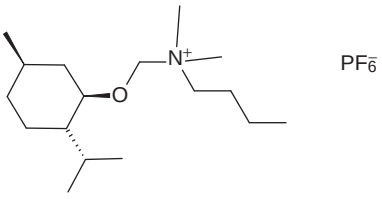


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| oil [238] |

### 1547-51: Butyldimethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl] ammonium hexafluorophosphate

**Abbreviation**: [N411,mom][$PF_6$]
**Molecular Formula**: $C_{17}H_{36}NOPF_6$
**Molar Mass**: 415.44
**Structure**:

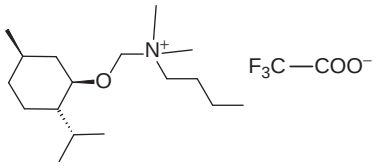


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 376.15-378.18 [238] |

### 1547-61: Butyldimethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl] ammonium trifluoroacetate

**Abbreviation**: [N411,mom][TA], [N411,mom] [$CF_3COO$]
**Molecular Formula**: $C_{19}H_{36}F_3NO_3$
**Molar Mass**: 383.49
**Structure**:

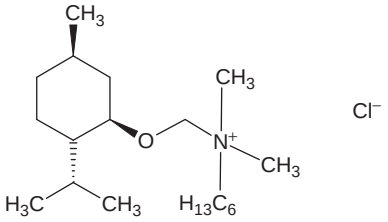



**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 345.15-347.15 [238] |

### 1548-11: Hexyldimethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl] ammonium chloride

**Abbreviation**: [N611,mom]Cl
**Molecular Formula**: $C_{19}H_{40}NOCl$
**Molar Mass**: 333.98
**Structure**:

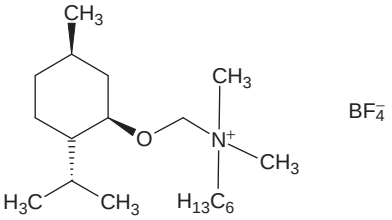



**Character**:
**Application**: Antielectrostatic

| MlC (μM) | MBC (μM) |
|---|---|
| 6 [238] | 186 [238] |

### 1548-21: Hexyldimethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl] ammonium tetrafluoroborate

**Abbreviation**: [N611,mom][$BF_4$]
**Molecular Formula**: $C_{19}H_{40}NOBF_4$
**Molar Mass**: 385.33
**Structure**:

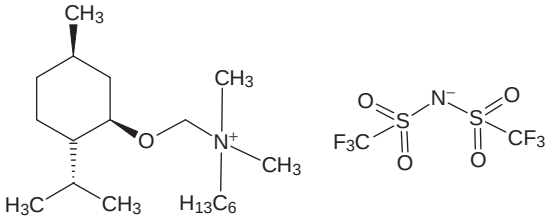



**Character**:
**Application**: Antielectrostatic

| $T_m$ (K) |
|---|
| 315.15-317.15 [238] |

### 1548-31: Hexyldimethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl] ammonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [N611,mom][$NTf_2$]
**Molecular Formula**: $C_{21}H_{40}F_6N_2O_5S_2$
**Molar Mass**: 578.68
**Structure**:



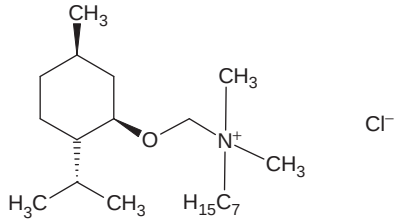

**Character**:
**Application**: Antielectrostatic

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 222.95 [238] | 473.15 [238] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.21 [238] | 303.15 | 774 [238] | 303.15 |

### 1549-11: Heptyldimethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl]ammonium chloride

**Abbreviation**: [N711,mom]Cl
**Molecular Formula**: $C_{20}H_{42}NOCl$
**Molar Mass**: 348.01
**Structure**:

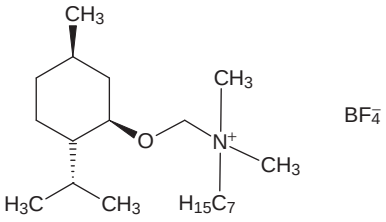


**Character**:
**Application**: Antielectrostatic

| MIC (μM) | MBC (μM) |
|---|---|
| 5.8 [238] | 89 [238] |

### 1549-21: Heptyldimethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl]ammonium tetrafluoroborate

**Abbreviation**: [N711,mom][$BF_4$]
**Molecular Formula**: $C_{20}H_{42}NOBF_4$
**Molar Mass**: 399.36
**Structure**:

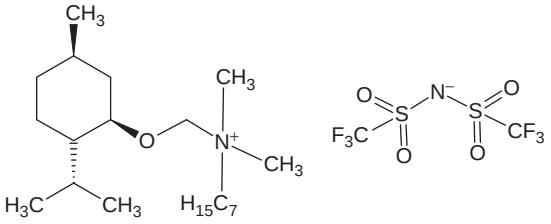


**Character**:
**Application**: Antielectrostatic

| $T_m$ (K) |
|---|
| 342.15-345.15 [238] |

### 1549-31: Heptyldimethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl]ammonium bis((trifluoromethyl) sulfonyl)imide

**Abbreviation**: [N711,mom][$NTf_2$]
**Molecular Formula**: $C_{22}H_{42}F_6N_2O_5S_2$
**Molar Mass**: 592.70
**Structure**:



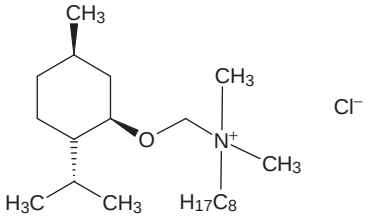
**Character**:
**Application**: Antielectrostatic

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 220.35 [238] | 475.15 [238] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.19 [238] | 303.15 | 787 [238] | 303.15 |

### 1550-11: Octyldimethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl] ammonium chloride

**Abbreviation**: [N811,mom]Cl
**Molecular Formula**: $C_{21}H_{44}NOCl$
**Molar Mass**: 362.03
**Structure**:

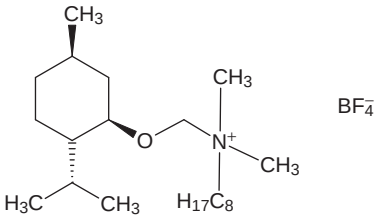


**Character**:
**Application**: Antielectrostatic

| MIC (μM) | MBC (μM) |
|---|---|
| 2.8 [238] | 44 [238] |

### 1550-21: Octyldimethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl] ammonium tetrafluoroborate

**Abbreviation**: [N811,mom][$BF_4$]
**Molecular Formula**: $C_{21}H_{44}NOBF_4$
**Molar Mass**: 413.38
**Structure**:

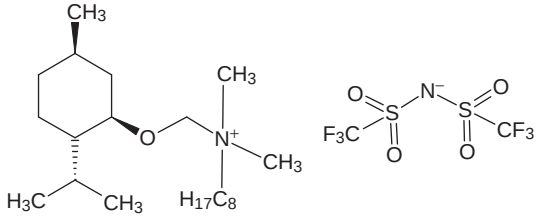


**Character**:
**Application**: Antielectrostatic

| $T_m$ (K) |
|---|
| 360.65-361.65 [238] |

### 1550-31: Octyldimethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl] ammonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [N811,mom][$NTf_2$]
**Molecular Formula**: $C_{23}H_{44}F_6N_2O_5S_2$
**Molar Mass**: 606.73
**Structure**:



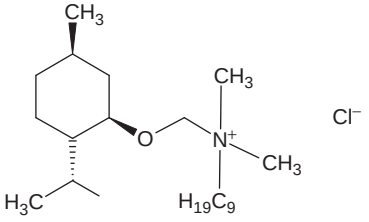
**Character**:
**Application**: Antielectrostatic

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 220.15 [238] | 473.15 [238] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.18 [238] | 303.15 | 806 [238] | 303.15 |

### 1551-11: Nonyldimethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl] ammonium chloride

**Abbreviation**: [N911,mom]Cl
**Molecular Formula**: $C_{22}H_{46}NOCl$
**Molar Mass**: 376.06
**Structure**:

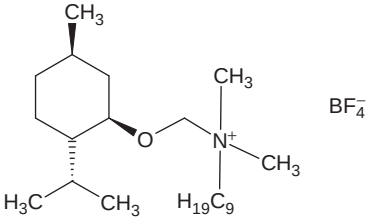


**Character**:
**Application**: Antielectrostatic

| MIC (μM) | MBC (μM) |
|---|---|
| <0.3 [238] | 21 [238] |

### 1551-21: Nonyldimethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl] ammonium tetrafluoroborate

**Abbreviation**: [N911,mom][$BF_4$]
**Molecular Formula**: $C_{22}H_{46}NOBF_4$
**Molar Mass**: 427.41
**Structure**:

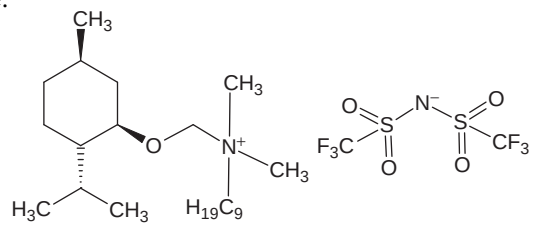


**Character**:
**Application**: Antielectrostatic

| $T_m$ (K) |
|---|
| 342.15–345.15 [238] |

### 1551-31: Nonyldimethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl] ammonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [N911,mom][$NTf_2$]
**Molecular Formula**: $C_{24}H_{46}F_6N_2O_5S_2$
**Molar Mass**: 620.75
**Structure**:



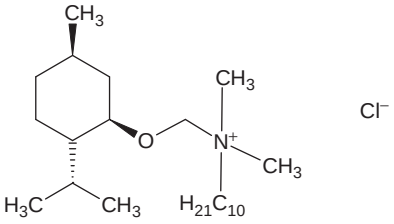
**Character**:
**Application**: Antielectrostatic

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 219.95 [238] | 472.15 [238] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.17 [238] | 303.15 | 829 [238] | 303.15 |

### 1552-11: Decyldimethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl] ammonium chloride

**Abbreviation**: [N10,1,1,mom]Cl
**Molecular Formula**: $C_{23}H_{48}NOCl$
**Molar Mass**: 390.09
**Structure**:

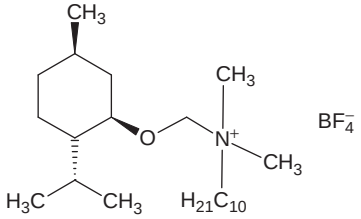


**Character**:
**Application**: Antielectrostatic

| MIC(μM) | MBC(μM) |
|---|---|
| <0.3 [238] | 2.6 [238] |

### 1552-21: Decyldimethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl] ammonium tetrafluoroborate

**Abbreviation**: [N10,1,1,mom][$BF_4$]
**Molecular Formula**: $C_{23}H_{48}NOBF_4$
**Molar Mass**: 441.44
**Structure**:

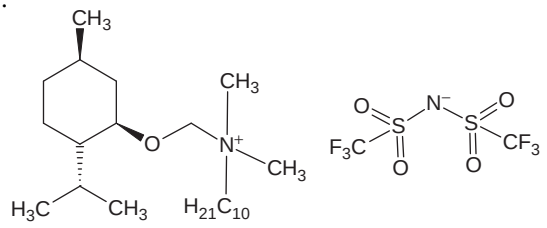


**Character**:
**Application**: Antielectrostatic

| $T_m$ (K) |
|---|
| 328.15-331.15 [238] |

### 1552-31: Decyldimethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl] ammonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [N10,1,1,mom][$NTf_2$]
**Molecular Formula**: $C_{25}H_{48}F_6N_2O_5S_2$
**Molar Mass**: 634.78
**Structure**:



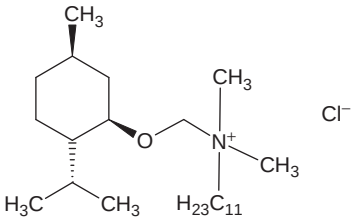
**Character**:
**Application**: Antielectrostatic

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 218.75 [238] | 473.15 [238] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.15 [238] | 303.15 | 840 [238] | 303.15 |

### 1553-11: Undecyldimethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl]ammonium chloride

**Abbreviation**: [N11,1,1,mom]Cl
**Molecular Formula**: $C_{24}H_{50}NOCl$
**Molar Mass**: 404.11
**Structure**:

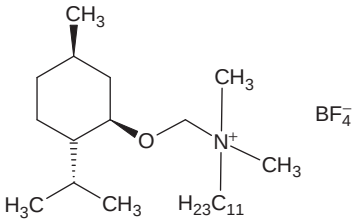


**Character**:
**Application**: Antielectrostatic

| MIC (μM) | MBC (μM) |
|---|---|
| <0.25 [238] | 1.2 [238] |

### 1553-21: Undecyldimethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl]ammonium tetrafluoroborate

**Abbreviation**: [N11,1,1,mom][$BF_4$]
**Molecular Formula**: $C_{24}H_{50}NOBF_4$
**Molar Mass**: 455.46
**Structure**:

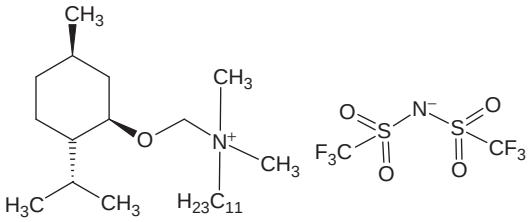


**Character**:
**Application**: Antielectrostatic

| $T_m$ (K) |
|---|
| 316.15-321.15 [238] |

### 1553-31: Undecyldimethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl]ammonium bis((trifluoromethyl) sulfonyl)imide

**Abbreviation**: [N11,1,1,mom][$NTf_2$]
**Molecular Formula**: $C_{26}H_{50}F_6N_2O_5S_2$
**Molar Mass**: 648.81
**Structure**:



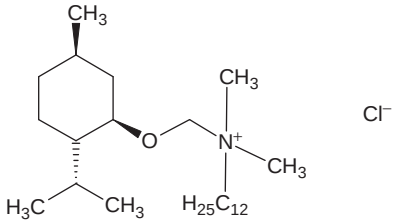
**Character**:
**Application**: Antielectrostatic

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 218.85 [238] | 479.15 [238] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.14 [238] | 303.15 | 844 [238] | 303.15 |

### 1554-11: Dodecyldimethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl]ammonium chloride

**Abbreviation**: [N12,1,1,mom]Cl
**Molecular Formula**: $C_{25}H_{52}NOCl$
**Molar Mass**: 418.14
**Structure**:

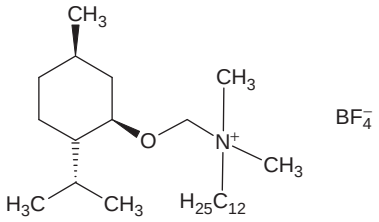


**Character**:
**Application**: Antielectrostatic

| MIC (μM) | MBC (μM) |
|---|---|
| <0.5 [238] | 2.4 [238] |

**1554-21: Dodecyldimethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl]ammonium tetrafluoroborate**

**Abbreviation**: [N12,1,1,mom][$BF_4$]
**Molecular Formula**: $C_{25}H_{52}NOBF_4$
**Molar Mass**: 469.49
**Structure**:

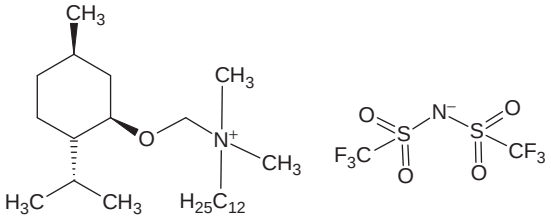



**Character**:
**Application**: Antielectrostatic

| $T_m$ (K) |
|---|
| 315.65-316.15 [238] |

**1554-31: Dodecyldimethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl]ammonium bis((trifluoromethyl) sulfonyl)imide**

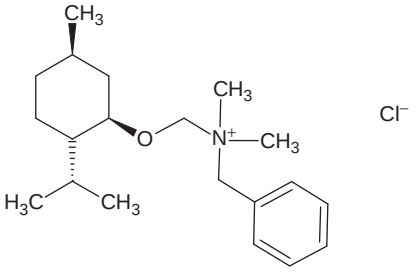
**Abbreviation**: [N12,1,1,mom][$NTf_2$]
**Molecular Formula**: $C_{27}H_{52}F_6N_2O_5S_2$
**Molar Mass**: 662.83
**Structure**:




**Character**:
**Application**: Antielectrostatic

**1555-11: Benzyldimethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl]ammonium chloride**

**Abbreviation**: [N11,Bz,mom]Cl
**Molecular Formula**: $C_{20}H_{34}NOCl$
**Molar Mass**: 339.94
**Structure**:

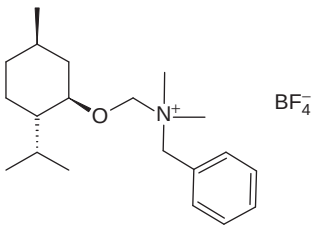



**Character**:
**Application**: Antielectrostatic

| MIC (μM) | MBC (μM) |
|---|---|
| 121 [238] | 183 [238] |

**1555-21: Benzyldimethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl]ammonium tetrafluoroborate**

**Abbreviation**: [N11,Bz,mom][$BF_4$]
**Molecular Formula**: $C_{20}H_{34}NOBF_4$
**Molar Mass**: 391.29
**Structure**:

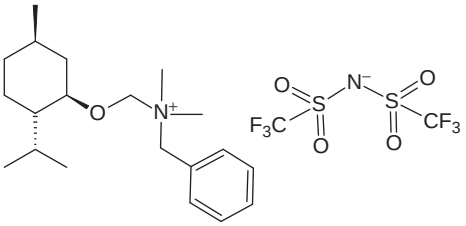



**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 370.65-373.15 [238] |

### 1555-31: Benzyldimethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl]ammonium bis((trifluoromethyl) sulfonyl)imide

**Abbreviation**: [N11,Bz,mom][$NTf_2$]
**Molecular Formula**: $C_{22}H_{34}F_6N_2O_5S_2$
**Molar Mass**: 584.64
**Structure**:

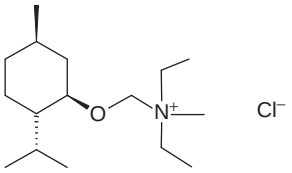


**Character**:
**Application**: Antielectrostatic

| $T_m$ (K) |
|---|
| 319.15-321.15 [238] |

### 1556-11: Methyldiethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl] ammonium chloride

**Abbreviation**: [N122,mom]Cl
**Molecular Formula**: $C_{16}H_{34}NOCl$
**Molar Mass**: 291.90
**Structure**:

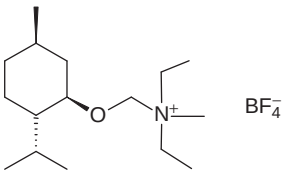


**Character**:
**Application**: Antielectrostatic

| MlC (μM) | MBC (μM) |
|---|---|
| 106 [238] | 213 [238] |

### 1556-21: Methyldiethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl] ammonium tetrafluoroborate

**Abbreviation**: [N122,mom][$BF_4$]
**Molecular Formula**: $C_{16}H_{34}NOBF_4$
**Molar Mass**: 343.25
**Structure**:

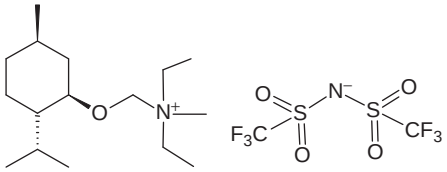


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 423.65-425.15 [238] |

### 1556-31: Methyldiethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl] ammonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [N122,mom][$NTf_2$]
**Molecular Formula**: $C_{18}H_{34}F_6N_2O_5S_2$
**Molar Mass**: 536.60
**Structure**:



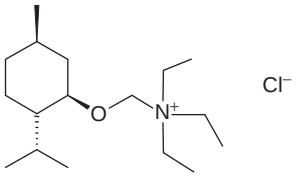
**Character**:
**Application**: Antielectrostatic

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 224.65 [238] | 470.15 [238] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.26 [238] | 303.15 | 754 [238] | 303.15 |

### 1557-11: Triethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl] ammonium chloride

**Abbreviation**: [N222,mom]Cl
**Molecular Formula**: $C_{17}H_{36}NOCl$
**Molar Mass**: 305.93
**Structure**:

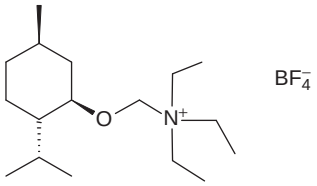



**Character**:
**Application**: Antielectrostatic

| MIC (μM) | MBC (μM) |
|---|---|
| 26 [238] | 52 [238] |

### 1557-21: Triethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl] ammonium tetrafluoroborate

**Abbreviation**: [N222,mom][$BF_4$]
**Molecular Formula**: $C_{17}H_{36}NOBF_4$
**Molar Mass**: 357.28
**Structure**:

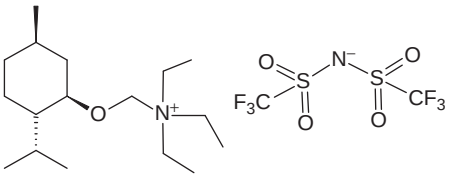



**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 398.15-399.65 [238] |

### 1557-31: Triethyl[(1*R*,2*S*,5*R*)-(−)-menthoxymethyl] ammonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [N222,mom][$NTf_2$]
**Molecular Formula**: $C_{19}H_{36}F_6N_2O_5S_2$
**Molar Mass**: 550.62
**Structure**:



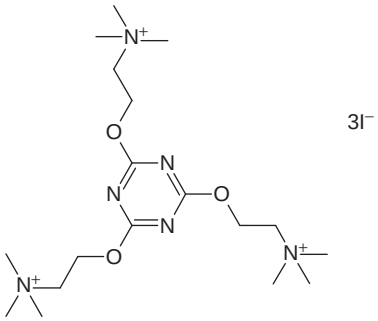

**Character**:
**Application**: Antielectrostatic

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 227.35 [238] | 452.15 [238] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.25 [238] | 303.15 | 876 [238] | 303.15 |

### 1558-13: Tris[2-(oxoethyl(trimethylammonium)ethoxy) triazine tri(iodine)

**Abbreviation**: [(N111,C2O)$_3$triaz]$I_3$
**Molecular Formula**: $C_{18}H_{39}O_3N_6I_3$
**Molar Mass**: 768.25
**Structure**:

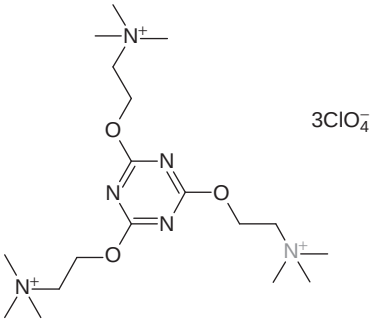



**Character**:
**Application**: Solvent

| $T_d$ (K) |
|---|
| 453.15 [150] |

### 1558-14: Tris[2-(oxoethyl(trimethylammonium)ethoxy) triazine tri(perchlorate)

**Abbreviation**: $[(N111,C2O)_3triaz][ClO_4]_3$
**Molecular Formula**: $C_{18}H_{39}O_{15}N_6Cl_3$
**Molar Mass**: 685.89
**Structure**:

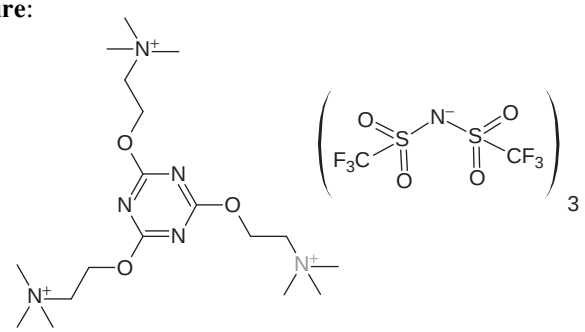



**Character**:
**Application**: Solvent

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 322.15, 358.15 [150] | 436.15 [150] |

### 1558-31: Tris[2-(oxoethyl(trimethylammonium)ethoxy) triazine tris[bis(trifluoromethyl)sulfonyl)imide]

**Abbreviation**: $[(N111,C_2O)_3triaz][NTf_2]_3$
**Molecular Formula**: $C_{24}H_{39}F_{18}N_9O_{15}S_6$
**Molar Mass**: 1227.99
**Structure**:



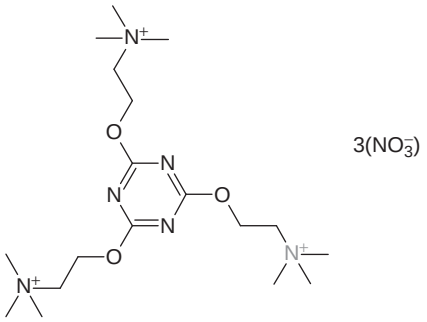

**Character**:
**Application**: Solvent

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 238.15 [150] | 578.15 [150] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.69 [150] | 298.15 |

### 1558-39: Tris[2-(oxoethyl(trimethylammonium)ethoxy) triazine tri(nitrate)

**Abbreviation**: $[(N111,C_2O)_3triaz][NO_3]_3$
**Molecular Formula**: $C_{18}H_{39}O_{12}N_9$
**Molar Mass**: 573.56
**Structure**:

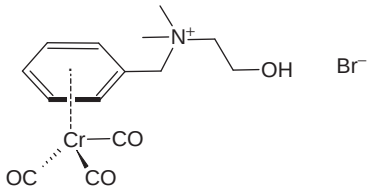



**Character**:
**Application**: Solvent

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 427.15 [150] | 451.15 [150] |

### 1559-12: $Cr(CO)_3(\eta^6\text{-}C_6H_5CH_2NMe_2(CH_2)_2OH)$ bromide

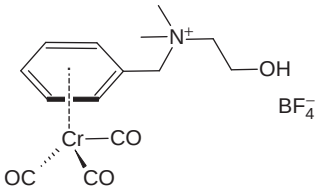
**Abbreviation**: $[Cr(CO)_3(\eta^6\text{-}C_6H_5CH_2NMe_2(CH_2)_2OH)]$ Br
**Molecular Formula**: $C_{14}H_{18}NCrO_4Br$
**Molar Mass**: 396.20
**Structure**:




**Character**:
**Application**: [151]

### 1559-21: $Cr(CO)_3(\eta^6\text{-}C_6H_5CH_2NMe_2(CH_2)_2OH)$ tetrafluoroborate

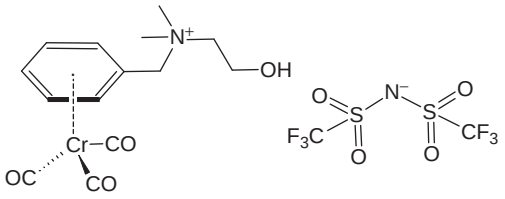
**Abbreviation**: $[Cr(CO)_3(\eta^6\text{-}C_6H_5CH_2NMe_2(CH_2)_2OH)][BF_4]$
**Molecular Formula**: $C_{14}H_{18}NCrO_4BF_4$
**Molar Mass**: 403.10
**Structure**:




**Character**:
**Application**: [151]

### 1559-31: $Cr(CO)_3(\eta^6\text{-}C_6H_5CH_2NMe_2\ (CH_2)_2OH)$ bis(trifluoromethylsulfonyl)imide

**Abbreviation**: $[Cr(CO)_3(\eta^6\text{-}C_6H_5CH_2NMe_2(CH_2)_2OH)][NTf_2]$
**Molecular Formula**: $C_{16}H_{18}F_6N_2CrO_8S_2$
**Molar Mass**: 596.44
**Structure**:

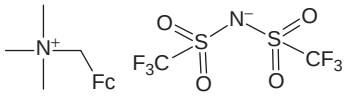



**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 318.15 [151] |

### 1560-31: (Ferrocenylmethyl)trimethylammonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [N111,Fc][$NTf_2$]
**Molecular Formula**: $C_{16}H_{20}F_6FeN_2O_4S_2$
**Molar Mass**: 538.31
**Structure**:

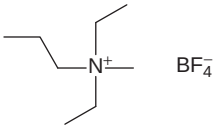



**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 357.65 [153] | 511.15 [153] |

### 1561-21: *N*,*N*-diethyl-*N*-methyl-*N*-(*n*-propyl)ammonium tetrafluoroborate

**Abbreviation**: [N1223][$BF_4$]
**Molecular Formula**: $C_8H_{20}NBF_4$
**Molar Mass**: 217.06
**Structure**:

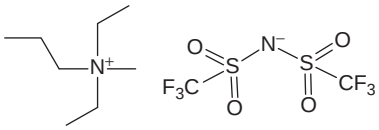



**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 459.15 [232] | 666.15 [232] |

**1561-31: *N*,*N*-diethyl-*N*-methyl-*N*-(*n*-propyl)ammonium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: [N1223][$NTf_2$]
**Molecular Formula**: $C_{10}H_{20}F_6N_2O_4S_2$
**Molar Mass**: 410.40
**Structure**:



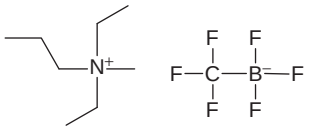
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) | $T_{s\text{-}s}$ (K) |
|---|---|---|
| 287.15 [232] | 677.15 [232] | 252.15, 271 [232] |

| $\rho$ (g/cm$^3$) | $K$ (S/m) | $T$ (K) |
|---|---|---|
| 1.42 [232] | 0.22 [232] | 298.15 |

**1561-223: *N*,*N*-diethyl-*N*-methyl-*N*-(*n*-propyl)ammonium trifluoromethyltrifluoroborate**

**Abbreviation**: [N1223][$CF_3BF_3$]
**Molecular Formula**: $C_9H_{20}BF_6N$
**Molar Mass**: 267.06
**Structure**:

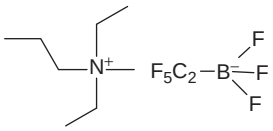


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) | $T_{s\text{-}s}$ (K) |
|---|---|---|
| 368.15 [232] | 525.15 [232] | 233.15, 243 [232] |

**1561-224: *N*,*N*-diethyl-*N*-methyl-*N*-(*n*-propyl)ammonium pentafluoroethyltrifluoroborate**

**Abbreviation**: [N1223][$C_2F_5BF_3$]
**Molecular Formula**: $C_{10}H_{20}BF_8N$
**Molar Mass**: 317.07
**Structure**:

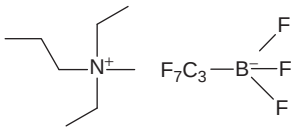


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) | $T_{s\text{-}s}$ (K) |
|---|---|---|
| 327.15 [232] | 588.15 [232] | 206.15, 233 [232] |

**1561-225: *N*,*N*-diethyl-*N*-methyl-*N*-(*n*-propyl)ammonium (heptafluoro-*n*-propyl)trifluoroborate**

**Abbreviation**: [N1223][*n*-$C_3F_7BF_3$]
**Molecular Formula**: $C_{11}H_{20}BF_{10}N$
**Molar Mass**: 367.08
**Structure**:

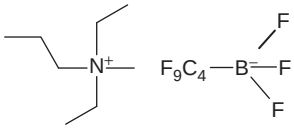


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) | $T_{s\text{-}s}$ (K) |
|---|---|---|
| 330.15 [232] | 588.15 [232] | 220.15, 298 [232] |

**1561-226: *N*,*N*-diethyl-*N*-methyl-*N*-(*n*-propyl)ammonium (nonafluoro-*n*-butyl)trifluoroborate**

**Abbreviation**: [N1223][*n*-$C_4F_9BF_3$]
**Molecular Formula**: $C_{12}H_{20}BF_{12}N$
**Molar Mass**: 417.09
**Structure**:

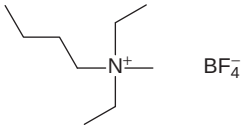


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) | $T_{s\text{-}s}$ (K) |
|---|---|---|
| 327.15 [232] | 546.15 [232] | 285.15, 297 [232] |

**1562-21: *N*,*N*-diethyl-*N*-methyl-*N*-(*n*-butyl)ammonium tetrafluoroborate**

**Abbreviation**: [N1224][$BF_4$]
**Molecular Formula**: $C_9H_{22}NBF_4$
**Molar Mass**: 231.08
**Structure**:

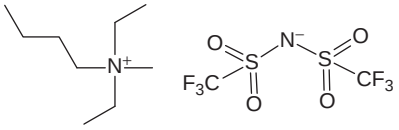


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 438.15 [232] | 665.15 [232] |

### 1562-31: *N*,*N*-diethyl-*N*-methyl-*N*-(*n*-butyl)ammonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [N1224][$NTf_2$]
**Molecular Formula**: $C_{11}H_{22}F_6N_2O_4S_2$
**Molar Mass**: 424.43
**Structure**:



**Character**:
**Application**:

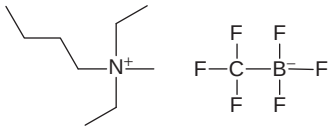
| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 282.15 [232] | 180.15 [232] | 673.15 [232] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 1.38 [232] | 298.15 | 0.16 [232] | 298.15 |

| Electrochemical window (V) | Anodic limit (V) | Cathode limit (V) |
|---|---|---|
| 5.69 [232] | 2.25 | −3.44 |

### 1562-223: *N*,*N*-diethyl-*N*-methyl-*N*-(*n*-butyl)ammonium trifluoromethyltrifluoroborate

**Abbreviation**: [N1224][$CF_3BF_3$]
**Molecular Formula**: $C_{10}H_{22}BF_6N$
**Molar Mass**: 281.09
**Structure**:



**Character**:
**Application**:

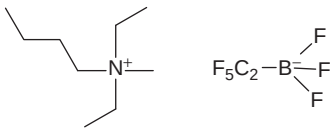
| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 270.15 [232] | 485.15 [232] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 1.18 [232] | 298.15 | 0.21 [232] | 298.15 |

| Electrochemical window (V) | Anodic limit (V) | Cathode limit (V) |
|---|---|---|
| 5.75 [232] | 2.32 | −3.43 |

### 1562-224: *N*,*N*-diethyl-*N*-methyl-*N*-(*n*-butyl)ammonium pentafluoroethyltrifluoroborate

**Abbreviation**: [N1224][$C_2F_5BF_3$]
**Molecular Formula**: $C_{11}H_{22}BF_8N$
**Molar Mass**: 331.10
**Structure**:



**Character**:
**Application**:

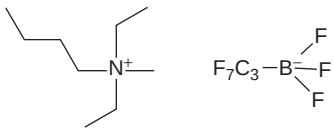
| $T_m$ (K) | $T_d$ (K) | $T_{s\text{-}s}$(K) |
|---|---|---|
| 288.15 [232] | 593.15 [232] | 224.15 [232] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 1.25 [232] | 298.15 | 0.23 [232] | 298.15 |

| Electrochemical window (V) | Anodic limit (V) | Cathode limit (V) | $T$ (K) |
|---|---|---|---|
| 5.64 [232] | 2.21 | −3.43 | 298 |

### 1562-225: *N*,*N*-diethyl-*N*-methyl-*N*-(*n*-butyl)ammonium (heptafluoro-*n*-propyl)trifluoroborate

**Abbreviation**: [N1224][*n*-$C_3F_7BF_3$]
**Molecular Formula**: $C_{12}H_{22}BF_{10}N$
**Molar Mass**: 381.10
**Structure**:

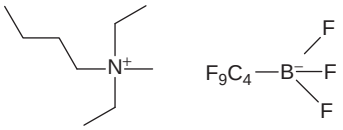


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) | $T_{s\text{-}s}$ (K) |
|---|---|---|
| 323.15 [232] | 580.15 [232] | 215.15 [232] |

**1562-226: *N*,*N*-diethyl-*N*-methyl-*N*-(*n*-butyl)ammonium (nonafluoro-*n*-butyl)trifluoroborate**

**Abbreviation**: [N1224][*n*-$C_4F_9BF_3$]
**Molecular Formula**: $C_{13}H_{22}BF_{12}N$
**Molar Mass**: 431.11
**Structure**:

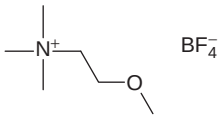


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) | $T_{s\text{-}s}$ (K) |
|---|---|---|
| 333.15 [232] | 587.15 [232] | 197.15, 276 [232] |

**1563-21: *N*,*N*,*N*-trimethyl-*N*-(2-methoxyethyl)ammonium tetrafluoroborate**

**Abbreviation**: [N111,1O2][$BF_4$]
**Molecular Formula**: $C_6H_{16}NOBF_4$
**Molar Mass**: 205
**Structure**:

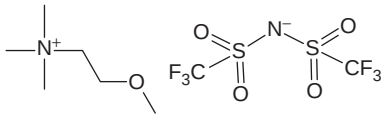


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 327.15 [232, 239] | 649.15 [232, 239] |

**1563-31: *N*,*N*,*N*-trimethyl-*N*-(2-methoxyethyl)ammonium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: [N111,1O2][$NTf_2$]
**Molecular Formula**: $C_8H_{16}F_6N_2O_5S_2$
**Molar Mass**: 398.35
**Structure**:



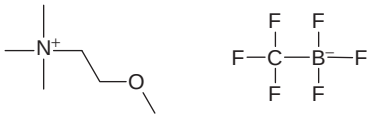
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 310.15 [232] | 655.15 [232] |

| Electrochemical window (V) | Anodic limit (V) | Cathode limit (V) |
|---|---|---|
| 5.07 [232] | 2.36 | −2.71 |

**1563-223: *N*,*N*,*N*-trimethyl-*N*-(2-methoxyethyl) ammonium trifluoromethyltrifluoroborate**

**Abbreviation**: [N111,1O2][$CF_3BF_3$]
**Molecular Formula**: $C_7H_{16}BF_6NO$
**Molar Mass**: 255.01
**Structure**:

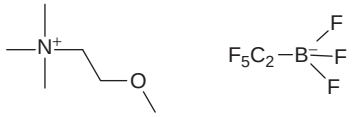


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) | $T_{s\text{-}s}$ (K) |
|---|---|---|
| 350.15 [232] | 459.15 [232] | 324.15 [232] |

**1563-224: *N*,*N*,*N*-trimethyl-*N*-(2-methoxyethyl) ammonium pentafluoroethyltrifluoroborate**

**Abbreviation**: [N111,1O2][$C_2F_5BF_3$]
**Molecular Formula**: $C_8H_{16}BF_8NO$
**Molar Mass**: 305.02
**Structure**:

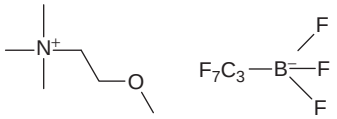


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 303.15 [232] | 599.15 [232] |
| 303.15 [239] | 599.15 [239] |

**1563-225: *N*,*N*,*N*-trimethyl-*N*-(2-methoxyethyl) ammonium (heptafluoro-*n*-propyl)trifluoroborate**

**Abbreviation**: [N111,1O2][*n*-$C_3F_7BF_3$]
**Molecular Formula**: $C_9H_{16}BF_{10}NO$
**Molar Mass**: 355.02
**Structure**:



**Character**:
**Application**:

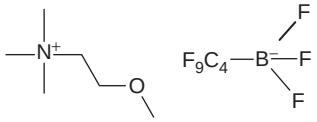
| $T_m$ (K) | $T_d$ (K) | $T_{s\text{-}s}$ (K) |
|---|---|---|
| 296.15 [232] | 557.15 [232] | 187.15 [232] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 1.41 [232] | 298.15 | 0.25 [232] | 298.15 |

| Electrochemical window (V) | Anodic limit (V) | Cathode limit (V) |
|---|---|---|
| 4.99 [232] | 2.24 | −2.75 |

**1563-226: *N*,*N*,*N*-trimethyl-*N*-(2-methoxyethyl) ammonium (nonafluoro-*n*-butyl)trifluoroborate**

**Abbreviation**: [N111,1O2][*n*-$C_4F_9BF_3$]
**Molecular Formula**: $C_{10}H_{16}BF_{12}NO$
**Molar Mass**: 405.03
**Structure**:

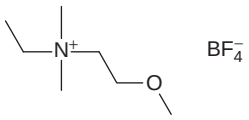


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 323.15 [232] | 580.15 [232] |

**1564-21: *N*,*N*-methyl-*N*-ethyl-*N*-(2-methoxyethyl) ammonium tetrafluoroborate**

**Abbreviation**: [N112,1O2][$BF_4$]
**Molecular Formula**: $C_7H_{18}NOBF_4$
**Molar Mass**: 219.03
**Structure**:



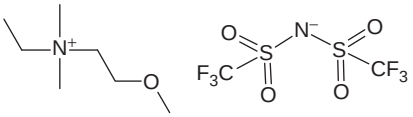
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 277.15 [232, 239] | 176.15 [239] | 650.15 [232, 239] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) | Molar conductivity (S·cm$^2$·mol$^{-1}$) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1.21 [239] | 298.15 | 335 [239] | 298.15 | 0.17 [239] | 298.15 | 0.308 [239] | 298.15 |

### 1564-31: *N*,*N*-methyl-*N*-ethyl-*N*-(2-methoxyethyl) ammonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [N112,1O2][$NTf_2$]
**Molecular Formula**: $C_9H_{18}F_6N_2O_5S_2$
**Molar Mass**: 412.37
**Structure**:



**Character**:
**Application**:

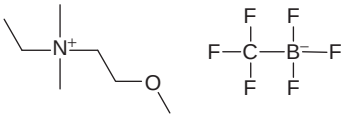
| $T_d$ (K) |
|---|
| 661.15 [232] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 1.45 [232] | 298.15 | 0.31 [232] | 298.15 |

| Electrochemical window (V) | Anodic limit (V) | Cathode limit (V) |
|---|---|---|
| 5.48 [232] | 2.35 | −3.13 |

### 1564-223: *N*,*N*-methyl-*N*-ethyl-*N*-(2-methoxyethyl) ammonium trifluoromethyltrifluoroborate

**Abbreviation**: [N112,1O2][$CF_3BF_3$]
**Molecular Formula**: $C_8H_{18}BF_6NO$
**Molar Mass**: 269.04
**Structure**:



**Character**:
**Application**:

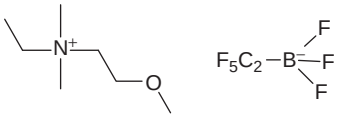
| $T_m$ (K) | $T_d$ (K) | $T_{s\text{-}s}$ (K) |
|---|---|---|
| 281.15 [232] | 436.15 [232] | 266.15 [232] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 1.27 [232] | 298.15 | 0.25 [232] | 298.15 |

| Electrochemical window (V) | Anodic limit (V) |
|---|---|
| 5.16 [232] | 2.21 |

### 1564-224: *N*,*N*-methyl-*N*-ethyl-*N*-(2-methoxyethyl) ammonium pentafluoroethyltrifluoroborate

**Abbreviation**: [N112,1O2][$C_2F_5BF_3$]
**Molecular Formula**: $C_9H_{18}BF_8NO$
**Molar Mass**: 319.04
**Structure**:



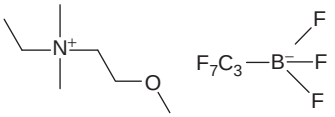
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 240.15 [232, 239] | 156.15 [232, 239] | 580.15 [232, 239] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.33 [239] | 298.15 | 58 [239] | 298.15 | 0.38 [239] | 298.15 |
| 1.34 [239] | 298.15 | | | 0.383 [239] | 298.15 |

### 1564-225: *N*,*N*-methyl-*N*-ethyl-*N*-(2-methoxyethyl) ammonium (heptafluoro-*n*-propyl)trifluoroborate

**Abbreviation**: [N112,1O2][*n*-$C_3F_7BF_3$]
**Molecular Formula**: $C_{10}H_{18}BF_{10}NO$
**Molar Mass**: 369.05
**Structure**:



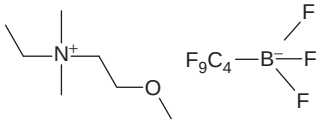
**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 564.15 [232] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 1.39 [232] | 298.15 | 0.26 [232] | 298.15 |

**1564-226: *N*,*N*-methyl-*N*-ethyl-*N*-(2-methoxyethyl) ammonium (nonafluoro-*n*-butyl)trifluoroborate**

**Abbreviation**: [N112,1O2][*n*-$C_4F_9BF_3$]
**Molecular Formula**: $C_{11}H_{18}BF_{12}NO$
**Molar Mass**: 419.06
**Structure**:



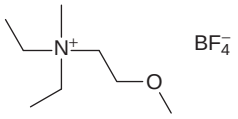

**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 245.15 [232] | 163.15 [232] | 556.15 [232] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 1.45 [232] | 298.15 | 0.15 [232] | 298.15 |

**1565-21: *N*,*N*-diethyl-*N*-methyl-*N*-(2-methoxyethyl) ammonium tetrafluoroborate**

**Abbreviation**: [N122,1O2][$BF_4$]
**Molecular Formula**: $C_8H_{20}NOBF_4$
**Molar Mass**: 233.06
**Structure**:




**Character**:
**Application**:

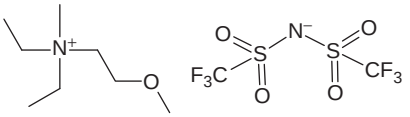
| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 281.15 [232, 239]<br>282.15 [20] | 178.15 [232, 239] | 591.15 [20]<br>645.15 [232, 239] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) | Molar conductivity (S·cm$^2$·mol$^{-1}$) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1.18 [20]<br>1.2 [232, 239] | 293.15<br>298.15 | 426 [239]<br>1200 [20] | 298.15<br>RT | 0.13 [239]<br>0.127 [239] | 298.15<br>298.15 | 0.245 [239] | 298.15 |

| Electrochemical window (V) | Anodic limit (V) | Cathode limit (V) | $T$ (K) |
|---|---|---|---|
| 5.63 [232]<br>6 [20] | 2.24 | −3.40 | 298.15 |

### 1565-31: *N*,*N*-diethyl-*N*-methyl-*N*-(2-methoxyethyl) ammonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [N122,1O2][$NTf_2$], [N122,1O2][TFSI]
**Molecular Formula**: $C_{10}H_{20}F_6N_2O_5S_2$
**Molar Mass**: 426.40
**Structure**:



**Character**:
**Application**:

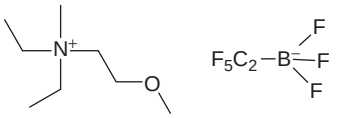
| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 182.15 [20] | 656.15 [20] |
| 178.15 [232] | 663.15 [232] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|
| 1.42 [20] | 293.15 | 120 [20] | 0.26 [232] | 298.15 |
| 1.42 [232] | 298.15 | | | |

| Electrochemical window (V) | Anodic limit (V) | Cathode limit (V) |
|---|---|---|
| 5.67 [232] | 2.34 | −3.33 |

### 1565-224: *N*,*N*-diethyl-*N*-methyl-*N*-(2-methoxyethyl) ammonium pentafluoroethyltrifluoroborate

**Abbreviation**: [N122,1O2][$C_2F_5BF_3$]
**Molecular Formula**: $C_{10}H_{20}BF_8NO$
**Molar Mass**: 333.07
**Structure**:



**Character**:
**Application**:

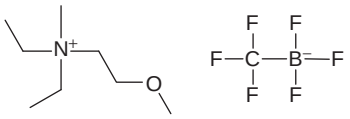
| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 160.15 [232, 239] | 595.15 [232, 239] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) | Molar conductivity (S·cm$^2$·mol$^{-1}$) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1.31 [232] | 298.15 | 68 [239] | 298.15 | 0.32 [232] | 298.15 | 0.792 [239] | 298.15 |
| 1.32 [239] | 298.15 | | | 0.314 [239] | 298.15 | | |

| Electrochemical window (V) | Anodic limit (V) | Cathode limit (V) |
|---|---|---|
| 5.61 [232] | 2.29 | −3.32 |

### 1565-223: *N*,*N*-diethyl-*N*-methyl-*N*-(2-methoxyethyl) ammonium trifluoromethyltrifluoroborate

**Abbreviation**: [N122,1O2][$CF_3BF_3$]
**Molecular Formula**: $C_9H_{20}BF_6NO$
**Molar Mass**: 283.06
**Structure**:



**Character**:
**Application**:

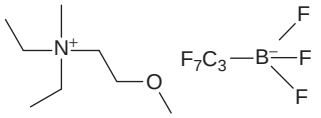
| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 251.15 [232] | 447.15 [232] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 1.25 [232] | 298.15 | 0.30 [232] | 298.15 |

| Electrochemical window (V) | Anodic limit (V) | Cathode limit (V) |
|---|---|---|
| 5.7 [232] | 2.32 | −3.38 |

### 1565-225: *N*,*N*-diethyl-*N*-methyl-*N*-(2-methoxyethyl) ammonium (heptafluoro-*n*-propyl)trifluoroborate

**Abbreviation**: [N122,1O2][*n*-$C_3F_7BF_3$]
**Molecular Formula**: $C_{11}H_{20}BF_{10}NO$
**Molar Mass**: 383.08
**Structure**:



**Character**:
**Application**:

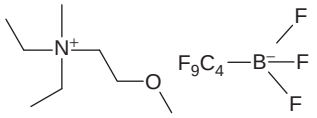
| $T_d$ (K) |
|---|
| 548.15 [232] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 1.37 [232] | 298.15 | 0.19 [232] | 298.155 |

| Electrochemical window (V) | Anodic limit (V) | Cathode limit (V) |
|---|---|---|
| 5.61 [232] | 2.28 | −3.33 |

### 1565-226: *N*,*N*-diethyl-*N*-methyl-*N*-(2-methoxyethyl) ammonium (nonafluoro-*n*-butyl)trifluoroborate

**Abbreviation**: [N122,1O2][*n*-$C_4F_9BF_3$]
**Molecular Formula**: $C_{12}H_{20}BF_{12}NO$
**Molar Mass**: 433.09
**Structure**:



**Character**:
**Application**:

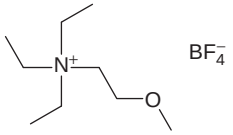
| $T_d$ (K) |
|---|
| 560.15 [232] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 1.42 [232] | 298.15 | 0.13 [232] | 298.15 |

| Electrochemical window (V) | Anodic limit (V) | Cathode limit (V) |
|---|---|---|
| 5.65 [232] | 2.21 | −3.44 |

### 1566-21: *N*,*N*,*N*-triethyl-*N*-(2-methoxyethyl)ammonium tetrafluoroborate

**Abbreviation**: [N222,1O2][$BF_4$]
**Molecular Formula**: $C_9H_{22}NOBF_4$
**Molar Mass**: 247.08
**Structure**:

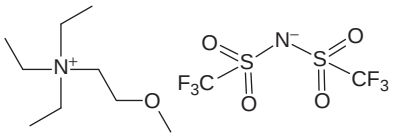


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 329.15 [232, 239] | 645.15 [232, 239] |

### 1566-31: *N*,N,*N*-triethyl-*N*-(2-methoxyethyl)ammonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [N222,1O2][$NTf_2$]
**Molecular Formula**: $C_{11}H_{22}F_6N_2O_5S_2$
**Molar Mass**: 440.43
**Structure**:



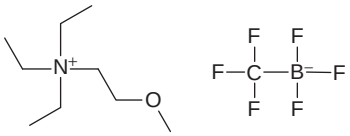
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 293.15 [232]<br>< 223.15 [236] | 191.15 [232] | 657.15 [236]<br>659.15 [232] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.4 [232, 236] | 298.15 | 85 [236] | 298.15 | 0.21 [232]<br>0.216 [236] | 298.15<br>298.15 |

### 1566-223: *N*,*N*,*N*-triethyl-*N*-(2-methoxyethyl)ammonium trifluoromethyltrifluoroborate

**Abbreviation**: [N222,1O2][$CF_3BF_3$]
**Molecular Formula**: $C_{10}H_{22}BF_6NO$
**Molar Mass**: 297.09
**Structure**:



**Character**:
**Application**:

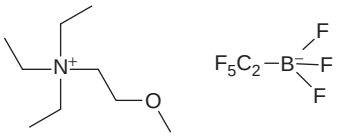
| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 283.15 [232] | 483.15 [232] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 1.22 [232] | 298.15 | 0.20 [232] | 298.15 |

| Electrochemical window (V) | Anodic limit (V) | Cathode limit (V) |
|---|---|---|
| 5.70 [232] | 2.29 | −3.41 |

### 1566-224: *N*,*N*,*N*-triethyl-*N*-(2-methoxyethyl)ammonium pentafluoroethyltrifluoroborate

**Abbreviation**: [N222,1O2][$C_2F_5BF_3$]
**Molecular Formula**: $C_{11}H_{22}BF_8NO$
**Molar Mass**: 347.10
**Structure**:



**Character**:
**Application**:

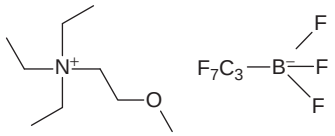
| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 276.15 [232, 239] | 175.15 [232, 239] | 618.15 [232, 239] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) | Molar conductivity (S·cm$^2$·mol$^{-1}$) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1.28 [232] | 298.15 | 86 [239] | 298.15 | 0.24 [232] | 298.15 | 0.635 [239] | 298.15 |
| 1.29 [239] | 298.15 | | | 0.236 [239] | 298.15 | | |

| Electrochemical window (V) | Anodic limit (V) | Cathode limit (V) |
|---|---|---|
| 5.63 [232] | 2.22 | −3.41 |

**1566-225: *N*,*N*,*N*-triethyl-*N*-(2-methoxyethyl)ammonium (heptafluoro-*n*-propyl)trifluoroborate**

**Abbreviation**: [N222,1O2][*n*-$C_3F_7BF_3$]
**Molecular Formula**: $C_{12}H_{22}BF_{10}NO$
**Molar Mass**: 397.10
**Structure**:



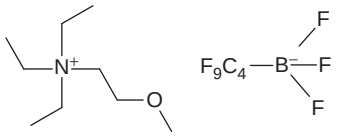
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) | $T_{s\text{-}s}$ (K) |
|---|---|---|
| 279.15 [232] | 624.15 [232] | 240.15 [232] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 1.34 [232] | 298.15 | 0.18 [232] | 298.15 |

**1566-226: *N*,*N*,*N*-triethyl-*N*-(2-methoxyethyl)ammonium (nonafluoro-*n*-butyl)trifluoroborate**

**Abbreviation**: [N222,1O2][*n*-$C_4F_9BF_3$]
**Molecular Formula**: $C_{13}H_{22}BF_{12}NO$
**Molar Mass**: 447.11
**Structure**:



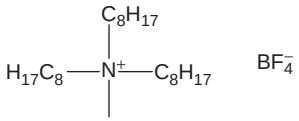
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) | $T_{s\text{-}s}$ (K) |
|---|---|---|
| 284.15 [232] | 578.15 [232] | 262.15 [232] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 1.4 [232] | 298.15 | 0.11 [232] | 298.15 |

**1567-21: *N*,*N*,*N*-trioctyl-*N*-methylammonium tetrafluoroborate**

**Abbreviation**: [N1888][$BF_4$]
**Molecular Formula**: $C_{25}H_{54}NBF_4$
**Molar Mass**: 455.51
**Structure**:



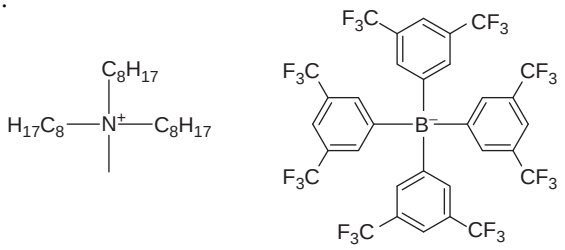
**Character**: hydrophobic
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 333.15 [240] | 567.15 [240] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 0.87 [240] | 323.15 |

**1567-217: *N*,*N*,*N*-trioctyl-*N*-methylammonium tetrakis (3,5-bis(trifluoromethyl)phenyl)borate**

**Abbreviation**: [N1888][TFPB]
**Molecular Formula**: $C_{57}H_{66}BF_{24}N$
**Molar Mass**: 1231.91
**Structure**:



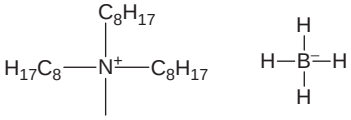
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 309.15 [98] | 237.15 [98] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.228 [98] | 298.15 | 470 [98] | 329.15 | 0.013 [98] | 329.15 |

### 1567-228: *N*,*N*,*N*-trioctyl-*N*-methylammonium tetrahydrogenborate

**Abbreviation**: [N1888][$BH_4$]
**Molecular Formula**: $C_{25}H_{58}NB$
**Molar Mass**: 383.55
**Structure**:



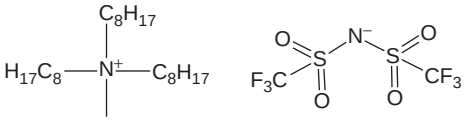
**Character**: Hydrophobic
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 265.15 [240] | 417.15 [240] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | Water content (<100 wt%, 100 ppm) |
|---|---|---|---|
| 0.87 [240] | 323.15 | 650 [240] | 4.2 (wt%) [240] |

### 1567-31: *N*,*N*,*N*-trioctyl-*N*-methylammonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [N1888][$NTf_2$]
**Molecular Formula**: $C_{27}H_{54}F_6N_2O_4S_2$
**Molar Mass**: 648.85
**Structure**:



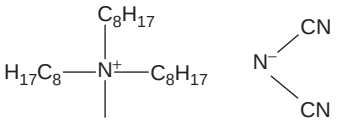
**Character**:
**Application**: Supported ILs membrane

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 234.15 [240] | 191.73 [137] | > 573.15 [137]<br>640.15 [240] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | Water content (<100 wt%, 100 ppm) |
|---|---|---|---|---|
| 1.0823 [102] | 293.15 | 354 [137] | 293.15 | 6.1 (wt%) [240] |
| 1.0803 [48] | 303.15 | 589.3 [102] | 293.15 | |
| 1.06 [240] | 323.15 | | | |

### 1567-34: *N*,*N*,*N*-trioctyl-*N*-methylammonium dicyanoamide

**Abbreviation**: [N1888][dca]
**Molecular Formula**: $C_{27}H_{54}N_4$
**Molar Mass**: 434.74
**Structure**:



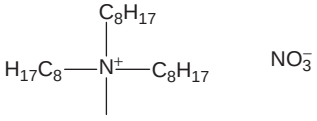
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 183.21 [137] | >573.15 [137] |

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 300 [137] | 293.15 |

### 1567-39: *N*,*N*,*N*-trioctyl-*N*-methylammonium nitrate

**Abbreviation**: [N1888][$NO_3$]
**Molecular Formula**: $C_{25}H_{54}N_2O_3$
**Molar Mass**: 430.71
**Structure**:



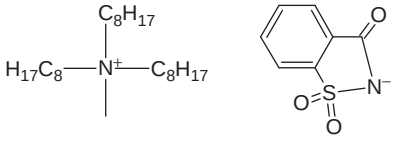
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 279.15-293.15 [240] | 475.15 [240] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | Water content (<100 wt%, 100 ppm) |
|---|---|---|---|
| 0.9 [240] | 323.15 | 630 [240] | 3.1 (wt%) [240] |

### 1567-312: *N*,*N*,*N*-trioctyl-*N*-methylammonium Saccharinate

**Abbreviation**: [N1888][Sac]
**Molecular Formula**: $C_{32}H_{58}N_2O_3S$
**Molar Mass**: 550.88
**Structure**:



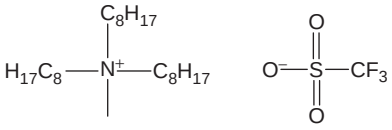
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 219.13 [137] | 478.15 [137] |

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 2824 [137] | 293.15 |

### 1567-43: *N*,*N*,*N*-trioctyl-*N*-methylammonium trifluoromethanesulfonate

**Abbreviation**: [N1888][TfO]
**Molecular Formula**: $C_{26}H_{54}F_3NO_3S$
**Molar Mass**: 517.77
**Structure**:

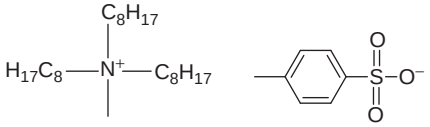


**Character**:
**Application**:

| $T_d$ (K) |
|---|
| > 573.15 [137] |

### 1567-47: *N*,*N*,*N*-trioctyl-*N*-methylammonium Tosylate

**Abbreviation**: [N1888][Tos]
**Molecular Formula**: $C_{32}H_{61}NO_3S$
**Molar Mass**: 539.90
**Structure**:

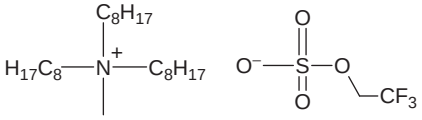


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 351.13 [137] | 514.15 [137] |

### 1567-410: *N*,*N*,*N*-trioctyl-*N*-methylammonium 2,2,2-trifluoroethyl sulfate

**Abbreviation**: [N1888][$C_2F_3$]
**Molecular Formula**: $C_{27}H_{56}F_3NSO_4$
**Molar Mass**: 547.80
**Structure**:



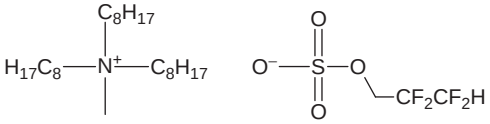
**Character**: Hydrophilic
**Application**: Medium for lipase-catalyzed reaction

| $T_m$ (K) |
|---|
| 277.15 [62] |

| $\eta_D$ (cp) | $K$ (S/m) |
|---|---|
| 1420 [62] | 0.00044 [62] |

### 1567-411: *N*,*N*,*N*-trioctyl-*N*-methylammonium 2,2,3,3-tetrafluoropropyl sulfate

**Abbreviation**: [N1888][$C_3F_4$]
**Molecular Formula**: $C_{28}H_{57}F_4NSO_4$
**Molar Mass**: 579.82
**Structure**:



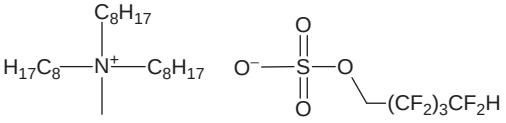
**Character**: Half-hydrophobic
**Application**: Medium for lipase-catalyzed reaction

| $T_m$ (K) |
|---|
| 268.15 [62] |

| $\eta_D$ (cp) | $K$ (S/m) |
|---|---|
| 690 [62] | 0.0028 [62] |

### 1567-414: *N*,*N*,*N*-trioctyl-*N*-methylammonium 2,2,3,3,4,4,5,5-octafluoropentyl sulfate

**Abbreviation**: [N1888][$C_5F_8$]
**Molecular Formula**: $C_{30}H_{57}F_8NSO_4$
**Molar Mass**: 679.83
**Structure**:



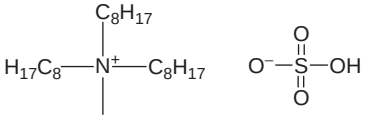
**Character**: Hydrophobic
**Application**: Medium for lipase-catalyzed reaction

| $T_m$ (K) |
|---|
| 271.15 [62] |

| $\eta_D$ (cp) | $K$ (S/m) |
|---|---|
| 650 [62] | 0.0022 [62] |

### 1567-421: *N*,*N*,*N*-trioctyl-*N*-methylammonium hydrosulfate

**Abbreviation**: [N1888][$HSO_4$]
**Molecular Formula**: $C_{25}H_{55}NSO_4$
**Molar Mass**: 465.77
**Structure**:



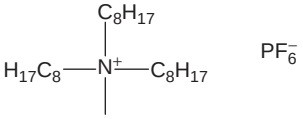
**Character**: Hydrophobic
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 254.15-248.15 [240] | 469.15 [240] |

| $\rho$ (g/cm$^3$) | $T$ (K) | Water content (<100 wt%, 100 ppm) |
|---|---|---|
| 0.91 [240] | 323.15 | 0.2 (wt%) [240] |

### 1567-51: *N*,*N*,*N*-trioctyl-*N*-methylammonium hexafluorophosphate

**Abbreviation**: [N1888][$PF_6$]
**Molecular Formula**: $C_{25}H_{54}NPF_6$
**Molar Mass**: 513.67
**Structure**:



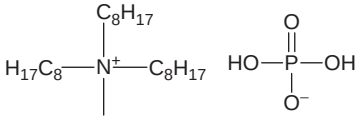
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 324.15-339.15 [240] | 547.15 [240] |

| Water content (<100 wt%, 100 ppm) |
|---|
| 0.5 (wt%) [240] |

### 1567-510: *N*,*N*,*N*-trioctyl-*N*-methylammonium Dihydrogen phosphate

**Abbreviation**: [N1888][dhp]
**Molecular Formula**: $C_{25}H_{56}NPO_4$
**Molar Mass**: 465.69
**Structure**:



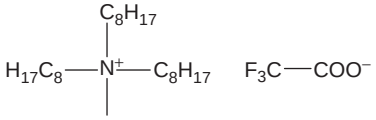
**Character**: Hydrophobic
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 251.15-249.15 [240] | 449.15 [240] |

| $\rho$ (g/cm$^3$) | $T$ (K) | Water content (<100 wt%, 100 ppm) |
|---|---|---|
| 0.87 [240] | 323.15 | 0.5 (wt%) [240] |

### 1567-61: *N*,*N*,*N*-trioctyl-*N*-methylammonium trifluoroacetate

**Abbreviation**: [N1888][$CF_3CO_2$]
**Molecular Formula**: $C_{27}H_{54}F_3NO_2$
**Molar Mass**: 481.72
**Structure**:



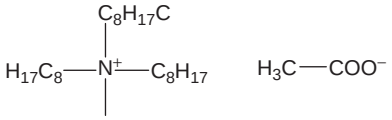
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 202.2 [137] | 456.15 [137] |

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 740 [137] | 293.15 |

### 1567-63: *N*,*N*,*N*-trioctyl-*N*-methylammonium acetate

**Abbreviation**: [N1888][OAc]
**Molecular Formula**: $C_{27}H_{57}NO_2$
**Molar Mass**: 427.75
**Structure**:

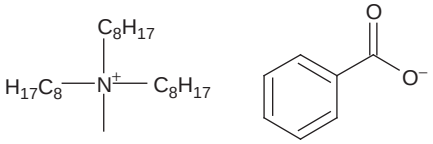


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 251.15-250.15 [240] | 448.15 [240] |

### 1567-64: Tricaprylmethylammonium benzoate

**Abbreviation**: [N1888][ba]
**Molecular Formula**: $C_{32}H_{59}NO_2$
**Molar Mass**: 489.81
**Structure**:



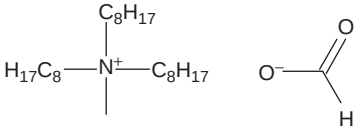
**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 434.15 [241] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 0.96 [241] | 293.15 |

### 1567-65: *N*,*N*,*N*-trioctyl-*N*-methylammonium formate

**Abbreviation**: [N1888][$HCO_2$]
**Molecular Formula**: $C_{26}H_{55}NO_2$
**Molar Mass**: 413.72
**Structure**:



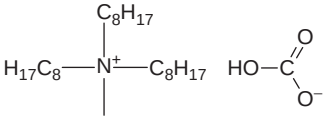
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 274.15-280.15 [240] | 447.15 [240] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 0.88 [240] | 323.15 |

### 1567-629: *N*,*N*,*N*-trioctyl-*N*-methylammonium bicarbonate

**Abbreviation**: [N1888][$HCO_3$]
**Molecular Formula**: $C_{26}H_{55}NO_3$
**Molar Mass**: 429.72
**Structure**:

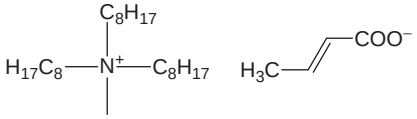


**Character**: Hydrophobic
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 267.15-266.15 [240] | 449.15 [240] |

### 1567-630: *N*,*N*,*N*-trioctyl-*N*-methylammonium Crotonic acid

**Abbreviation**: [N1888][Crot]
**Molecular Formula**: $C_{29}H_{59}NO_2$
**Molar Mass**: 453.78
**Structure**:



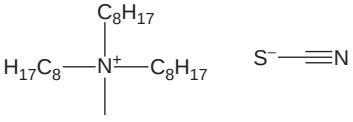
**Character**: Hydrophobic
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 289.15-293.15 [240] | 456.15 [240] |

| $\rho$ (g/cm$^3$) | $T$ (K) | Water content (<100 wt%, 100 ppm) |
|---|---|---|
| 0.87 [240] | 323.15 | 3.6 (wt%) [240] |

### 1567-1503: *N*,*N*,*N*-trioctyl-*N*-methylammonium thiocyanate

**Abbreviation**: [N1888][SCN]
**Molecular Formula**: $C_{26}H_{54}N_2S$
**Molar Mass**: 426.78
**Structure**:

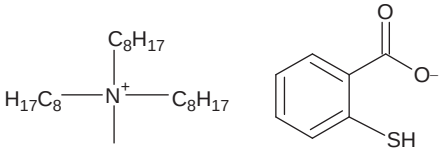


**Character**:
**Application**:

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 1017 [137] | 293.15 |

### 1567-1504: Tricaprylmethylammonium thiosalicylate

**Abbreviation**: [A336][TS], [N1888][TS]
**Molecular Formula**: $C_{32}H_{59}NO_2S$
**Molar Mass**: 521.88
**Structure**:



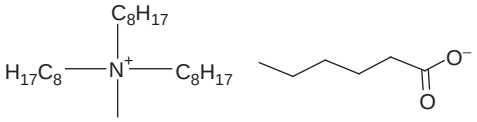
**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 475.15 [241] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 0.96 [241] | 293.15 |

### 1567-1505: Tricaprylmethylammonium hexanoate

**Abbreviation**: [A336][Hex]
**Molecular Formula**: $C_{31}H_{65}NO_2$
**Molar Mass**: 483.86
**Structure**:



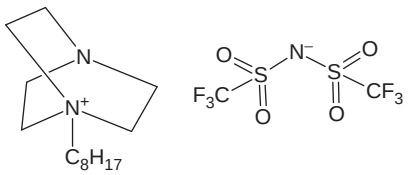
**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 421.15 [241] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 0.89 [241] | 293.15 |

### 1568-31: 1-Octyl-4-aza-1-azonia-bicyclo[2.2.2]octane bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [$C_8$dabco][TFSI]
**Molecular Formula**: $C_{16}H_{29}F_6N_3O_4S_2$
**Molar Mass**: 505.54
**Structure**:

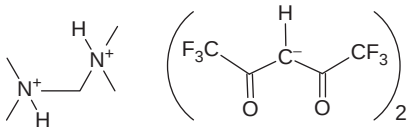


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 299.15 [208] | 423.15 [208] |

### 1569-1402: *N*,*N*,*N*′,*N*′-tetramethylmethanediamine di[1,1,1,5,5,5-hexafluoro-2,4-pentanedionate]

**Abbreviation**: $[(Me_2NH)_2CH_2][(CF_3CO)_2CH]_2$
**Molecular Formula**: $C_{15}H_{18}F_{12}N_2O_4$
**Molar Mass**: 518.30
**Structure**:

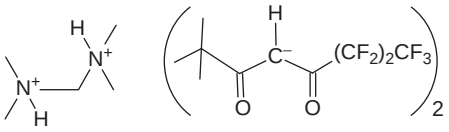


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 205.15 [242] | 453.15 [242] |

**1569-1403: *N*,*N*,*N*′,*N*′-tetramethylmethanediamine di[2,2-dimethyl-6,6,7,7,8,8,8-heptafluoro-3,5-octanedionate]**

**Abbreviation**: $[(Me_2NH)_2CH_2][(Me_3CCO)CH(CO(CF_2)_2CF_3)]_2$
**Molecular Formula**: $C_{25}H_{36}F_{14}N_2O_4$
**Molar Mass**: 694.54
**Structure**:

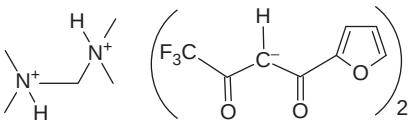


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| < 208.15 [242] | 458.15 [242] |

**1569-1404: *N*,*N*,*N*′,*N*′-tetramethylmethanediamine di[4,4,4-trifluoro-1-(2-furyl)-1,3-butanedionate]**

**Abbreviation**: $[(Me_2NH)_2CH_2][(CF_3CO)CH(COfuran)]_2$
**Molecular Formula**: $C_{21}H_{24}F_6N_2O_6$
**Molar Mass**: 514.42
**Structure**:

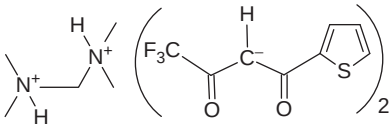


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 355.15 [242] | 469.15 [242] |

**1569-1405: *N*,*N*,*N*′,*N*′-tetramethylmethanediamine di[4,4,4-trifluoro-1-(2-thenoyl)-1,3-butanedionate]**

**Abbreviation**: $[(Me_2NH)_2CH_2][(CF_3CO)CH(COthiophene)]_2$
**Molecular Formula**: $C_{21}H_{24}F_6N_2O_4S_2$
**Molar Mass**: 546.55
**Structure**:

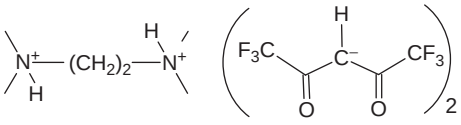


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 311.15 [242] | 506.15 [242] |

**1570-1402: *N*,*N*,*N*′,*N*′-tetramethylethanediamine di[1,1,1,5,5,5-hexafluoro-2,4-pentanedionate]**

**Abbreviation**: $[(Me_2NH)_2(CH_2)_2][(CF_3CO)_2CH]_2$
**Molecular Formula**: $C_{16}H_{20}F_{12}N_2O_4$
**Molar Mass**: 532.32
**Structure**:

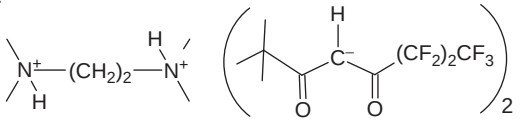


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 365.15 [242] |

**1570-1403: *N*,*N*,*N*′,*N*′-tetramethylethanediamine di [2,2-dimethyl-6,6,7,7,8,8,8-heptafluoro-3,5-octanedionate]**

**Abbreviation**: $[(Me_2NH)_2(CH_2)_2][(Me_3CCO)CH(CO(CF_2)_2CF_3)]_2$
**Molecular Formula**: $C_{26}H_{38}F_{14}N_2O_4$
**Molar Mass**: 708.57
**Structure**:

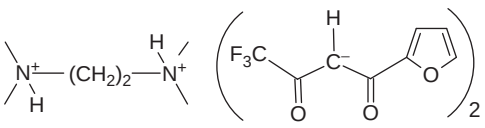


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 313.15 [242] | 476.15 [242] |

**1570-1404: *N*,*N*,*N*′,*N*′-tetramethylethanediamine di[4,4,4-trifluoro-1-(2-furyl)-1,3-butanedionate]**

**Abbreviation**: $[(Me_2NH)_2(CH_2)_2][(CF_3CO)CH(COfuran)]_2$
**Molecular Formula**: $C_{22}H_{26}F_6N_2O_6$
**Molar Mass**: 528.44
**Structure**:

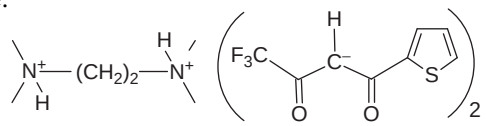


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 208.15 [242] | 500.15 [242] |

**1570-1405: *N*,*N*,*N*′,*N*′-tetramethylethanediamine di[4,4,4-trifluoro-1-(2-thenoyl)-1,3-butanedionate]**

**Abbreviation**: $[(Me_2NH)_2(CH_2)_2][(CF_3CO)CH(COthiophene)]_2$
**Molecular Formula**: $C_{22}H_{26}F_6N_2O_4S_2$
**Molar Mass**: 560.57
**Structure**:

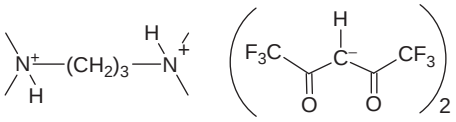


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 355.15 [242] | 405.15 [242] |

**1571-1402: *N*,*N*,*N*′,*N*′-tetramethyl-1, 3-propanediamine di[1,1,1,5,5,5-hexafluoro-2,4-pentanedionate]**

**Abbreviation**: $[(Me_2NH)_2(CH_2)_3][(CF_3CO)_2CH]_2$
**Molecular Formula**: $C_{17}H_{22}F_{12}N_2O_4$
**Molar Mass**: 546.35
**Structure**:

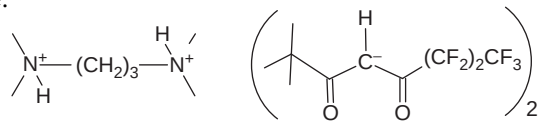


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 341.15 [242] | 463.15 [242] |

**1571-1403: *N*,*N*,*N*′,*N*′-tetramethyl-1, 3-propanediamine di[2,2-dimethyl-6,6,7,7,8,8,8-heptafluoro-3,5-octanedionate]**

**Abbreviation**: $[(Me_2NH)_2(CH_2)_3][(Me_3CCO)CH(CO(CF_2)_2CF_3)]_2$
**Molecular Formula**: $C_{27}H_{40}F_{14}N_2O_4$
**Molar Mass**: 722.60
**Structure**:

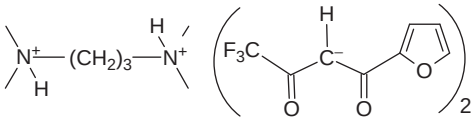


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 311.15 [242] | 425.15 [242] |

**1571-1404: *N*,*N*,*N*′,*N*′-tetramethyl-1, 3-propanediamine di[4,4,4-trifluoro-1-(2-furyl)-1,3-butanedionate]**

**Abbreviation**: $[(Me_2NH)_2(CH_2)_3][(CF_3CO)CH(COfuran)]_2$
**Molecular Formula**: $C_{23}H_{28}F_6N_2O_6$
**Molar Mass**: 542.47
**Structure**:

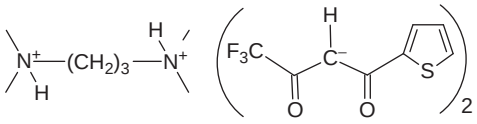


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 188.15 [242] | 493.15 [242] |

**1571-1405: *N*,*N*,*N*′,*N*′-tetramethyl-1, 3-propanediamine di[4,4,4-trifluoro-1-(2-thenoyl)-1,3-butanedionate]**

**Abbreviation**: $[(Me_2NH)_2(CH_2)_3][(CF_3CO)CH(COthiophene)]_2$
**Molecular Formula**: $C_{23}H_{28}F_6N_2O_4S_2$
**Molar Mass**: 574.60
**Structure**:

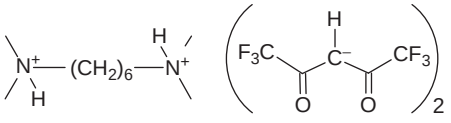


**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 415.15 [242] |

**1572-1402: *N*,*N*,*N*′,*N*′-tetramethyl-1,6-hexanediamine di[1,1,1,5,5,5-hexafluoro-2,4-pentanedionate]**

**Abbreviation**: $[(Me_2NH)_2(CH_2)_6][(CF_3CO)_2CH]_2$
**Molecular Formula**: $C_{20}H_{28}F_{12}N_2O_4$
**Molar Mass**: 588.43
**Structure**:

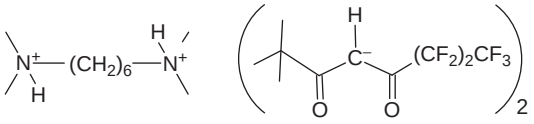


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 383.15 [242] | 588.15 [242] |

**1572-1403: *N*,*N*,*N*′,*N*′-tetramethyl-1,6-hexanediamine di[2,2-dimethyl-6,6,7,7,8,8,8-heptafluoro-3,5-octanedionate]**

**Abbreviation**: $[(Me_2NH)_2(CH_2)_6][(Me_3CCO)CH(CO(CF_2)_2CF_3)]_2$
**Molecular Formula**: $C_{30}H_{46}F_{14}N_2O_4$
**Molar Mass**: 764.68
**Structure**:

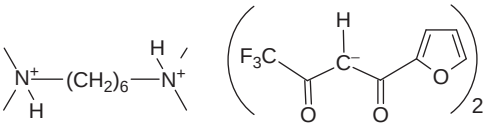


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 208.15 [242] | 379.15 [242] |

**1572-1404: *N*,*N*,*N*′,*N*′-tetramethyl-1,6-hexanediamine di[4,4,4-trifluoro-1-(2-furyl)-1,3-butanedionate]**

**Abbreviation**: $[(Me_2NH)_2(CH_2)_6][(CF_3CO)CH(COfuran)]_2$
**Molecular Formula**: $C_{26}H_{34}F_6N_2O_6$
**Molar Mass**: 584.55
**Structure**:

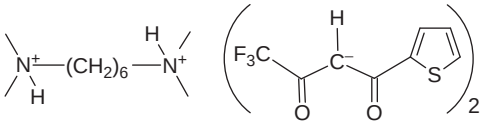


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 378.15 [242] |

**1572-1405: *N*,*N*,*N*′,*N*′-tetramethyl-1,6-hexanediamine di[4,4,4-trifluoro-1-(2-thenoyl)-1,3-butanedionate]**

**Abbreviation**: $[(Me_2NH)_2(CH_2)_6][(CF_3CO)CH(COthiophene)]_2$
**Molecular Formula**: $C_{26}H_{34}F_6N_2O_4S_2$
**Molar Mass**: 616.68
**Structure**:

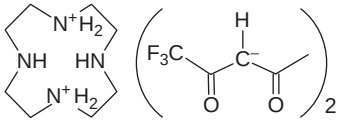


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 425.15 [242] | 414.15 [242] |

**1573-1401: 1,4,7,10-Tetraazacyclododecane di[1,1,1-trifluoro-2,4-pentanedionate]**

**Abbreviation**: $[(C_2NHC_2NH_2)]_2[(CF_3CO)CH(COCH_3)]_2$
**Molecular Formula**: $C_{18}H_{30}F_6N_4O_4$
**Molar Mass**: 480.45
**Structure**:

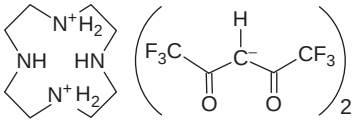


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 424.15 [242] | 496.15 [242] |

**1573-1402: 1,4,7,10-Tetraazacyclododecane di[1,1,1,5,5,5-hexafluoro-2,4-pentanedionate]**

**Abbreviation**: $[(C_2NHC_2NH_2)]_2[(CF_3CO)_2CH]_2$
**Molecular Formula**: $C_{18}H_{24}F_{12}N_4O_4$
**Molar Mass**: 588.39
**Structure**:

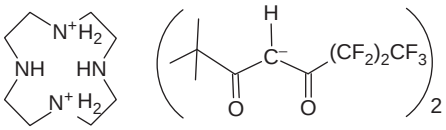


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 392.15 [242] | 487.15 [242] |

**1573-1403: 1,4,7,10-Tetraazacyclododecane di[2,2-dimethyl-6,6,7,7,8,8,8-heptafluoro-3,5-octanedionate]**

**Abbreviation**: $[(C_2NHC_2NH_2)]_2[(Me_3CCO)CH(CO(CF_2)_2CF_3)]_2$
**Molecular Formula**: $C_{28}H_{42}F_{14}N_4O_4$
**Molar Mass**: 764.64
**Structure**:

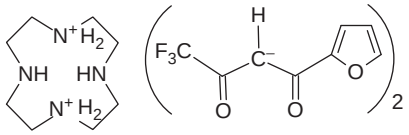


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 375.15 [242] | 430.15 [242] |

### 1573-1404: 1,4,7,10-Tetraazacyclododecane di[4,4,4-trifluoro-1-(2-furyl)-1,3-butanedionate]

**Abbreviation**: $[(C_2NHC_2NH_2)]_2[(CF_3CO)CH(COfuran)]_2$
**Molecular Formula**: $C_{24}H_{30}F_6N_4O_6$
**Molar Mass**: 584.51
**Structure**:

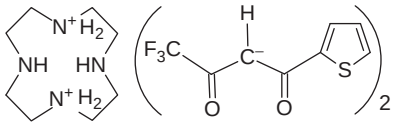


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 405.15 [242] | 490.15 [242] |

### 1573-1405: 1,4,7,10-Tetraazacyclododecane di[4,4,4-trifluoro-1-(2-thenoyl)-1,3-butanedionate]

**Abbreviation**: $[(C_2NHC_2NH_2)]_2[(CF_3CO)CH(COthiophene)]_2$
**Molecular Formula**: $C_{24}H_{30}F_6N_4O_4S_2$
**Molar Mass**: 616.64
**Structure**:

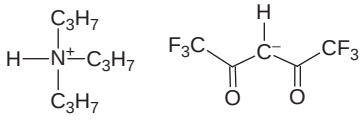


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 372.15 [242] | 496.15 [242] |

### 1574-1402: Tri-*n*-propylammonium 1,1,1,5,5,5-hexafluoro-2,4-pentanedionate

**Abbreviation**: $[N333H][(CF_3CO)_2CH]$
**Molecular Formula**: $C_{14}H_{23}F_6NO_2$
**Molar Mass**: 351.33
**Structure**:



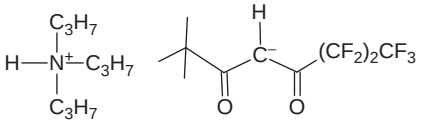
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 263.15 [243] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 0.73 [243] | 298.15 |

### 1574-1403: Tri-*n*-propylammonium 2,2-dimethyl-6,6,7,7,8,8,8-heptafluoro-3,5-octanedionate

**Abbreviation**: $[N333H][(Me_3CCO)CH(CO(CF_2)_2CF_3)]$
**Molecular Formula**: $C_{19}H_{32}F_7NO_2$
**Molar Mass**: 439.45
**Structure**:



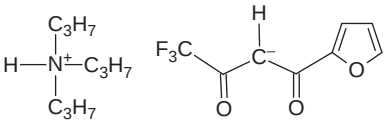
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 190.15 [243] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 0.96 [243] | 298.15 | 16 [243] | 298.15 |
| | | 6 [243] | 313.15 |

### 1574-1404: Tri-*n*-propylammonium 4,4,4-trifluoro-1-(2-furyl)-1,3-butanedionate

**Abbreviation**: [N333H][($CF_3CO$)CH(COfuran)]
**Molecular Formula**: $C_{17}H_{26}F_3NO_3$
**Molar Mass**: 349.39
**Structure**:



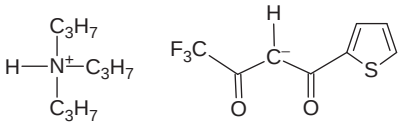
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 191.15 [243] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.25 [243] | 298.15 | 10.87 [243] | 298.15 |

### 1574-1405: Tri-*n*-propylammonium 4,4,4-trifluoro-1-(2-thenoyl)-1,3-butanedionate

**Abbreviation**: [N333H][($CF_3CO$)CH(COthiophene)]
**Molecular Formula**: $C_{17}H_{26}F_3NO_2S$
**Molar Mass**: 365.45
**Structure**:



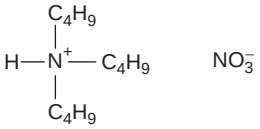
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 208.15 [243] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.27 [243] | 298.15 |

### 1575-39: Tributylammonium nitrate

**Abbreviation**: [NH444][$NO_3$]
**Molecular Formula**: $C_{12}H_{28}N_2O_3$
**Molar Mass**: 248.36
**Structure**:



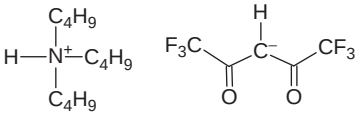
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 294.65 [12] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $n$ |
|---|---|---|---|---|
| 0.918 [12] | 298.15 | 640 [12] | 298.15 | 1.4627 [12] |

### 1575-1402: Tri-*n*-butylammonium 1,1,1,5,5,5-hexafluoro-2,4-pentanedionate

**Abbreviation**: [N444H][($CF_3CO$)$_2$CH]
**Molecular Formula**: $C_{17}H_{29}F_6NO_2$
**Molar Mass**: 393.41
**Structure**:



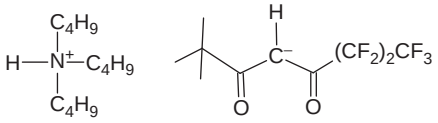
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 180.15 [243] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 0.68 [243] | 298.15 | 16.8 [243] | 298.15 |
| | | 6.8 [243] | 313.15 |

### 1575-1403: Tri-*n*-butylammonium 2,2-dimethyl-6,6,7,7,8,8,8-heptafluoro-3,5-octanedionate

**Abbreviation**: [N444H][($Me_3CCO$)CH(CO($CF_2$)$_2CF_3$)]
**Molecular Formula**: $C_{22}H_{38}F_7NO_2$
**Molar Mass**: 481.53
**Structure**:



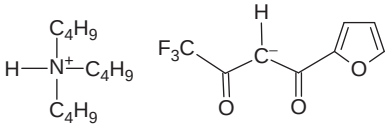
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 208.15 [243] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 0.86 [243] | 298.15 | 9.5 [243] | 298.15 |
| | | 2.5 [243] | 313.15 |

### 1575-1404: Tri-*n*-butylammonium 4,4,4-trifluoro-1-(2-furyl)-1,3-butanedionate

**Abbreviation**: [N444H][($CF_3$CO)CH(COfuran)]
**Molecular Formula**: $C_{20}H_{32}F_3NO_3$
**Molar Mass**: 391.47
**Structure**:



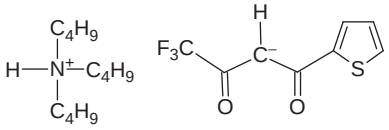
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 208.15 [243] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.02 [243] | 298.15 | 317.4 [243] | 298.15 |
| | | 3.60 [243] | 313.15 |

### 1575-1405: Tri-*n*-butylammonium 4,4,4-trifluoro-1-(2-thenoyl)-1,3-butanedionate

**Abbreviation**: [N444H][($CF_3$CO)CH(COthiophene)]
**Molecular Formula**: $C_{20}H_{32}F_3NO_2S$
**Molar Mass**: 407.53
**Structure**:

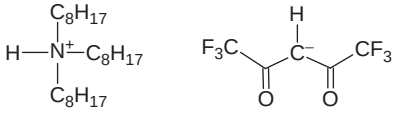


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 325.15 [243] |

### 1576-1402: Tri-i-octylammonium 1,1,1,5,5,5-hexafluoro-2,4-pentanedionate

**Abbreviation**: [N888H][($CF_3CO)_2$CH]
**Molecular Formula**: $C_{29}H_{53}F_6NO_2$
**Molar Mass**: 561.73
**Structure**:



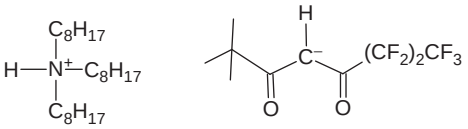
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 262.15 [243] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 0.80 [243] | 298.15 | 3.44 [243] | 298.15 |
| | | 1.6 [243] | 313.15 |

### 1576-1403: Tri-i-octylammonium 2,2-dimethyl-6,6,7,7,8,8,8-heptafluoro-3,5-octanedionate

**Abbreviation**: [N888H][($Me_3CCO$)CH(CO($CF_2$)$_2CF_3$)]
**Molecular Formula**: $C_{34}H_{62}F_7NO_2$
**Molar Mass**: 649.85
**Structure**:



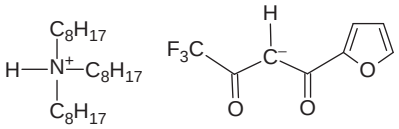
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 177.15 [243] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 0.82 [243] | 298.15 | 8.34 [243] | 298.15 |
| | | 2.86 [243] | 313.15 |

### 1576-1404: Tri-i-octylammonium 4,4,4-trifluoro-1-(2-furyl)-1,3-butanedionate

**Abbreviation**: [N888H][($CF_3CO$)CH(COfuran)]
**Molecular Formula**: $C_{32}H_{56}F_3NO_3$
**Molar Mass**: 559.79
**Structure**:



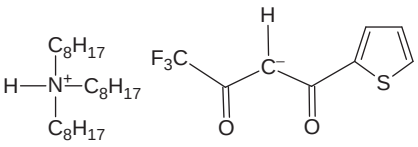
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 181.15 [243] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.14 [243] | 298.15 | 140.2 [243] | 298.15 |
| | | 39.58 [243] | 313.15 |

### 1576-1405: Tri-i-octylammonium 4,4,4-trifluoro-1-(2-thenoyl)-1,3-butanedionate

**Abbreviation**: [N888H][($CF_3CO$)CH(COthiophene)]
**Molecular Formula**: $C_{32}H_{56}F_3NO_2S$
**Molar Mass**: 575.85
**Structure**:



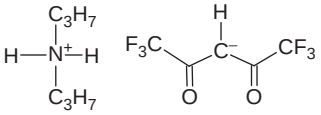
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 187.15 [243] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 0.94 [243] | 298.15 | 172.22 [243] | 298.15 |
| | | 44.11 [243] | 313.15 |

### 1577-1402: Di-*n*-propylammonium 1,1,1,5,5,5-hexafluoro-2,4-pentanedionate

**Abbreviation**: [$H_2N(n\text{-}C_3H_7)_2$][($CF_3CO$)$_2$CH]
**Molecular Formula**: $C_{11}H_{17}F_6NO_2$
**Molar Mass**: 309.25
**Structure**:



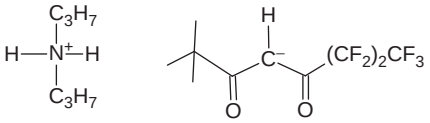
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 370.15 [211] | 407.15 [211] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.31 [211] | 298.15 |

### 1577-1403: Di-*n*-propylammonium 2,2-dimethyl-6,6,7,7,8,8,8-heptafluoro-3,5-octanedionate

**Abbreviation**: $[H_2N(n\text{-}C_3H_7)_2][(Me_3CCO)CH(CO(CF_2)_2CF_3)]$
**Molecular Formula**: $C_{16}H_{26}F_7NO_2$
**Molar Mass**: 397.37
**Structure**:

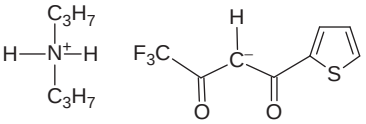


**Character**:
**Application**:

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.08 [211] | 298.15 |

### 1577-1405: Di-*n*-propylammonium 4,4,4-trifluoro-1-(2-thenoyl)-1,3-butanedionate

**Abbreviation**: $[H_2N(n\text{-}C_3H_7)_2][(CF_3CO)CH(COthiophene)]$
**Molecular Formula**: $C_{14}H_{20}F_3NO_2S$
**Molar Mass**: 323.37
**Structure**:



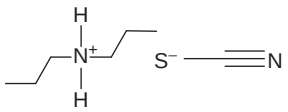
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 376.15 [211] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.27 [211] | 298.15 |

### 1577-1503: Dipropylammonium thiocyanate

**Abbreviation**: [NHH33][SCN]
**Molecular Formula**: $C_7H_{16}N_2S$
**Molar Mass**: 160.28
**Structure**:



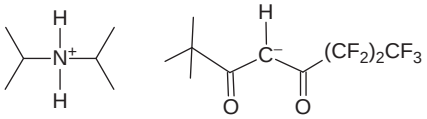
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 278.65 [12] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $n$ |
|---|---|---|---|---|
| 0.964 [12] | 298.15 | 86 [12] | 298.15 | 1.5062 [12] |

### 1578-1403: Di-i-propylammonium 2,2-dimethyl-6,6,7,7,8,8,8-heptafluoro-3,5-octanedionate

**Abbreviation**: $[H_2N(i\text{-}C_3H_7)_2][(Me_3CCO)CH(CO(CF_2)_2CF_3)]$
**Molecular Formula**: $C_{16}H_{26}F_7NO_2$
**Molar Mass**: 397.37
**Structure**:



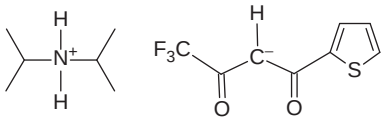
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 364.15 [211] | 215.15 [211] | 374.15 [211] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.23 [211] | 298.15 |

### 1578-1405: Di-i-propylammonium 4,4,4-trifluoro-1-(2-thenoyl)-1,3-butanedionate

**Abbreviation**: $[H_2N(i\text{-}C_3H_7)_2][(CF_3CO)CH(COthiophene)]$
**Molecular Formula**: $C_{14}H_{20}F_3NO_2S$
**Molar Mass**: 323.37
**Structure**:



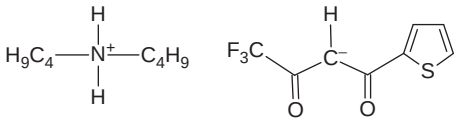
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 397.15 [211] | 215.15 [211] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.24 [211] | 298.15 |

### 1579-1405: Di-*n*-butylammonium 4,4,4-trifluoro-1-(2-thenoyl)-1,3-butanedionate

**Abbreviation**: $[H_2N(n\text{-}Bu)_2][(CF_3CO)CH(COthiophene)]$
**Molecular Formula**: $C_{16}H_{24}F_3NO_2S$
**Molar Mass**: 351.43
**Structure**:



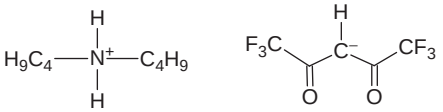
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 344.15 [211] | 422.15 [211] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.21 [211] | 298.15 |

### 1579-1402: Di-*n*-butylammonium 1,1,1,5,5,5-hexafluoro-2,4-pentanedionate

**Abbreviation**: $[H_2N(n\text{-}Bu)_2][(CF_3CO)_2CH]$
**Molecular Formula**: $C_{13}H_{21}F_6NO_2$
**Molar Mass**: 337.30
**Structure**:



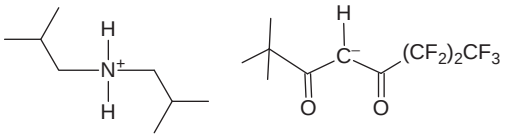
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 357.15 [211] | 422.15 [211] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.25 [211] | 298.15 |

### 1580-1403: Di-i-butylammonium 2,2-dimethyl-6,6,7,7,8,8,8-heptafluoro-3,5-octanedionate

**Abbreviation**: $[H_2N(i\text{-}Bu)_2][(Me_3CCO)CH(CO(CF_2)_2CF_3)]$
**Molecular Formula**: $C_{18}H_{30}F_7NO_2$
**Molar Mass**: 425.43
**Structure**:



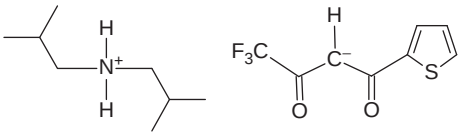
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 336.15 [211] | 343.15 [211] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.26 [211] | 298.15 |

### 1580-1405: Di-i-butylammonium 4,4,4-trifluoro-1-(2-thenoyl)-1,3-butanedionate

**Abbreviation**: $[H_2N(i\text{-}Bu)_2][(CF_3CO)CH(COthiophene)]$
**Molecular Formula**: $C_{16}H_{24}F_3NO_2S$
**Molar Mass**: 351.43
**Structure**:



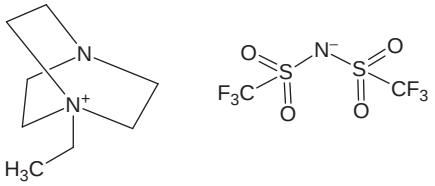
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 413.15 [211] | 423.15 [211] | 459.15 [211] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.23 [211] | 298.15 |

### 1581-31: 1-Ethyl-4-aza-1-azonia-bicyclo[2.2.2]octane bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: $[C_2dabco][TFSI]$
**Molecular Formula**: $C_{10}H_{17}F_6N_3O_4S_2$
**Molar Mass**: 421.38
**Structure**:



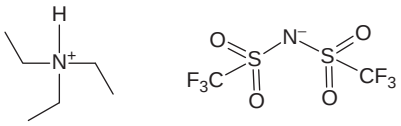
**Character**:
**Application**: Electrolyte

| $T_m$ (K) | $T_{s\text{-}s}$ (K) |
|---|---|
| 349.15 [244] | 306.15 [244] |

| Electrochemical window (V) | Anodic limit (V) | Cathode limit (V) |
|---|---|---|
| 5 [244] | 1.5 | −3.5 |

### 1582-31: Triethylammonium bis((trifluoromethyl) sulfonyl)imide

**Abbreviation**: [NH222][TFSI]
**Molecular Formula**: $C_8H_{16}F_6N_2O_4S_2$
**Molar Mass**: 382.34
**Structure**:



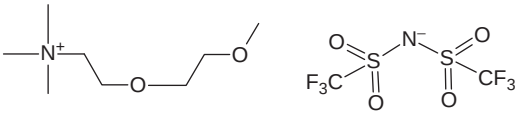
**Character**:
**Application**: Electrolyte

| $T_m$ (K) |
|---|
| 276.15 [59] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.42 [59] | 298.15 | 48 [59] | 298.15 | 0.44 [59] | 298.15 |

### 1583-31: Trimethyl$(CH_2)_2O(CH_2)_2OCH_3$ammonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [N111.1O2O2][TFSI]
**Molecular Formula**: $C_{10}H_{20}F_6N_2O_6S_2$
**Molar Mass**: 442.40
**Structure**:



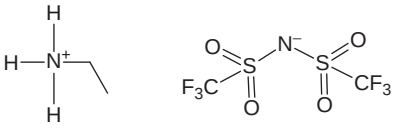
**Character**:
**Application**: Electrolyte

| $T_g$ (K) |
|---|
| 193.15 [59] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.44 [59] | 298.15 | 63 [59] | 298.15 | 0.26 [59] | 298.15 |

### 1584-31: Ethylammonium bis((trifluoromethyl)sulfonyl) imide

**Abbreviation**: [NHHH2][TFSI]
**Molecular Formula**: $C_4H_8F_6N_2O_4S_2$
**Molar Mass**: 326.24
**Structure**:

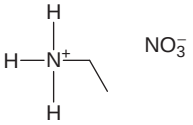


**Character**:
**Application**: Electrolyte

| $T_m$ (K) |
|---|
| 321.15 [59] |

### 1584-39: Ethylammonium nitrate

**Abbreviation**: [NHHH2][$NO_3$]
**Molecular Formula**: $C_2H_8N_2O_3$
**Molar Mass**: 108.10
**Structure**:



**Character**:
**Application**:

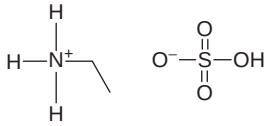
| $T_m$ (K) |
|---|
| 282.15 [245] |
| 282.15 [246] |

| $\rho$ (g/cm$^3$) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|
| 1.216 [245] | 32 [245] | 298.15 | 2.69 [245] | 298.15 |

| $n$ | $T$ (K) | Parachor parameter | $T$ (K) | $\sigma$ (N/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.4524 [245] | 298 | 257.0 [245] | 300 | 0.0473 [245, 246] | 300.1 |

### 1584-421: Ethylammonium hydrosulfate

**Abbreviation**: [NHHH2][$HSO_4$]
**Molecular Formula**: $C_2H_9NO_4S$
**Molar Mass**: 143.16
**Structure**:



**Character**:
**Application**:

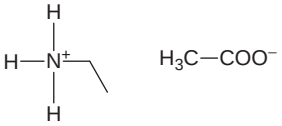
| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 313.15 [245] | 189.15 [245] |
| 313.15 [246] | |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.438 [245] | 300.15 | 128 [245] | 298.15 | 0.44 [245] | 298.15 |

| $n$ | $T$ (K) | Parachor parameter | $T$ (K) | $\sigma$ (N/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.4489 [245] | 298 | 242.2 [245] | 300 | 0.0563 [245, 246] | 300.1 |

### 1584-63: Ethylammonium acetate

**Abbreviation**: [NHHH2][OAc]
**Molecular Formula**: $C_4H_{11}NO_2$
**Molar Mass**: 105.14
**Structure**:

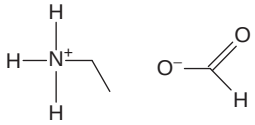


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 360.15 [245] |
| 360.15 [246] |

### 1584-65: Ethylammonium formate

**Abbreviation**: [NHHH2][$HCO_2$]
**Molecular Formula**: $C_3H_9NO_2$
**Molar Mass**: 91.11
**Structure**:



**Character**:
**Application**:

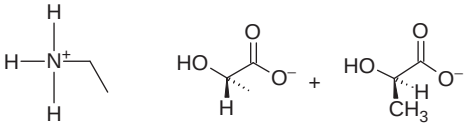
| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 258.15 [245]<br>258.15 [246] | 167.15 [245] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.039 [245] | 300.15 | 32 [245] | 298.15 | 1.216 [245] | 298.15 |

| $n$ | $T$ (K) | Parachor parameter | $T$ (K) | $\sigma$ (N/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.4344 [245] | 298 | 218.4 [245] | 300 | 0.0385 [245, 246] | 300.1 |

### 1584-67: Ethylammonium DL-lactate

**Abbreviation**: [NHHH2][DL-lactate]
**Molecular Formula**: $C_5H_{13}NO_3$
**Molar Mass**: 135.17
**Structure**:



**Character**:
**Application**:

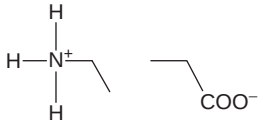
| $T_g$ (K) |
|---|
| 216.15 [245] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.110 [245] | 298.15 | 803 [245] | 298.15 | 0.026 [245] | 298.15 |

| $n$ | $T$ (K) | Parachor parameter | $T$ (K) | $\sigma$ (N/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.4581 [245] | 298 | 271.0 [245] | 300 | 0.0393 [245, 246] | 300.1 |

### 1584-632: Ethylammonium propionate

**Abbreviation**: [NHHH2][$CH_3CH_2CO_2$]
**Molecular Formula**: $C_5H_{13}NO_2$
**Molar Mass**: 119.16
**Structure**:



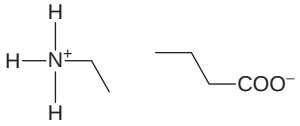
**Character**:
**Application**:

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.018 [245] | 300.15 | 75 [245] | 298.15 | 0.0872 [245] | 298.15 |

| $n$ | $T$ (K) | Parachor parameter | $T$ (K) | $\sigma$ (N/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.4358 [245] | 298 | 314.5 [245] | 298 | 0.0315 [245, 246] | 300.1 |

### 1584-633: Ethylammonium butyrate

**Abbreviation**: [NHHH2][$CH_3(CH_2)_2CO_2$]
**Molecular Formula**: $C_6H_{15}NO_2$
**Molar Mass**: 133.19
**Structure**:



**Character**:
**Application**:

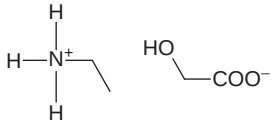
| $T_g$ (K) |
|---|
| 185.15 [245] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 0.980 [245] | 298.15 | 208 [245] | 298.15 | 0.103 [245] | 298.15 |

| $n$ | $T$ (K) | Parachor parameter | $T$ (K) | $\sigma$ (N/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.4398 [245] | 298 | 359.8 [245] | 300 | 0.0296 [245, 246] | 300.1 |

### 1584-634: Ethylammonium glycolate

**Abbreviation**: [NHHH2][$CH_2$(OH)$CO_2$]
**Molecular Formula**: $C_4H_{11}NO_3$
**Molar Mass**: 121.14
**Structure**:



**Character**:
**Application**:

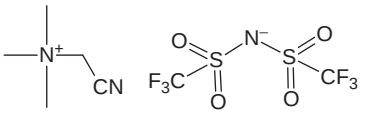
| $T_g$ (K) |
|---|
| 206.15 [245] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.189 [245] | 300.15 | 1200 [245] | 298.15 | 0.0864 [245] | 298.15 |

| $n$ | $T$ (K) | Parachor parameter | $T$ (K) | $\sigma$ (N/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.4692 [245] | 298 | 234.3 [245] | 300 | 0.0493 [245, 246] | 300.1 |

### 1585-31: *N*,*N*,*N*,*N*-cyanomethyltrimethylammonium bis ((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [CTMA][TFSI]
**Molecular Formula**: $C_7H_{11}F_6N_3O_4S_2$
**Molar Mass**: 379.30
**Structure**:



**Character**:
**Application**: Electrolyte

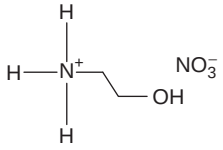
| $T_m$ (K) |
|---|
| 308.35 [247] |

| $K$ (S/m) | $T$ (K) |
|---|---|
| ≈0.01 [247] | 298.15 |

| Electrochemical window (V) | Anodic limit (V) | Cathode limit (V) | $T$ (K) |
|---|---|---|---|
| 3.8 [247] | 1.3 | −2.5 | 298 |

### 1586-39: 2-Hydroxyethylammonium nitrate

**Abbreviation**: [NHHH,$(CH_2)_2$OH][$NO_3$], [HO$(CH_2)_2NH_3$][$NO_3$]
**Molecular Formula**: $C_2H_8N_2O_4$
**Molar Mass**: 124.10
**Structure**:



**Character**:
**Application**:

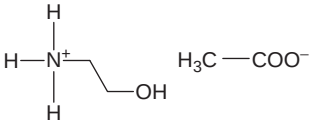
| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 324.15 [245] | 191.15 [245] |
| 324.15 [246] | |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.265 [245] | 300.15 | 113 [245] | 298.15 | 0.935 [245] | 298.15 |

| $n$ | $T$ (K) | Parachor parameter | $T$ (K) | $\sigma$ (N/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.4400 [245] | 298 | 280.8 [245] | 300 | 0.0506 [245, 246] | 300.1 |

### 1586-63: 2-Hydroxyethylammonium acetate

**Abbreviation**: [NHHH,$(CH_2)_2$OH][OAc], [HO$(CH_2)_2NH_3$][OAc]
**Molecular Formula**: $C_4H_{11}NO_3$
**Molar Mass**: 121.14
**Structure**:



**Character**:
**Application**:

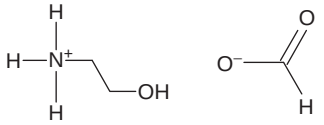
| $T_g$ (K) |
|---|
| 206.15 [245] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.176 [245] | 300.15 | 701 [245] | 298.15 | 0.03 [245] | 298.15 |

| $n$ | $T$ (K) | Parachor parameter | $T$ (K) | $\sigma$ (N/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.4691 [245] | 298 | 285.0 [245] | 300 | 0.0515 [245, 246] | 300.1 |

**1586-65: 2-Hydroxyethylammonium formate**

**Abbreviation**: $[HO(CH_2)_2NH_3][HCO_2]$
**Molecular Formula**: $C_3H_9NO_3$
**Molar Mass**: 107.11
**Structure**:



**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 191.15 [248] | 188.15 [245] | 423.15 [248] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\rho$ (g/cm$^3$) | $T$ (K) | $\rho$ (g/cm$^3$) | $T$ (K) | $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1.182877 [249] | 189.15 | 1.179682 [249] | 293.65 | 1.169213 [249] | 308.4 | 1.158556 [249] | 323.4 |
| 1.190632 [249] | 278.15 | 1.179505 [249] | 293.9 | 1.169036 [249] | 308.65 | 1.158378 [249] | 323.65 |
| 1.190464 [249] | 278.4 | 1.179325 [249] | 294.15 | 1.168859 [249] | 308.9 | 1.158201 [249] | 323.9 |
| 1.190288 [249] | 278.65 | 1.179148 [249] | 294.4 | 1.168680 [249] | 309.15 | 1.158023 [249] | 324.15 |
| 1.190108 [249] | 278.9 | 1.178971 [249] | 294.65 | 1.168502 [249] | 309.4 | 1.157846 [249] | 324.4 |
| 1.189935 [249] | 279.15 | 1.178798 [249] | 294.9 | 1.168325 [249] | 309.65 | 1.157669 [249] | 324.65 |
| 1.189760 [249] | 279.4 | 1.178617 [249] | 295.15 | 1.168149 [249] | 309.9 | 1.157490 [249] | 324.9 |
| 1.189580 [249] | 279.65 | 1.178438 [249] | 295.4 | 1.167970 [249] | 310.15 | 1.157314 [249] | 325.16 |
| 1.189407 [249] | 279.9 | 1.178265 [249] | 295.65 | 1.167794 [249] | 310.4 | 1.157136 [249] | 325.4 |
| 1.189231 [249] | 280.15 | 1.178085 [249] | 295.9 | 1.167617 [249] | 310.65 | 1.156957 [249] | 325.65 |
| 1.189050 [249] | 280.4 | 1.177905 [249] | 296.15 | 1.167437 [249] | 310.9 | 1.156780 [249] | 325.91 |
| 1.188874 [249] | 280.65 | 1.177729 [249] | 296.4 | 1.167260 [249] | 311.15 | 1.156603 [249] | 326.16 |
| 1.188699 [249] | 280.9 | 1.177553 [249] | 296.65 | 1.167085 [249] | 311.4 | 1.156426 [249] | 326.41 |
| 1.188344 [249] | 281.4 | 1.177373 [249] | 296.9 | 1.166903 [249] | 311.65 | 1.156247 [249] | 326.66 |
| 1.188172 [249] | 281.65 | 1.177201 [249] | 297.15 | 1.166726 [249] | 311.9 | 1.156069 [249] | 326.91 |
| 1.187991 [249] | 281.9 | 1.177019 [249] | 297.4 | 1.166549 [249] | 312.15 | 1.155890 [249] | 327.16 |
| 1.187817 [249] | 282.15 | 1.176842 [249] | 297.65 | 1.166372 [249] | 312.4 | 1.155713 [249] | 327.4 |
| 1.187641 [249] | 282.4 | 1.176666 [249] | 297.9 | 1.166194 [249] | 312.65 | 1.155535 [249] | 327.66 |
| 1.187467 [249] | 282.65 | 1.204 [241] | 298.15 | 1.166018 [249] | 312.9 | 1.155360 [249] | 327.9 |
| 1.187288 [249] | 282.9 | 1.176489 [249] | 298.15 | 1.165839 [249] | 313.15 | 1.155181 [249] | 328.15 |
| 1.187110 [249] | 283.15 | 1.176311 [249] | 298.4 | 1.165661 [249] | 313.4 | 1.155003 [249] | 328.4 |
| 1.186933 [249] | 283.4 | 1.176133 [249] | 298.65 | 1.165485 [249] | 313.65 | 1.154826 [249] | 328.65 |
| 1.186756 [249] | 283.65 | 1.175955 [249] | 298.9 | 1.165305 [249] | 313.9 | 1.154648 [249] | 328.91 |
| 1.186582 [249] | 283.9 | 1.175780 [249] | 299.15 | 1.165128 [249] | 314.15 | 1.154469 [249] | 329.15 |
| 1.186403 [249] | 284.15 | 1.175602 [249] | 299.4 | 1.164951 [249] | 314.4 | 1.154294 [249] | 329.41 |
| 1.186288 [249] | 284.4 | 1.175425 [249] | 299.65 | 1.164774 [249] | 314.65 | 1.154114 [249] | 329.65 |
| 1.186059 [249] | 284.64 | 1.175247 [249] | 299.9 | 1.164597 [249] | 314.9 | 1.153939 [249] | 329.9 |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\rho$ (g/cm$^3$) | $T$ (K) | $\rho$ (g/cm$^3$) | $T$ (K) | $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1.185886 [249] | 284.9 | 1.184 [238] | 300.15 | 1.164417 [249] | 315.15 | 1.153761 [249] | 330.15 |
| 1.185700 [249] | 285.15 | 1.184 [249] | 300.15 | 1.164240 [249] | 315.4 | 1.153582 [249] | 330.41 |
| 1.185519 [249] | 285.4 | 1.175070 [249] | 300.15 | 1.164062 [249] | 315.65 | 1.153405 [249] | 330.65 |
| 1.185344 [249] | 285.65 | 1.174891 [249] | 300.4 | 1.163885 [249] | 315.9 | 1.153225 [249] | 330.9 |
| 1.185168 [249] | 285.9 | 1.174714 [249] | 300.65 | 1.163706 [249] | 316.15 | 1.153048 [249] | 331.16 |
| 1.184986 [249] | 286.15 | 1.174535 [249] | 300.9 | 1.163529 [249] | 316.41 | 1.152871 [249] | 331.4 |
| 1.184815 [249] | 286.4 | 1.174361 [249] | 301.15 | 1.163352 [249] | 316.65 | 1.152694 [249] | 331.65 |
| 1.184637 [249] | 286.65 | 1.174180 [249] | 301.4 | 1.163174 [249] | 316.91 | 1.152514 [249] | 331.9 |
| 1.184462 [249] | 286.9 | 1.174003 [249] | 301.65 | 1.162998 [249] | 317.15 | 1.152338 [249] | 332.15 |
| 1.184298 [249] | 287.15 | 1.173826 [249] | 301.9 | 1.162820 [249] | 317.41 | 1.152159 [249] | 332.41 |
| 1.184107 [249] | 287.4 | 1.173648 [249] | 302.15 | 1.162643 [249] | 317.65 | 1.151981 [249] | 332.65 |
| 1.183941 [249] | 287.64 | 1.173473 [249] | 302.4 | 1.162462 [249] | 317.9 | 1.151804 [249] | 332.9 |
| 1.183753 [249] | 287.9 | 1.173295 [249] | 302.65 | 1.162286 [249] | 318.16 | 1.15625 [249] | 333.16 |
| 1.183574 [249] | 288.15 | 1.173120 [249] | 302.9 | 1.162110 [249] | 318.4 | 1.151449 [249] | 333.41 |
| 1.183407 [249] | 288.39 | 1.172937 [249] | 303.15 | 1.161930 [249] | 318.65 | 1.151271 [249] | 333.65 |
| 1.183228 [249] | 288.64 | 1.172764 [249] | 303.4 | 1.161750 [249] | 318.91 | 1.151094 [249] | 333.9 |
| 1.183052 [249] | 288.89 | 1.172587 [249] | 303.65 | 1.161574 [249] | 319.15 | 1.150916 [249] | 334.16 |
| 1.182700 [249] | 289.39 | 1.172408 [249] | 303.9 | 1.161398 [249] | 319.4 | 1.150740 [249] | 334.4 |
| 1.182515 [249] | 289.65 | 1.172053 [249] | 304.4 | 1.161218 [249] | 319.65 | 1.150560 [249] | 334.66 |
| 1.182339 [249] | 289.9 | 1.171876 [249] | 304.65 | 1.161042 [249] | 319.9 | 1.150384 [249] | 334.9 |
| 1.182161 [249] | 290.15 | 1.171699 [249] | 304.9 | 1.160863 [249] | 320.15 | 1.150205 [249] | 335.16 |
| 1.181990 [249] | 290.4 | 1.171518 [249] | 305.15 | 1.160688 [249] | 320.4 | 1.150027 [249] | 335.4 |
| 1.181809 [249] | 290.65 | 1.171343 [249] | 305.4 | 1.160509 [249] | 320.66 | 1.149848 [249] | 335.65 |
| 1.181631 [249] | 290.9 | 1.171165 [249] | 305.65 | 1.160330 [249] | 320.91 | 1.149669 [249] | 335.9 |
| 1.181453 [249] | 291.15 | 1.170986 [249] | 305.9 | 1.160154 [249] | 321.15 | 1.149494 [249] | 336.16 |
| 1.181278 [249] | 291.4 | 1.170810 [249] | 306.15 | 1.159976 [249] | 321.4 | 1.149316 [249] | 336.41 |
| 1.181104 [249] | 291.65 | 1.170632 [249] | 306.4 | 1.159797 [249] | 321.65 | 1.149139 [249] | 336.66 |
| 1.180923 [249] | 291.9 | 1.170454 [249] | 306.65 | 1.159620 [249] | 321.91 | 1.148963 [249] | 336.91 |
| 1.180744 [249] | 292.15 | 1.170276 [249] | 306.9 | 1.159442 [249] | 322.16 | 1.148785 [249] | 337.15 |
| 1.180568 [249] | 292.4 | 1.170102 [249] | 307.15 | 1.159265 [249] | 322.41 | 1.148608 [249] | 337.4 |
| 1.180390 [249] | 292.65 | 1.169922 [249] | 307.4 | 1.159088 [249] | 322.66 | 1.148433 [249] | 337.66 |
| 1.180210 [249] | 292.9 | 1.169742 [249] | 307.65 | 1.158910 [249] | 322.9 | 1.148254 [249] | 337.9 |
| 1.180037 [249] | 293.15 | 1.169567 [249] | 307.9 | 1.158734 [249] | 323.15 | 1.148091 [249] | 338.15 |
| 1.179858 [249] | 293.4 | 1.169391 [249] | 308.15 | | | | |

| $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) | $K$ (S/m) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 105 [248] | 298.15 | 0.33 [248] | RT | 0.4197 [249] | 298.15 | 0.41976 [249] | 298.15 |
| 220 [245] | 298.15 | 0.34 [245] | 298.15 | 0.3069 [249] | 288.15 | 1.04049 [249] | 338.15 |
| | | 0.6956 [249] | 318.15 | 0.21582 [249] | 278.15 | 0.85635 [249] | 328.15 |
| | | 0.5623 [249] | 308.15 | | | | |

| $n$ | $T$ (K) | Parachor parameter | $T$ (K) | $\sigma$ (N/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.4705 [245] | 298 | 256.9 [245] | 300 | 0.065 [245, 246] | 300.1 |

| $u_s$ (m/s) | $T$ (K) | $u_s$ (m/s) | $T$ (K) | $u_s$ (m/s) | $T$ (K) | $u_s$ (m/s) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1757.88 [249] | 278 | 1726.18 [249] | 291 | 1695.62 [249] | 303 | 1642.94 [249] | 325 |
| 1757.23 [249] | 278 | 1725.57 [249] | 291 | 1695.01 [249] | 303 | 1642.34 [249] | 325 |
| 1756.62 [249] | 278 | 1724.95 [249] | 291 | 1692.60 [249] | 304 | 1641.75 [249] | 326 |
| 1758.50 [249] | 278 | 1724.34 [249] | 291 | 1694.41 [249] | 304 | 1641.16 [249] | 326 |
| 1756.03 [249] | 279 | 1723.72 [249] | 292 | 1693.20 [249] | 304 | 1640.57 [249] | 326 |
| 1755.38 [249] | 279 | 1723.11 [249] | 292 | 1693.80 [249] | 304 | 1639.97 [249] | 326 |
| 1754.75 [249] | 279 | 1722.50 [249] | 292 | 1691.99 [249] | 305 | 1638.79 [249] | 327 |
| 1754.12 [249] | 279 | 1721.88 [249] | 292 | 1691.39 [249] | 305 | 1639.38 [249] | 327 |
| 1753.49 [249] | 280 | 1720.04 [249] | 293 | 1690.79 [249] | 305 | 1638.20 [249] | 327 |
| 1752.86 [249] | 280 | 1721.27 [249] | 293 | 1690.18 [249] | 305 | 1637.61 [249] | 327 |
| 1752.24 [249] | 280 | 1719.42 [249] | 293 | 1689.58 [249] | 306 | 1637.02 [249] | 328 |
| 1751.60 [249] | 280 | 1720.66 [249] | 293 | 1688.98 [249] | 306 | 1636.43 [249] | 328 |
| 1750.39 [249] | 281 | 1720.66 [249] | 293 | 1688.37 [249] | 306 | 1635.84 [249] | 328 |
| 1749.20 [249] | 281 | 1718.81 [249] | 294 | 1687.77 [249] | 306 | 1635.24 [249] | 328 |
| 1749.83 [249] | 281 | 1718.20 [249] | 294 | 1687.17 [249] | 307 | 1634.65 [249] | 329 |
| 1748.57 [249] | 282 | 1717.58 [249] | 294 | 1686.56 [249] | 307 | 1634.06 [249] | 329 |
| 1747.95 [249] | 282 | 1716.36 [249] | 295 | 1685.96 [249] | 307 | 1633.47 [249] | 329 |
| 1747.32 [249] | 282 | 1715.75 [249] | 295 | 1685.36 [249] | 307 | 1632.88 [249] | 329 |
| 1746.70 [249] | 282 | 1715.13 [249] | 295 | 1684.76 [249] | 308 | 1630.52 [249] | 330 |
| 1746.08 [249] | 283 | 1714.52 [249] | 295 | 1683.55 [249] | 308 | 1632.29 [249] | 330 |
| 1745.46 [249] | 283 | 1716.36 [249] | 295 | 1684.16 [249] | 308 | 1631.69 [249] | 330 |
| 1744.84 [249] | 283 | 1715.75 [249] | 295 | 1678.14 [249] | 310 | 1631.11 [249] | 330 |
| 1744.21 [249] | 283 | 1715.13 [249] | 295 | 1677.55 [249] | 311 | 1628.75 [249] | 331 |
| 1743.61 [249] | 284 | 1714.52 [249] | 295 | 1676.95 [249] | 311 | 1628.16 [249] | 331 |
| 1742.99 [249] | 284 | 1713.90 [249] | 296 | 1676.95 [249] | 311 | 1629.93 [249] | 331 |
| 1742.42 [249] | 284 | 1713.28 [249] | 296 | 1676.34 [249] | 311 | 1629.34 [249] | 331 |
| 1741.82 [249] | 284 | 1712.67 [249] | 296 | 1675.74 [249] | 311 | 1627.58 [249] | 332 |
| 1739.24 [249] | 285 | 1713.90 [249] | 296 | 1675.14 [249] | 312 | 1626.99 [249] | 332 |
| 1739.86 [249] | 285 | 1713.28 [249] | 296 | 1673.94 [249] | 312 | 1626.41 [249] | 332 |
| 1741.08 [249] | 285 | 1712.67 [249] | 296 | 1673.34 [249] | 312 | 1625.82 [249] | 332 |
| 1740.47 [249] | 285 | 1710.84 [249] | 297 | 1672.72 [249] | 313 | 1625.23 [249] | 333 |
| 1738.07 [249] | 286 | 1707.16 [249] | 298 | 1672.13 [249] | 313 | 1624.64 [249] | 333 |
| 1737.45 [249] | 286 | 1707.16 [249] | 298 | 1671.54 [249] | 313 | 1624.06 [249] | 333 |
| 1736.82 [249] | 286 | 1704.12 [249] | 299 | 1670.94 [249] | 313 | 1623.48 [249] | 333 |

| $u_s$ (m/s) | $T$ (K) | $u_s$ (m/s) | $T$ (K) | $u_s$ (m/s) | $T$ (K) | $u_s$ (m/s) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1738.68 [249] | 286 | 1704.73 [249] | 299 | 1670.33 [249] | 314 | 1621.13 [249] | 334 |
| 1736.27 [249] | 287 | 1704.12 [249] | 299 | 1669.73 [249] | 314 | 1622.89 [249] | 334 |
| 1735.67 [249] | 287 | 1704.73 [249] | 299 | 1669.14 [249] | 314 | 1621.71 [249] | 334 |
| 1735.04 [249] | 287 | 1702.90 [249] | 300 | 1668.54 [249] | 314 | 1622.30 [249] | 334 |
| 1734.51 [249] | 287 | 1703.50 [249] | 300 | 1667.94 [249] | 315 | 1620.55 [249] | 335 |
| 1733.91 [249] | 288 | 1703.50 [249] | 300 | 1667.34 [249] | 315 | 1619.96 [249] | 335 |
| 1733.34 [249] | 288 | 1701.07 [249] | 301 | 1666.74 [249] | 315 | 1619.38 [249] | 335 |
| 1732.78 [249] | 288 | 1700.47 [249] | 301 | 1664.95 [249] | 316 | 1618.81 [249] | 335 |
| 1732.13 [249] | 288 | 1699.86 [249] | 301 | 1647.68 [249] | 323 | 1618.22 [249] | 336 |
| 1729.91 [249] | 289 | 1701.68 [249] | 301 | 1648.90 [249] | 323 | 1617.63 [249] | 336 |
| 1730.84 [249] | 289 | 1701.68 [249] | 301 | 1647.09 [249] | 323 | 1617.04 [249] | 336 |
| 1729.29 [249] | 289 | 1699.25 [249] | 302 | 1646.50 [249] | 324 | 1616.46 [249] | 336 |
| 1731.59 [249] | 289 | 1698.64 [249] | 302 | 1645.91 [249] | 324 | 1615.87 [249] | 337 |
| 1728.67 [249] | 290 | 1698.04 [249] | 302 | 1645.32 [249] | 324 | 1615.30 [249] | 337 |
| 1728.05 [249] | 290 | 1697.43 [249] | 302 | 1644.72 [249] | 324 | 1614.71 [249] | 337 |
| 1727.43 [249] | 290 | 1696.81 [249] | 303 | 1644.12 [249] | 325 | 1614.14 [249] | 337 |
| 1726.80 [249] | 290 | 1696.23 [249] | 303 | 1643.53 [249] | 325 | 1613.59 [249] | 338 |

| $K_s$ (T·Pa$^{-1}$) | $T$ (K) | $K_s$ (T·Pa$^{-1}$) | $T$ (K) | $K_s$ (T·Pa$^{-1}$) | $T$ (K) | $K_s$ (T·Pa$^{-1}$) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 271.60 [249] | 278.15 | 286.52 [249] | 293.65 | 302.06 [249] | 308.9 | 317.70 [249] | 323.4 |
| 272.08 [249] | 278.4 | 286.77 [249] | 293.9 | 281.95 [249] | 308.9 | 317.98 [249] | 323.65 |
| 272.31 [249] | 278.65 | 287.02 [249] | 294.15 | 302.32 [249] | 309.15 | 318.26 [249] | 323.9 |
| 272.53 [249] | 278.9 | 287.27 [249] | 294.4 | 302.59 [249] | 309.4 | 318.54 [249] | 324.15 |
| 272.77 [249] | 279.4 | 287.52 [249] | 294.65 | 302.85 [249] | 309.65 | 318.81 [249] | 324.4 |
| 273.01 [249] | 279.65 | 288.51 [249] | 294.65 | 303.11 [249] | 309.9 | 319.09 [249] | 324.65 |
| 273.24 [249] | 279.9 | 287.76 [249] | 294.9 | 303.38 [249] | 310.15 | 319.37 [249] | 324.9 |
| 273.48 [249] | 280.15 | 288.01 [249] | 295.15 | 303.63 [249] | 310.4 | 319.66 [249] | 325.16 |
| 273.72 [249] | 280.4 | 288.26 [249] | 295.4 | 303.90 [249] | 310.65 | 319.93 [249] | 325.4 |
| 273.95 [249] | 280.65 | 288.76 [249] | 295.9 | 304.17 [249] | 310.9 | 320.21 [249] | 325.65 |
| 274.19 [249] | 280.9 | 289.01 [249] | 296.15 | 304.43 [249] | 311.15 | 320.50 [249] | 325.91 |
| 274.66 [249] | 281.4 | 289.27 [249] | 296.4 | 304.69 [249] | 311.4 | 320.78 [249] | 326.16 |
| 274.87 [249] | 281.65 | 289.52 [249] | 296.65 | 304.96 [249] | 311.65 | 321.06 [249] | 326.41 |
| 275.11 [249] | 281.9 | 289.77 [249] | 296.9 | 305.22 [249] | 311.9 | 321.34 [249] | 326.66 |
| 271.83 [249] | 282.4 | 290.02 [249] | 297.15 | 305.49 [249] | 312.15 | 321.62 [249] | 326.91 |
| 275.59 [249] | 282.4 | 290.27 [249] | 297.4 | 305.75 [249] | 312.4 | 321.90 [249] | 327.16 |
| 275.82 [249] | 282.65 | 290.52 [249] | 297.65 | 306.02 [249] | 312.65 | 322.18 [249] | 327.4 |
| 276.06 [249] | 282.9 | 291.53 [249] | 297.65 | 306.29 [249] | 312.9 | 322.47 [249] | 327.66 |
| 276.30 [249] | 283.15 | 291.78 [249] | 297.9 | 306.56 [249] | 313.15 | 322.75 [249] | 327.9 |
| 276.54 [249] | 283.4 | 290.77 [249] | 297.9 | 306.82 [249] | 313.4 | 323.03 [249] | 328.15 |

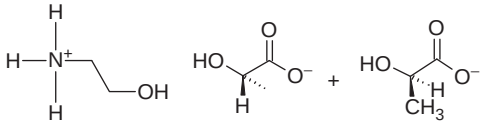
| $K_s$ (T·Pa$^{-1}$) | $T$ (K) | $K_s$ (T·Pa$^{-1}$) | $T$ (K) | $K_s$ (T·Pa$^{-1}$) | $T$ (K) | $K_s$ (T·Pa$^{-1}$) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 276.78 [249] | 283.65 | 291.02 [249] | 298.15 | 307.09 [249] | 313.65 | 323.31 [249] | 328.4 |
| 277.02 [249] | 283.9 | 291.28 [249] | 298.4 | 307.35 [249] | 313.9 | 323.59 [249] | 328.65 |
| 277.49 [249] | 284.4 | 292.04 [249] | 299.15 | 307.63 [249] | 314.15 | 323.88 [249] | 328.91 |
| 277.71 [249] | 284.64 | 292.29 [249] | 299.4 | 307.89 [249] | 314.4 | 324.17 [249] | 329.15 |
| 277.94 [249] | 284.9 | 292.54 [249] | 299.65 | 308.16 [249] | 314.65 | 324.45 [249] | 329.41 |
| 278.22 [249] | 285.15 | 292.79 [249] | 299.9 | 308.43 [249] | 314.9 | 324.73 [249] | 329.65 |
| 278.46 [249] | 285.4 | 293.05 [249] | 300.15 | 308.70 [249] | 315.15 | 325.02 [249] | 329.9 |
| 278.69 [249] | 285.65 | 293.30 [249] | 300.4 | 308.96 [249] | 315.4 | 325.30 [249] | 330.15 |
| 278.93 [249] | 285.9 | 293.56 [249] | 300.65 | 309.23 [249] | 315.65 | 325.59 [249] | 330.41 |
| 279.16 [249] | 286.15 | 293.81 [249] | 300.9 | 309.50 [249] | 315.9 | 325.88 [249] | 330.65 |
| 279.39 [249] | 286.4 | 294.06 [249] | 301.15 | 309.77 [249] | 316.15 | 326.16 [249] | 330.9 |
| 279.63 [249] | 286.65 | 294.32 [249] | 301.4 | 310.04 [249] | 316.41 | 326.45 [249] | 331.16 |
| 279.88 [249] | 286.9 | 294.57 [249] | 301.65 | 310.31 [249] | 316.65 | 326.74 [249] | 331.4 |
| 280.10 [249] | 287.15 | 294.83 [249] | 301.9 | 310.58 [249] | 316.91 | 327.02 [249] | 331.65 |
| 280.33 [249] | 287.4 | 295.09 [249] | 302.15 | 310.85 [249] | 317.15 | 327.31 [249] | 331.9 |
| 280.58 [249] | 287.64 | 295.34 [249] | 302.4 | 311.12 [249] | 317.41 | 327.59 [249] | 332.15 |
| 280.79 [249] | 287.9 | 295.59 [249] | 302.65 | 311.39 [249] | 317.65 | 327.88 [249] | 332.41 |
| 281.03 [249] | 288.15 | 295.85 [249] | 302.9 | 311.67 [249] | 317.9 | 328.17 [249] | 332.65 |
| 281.25 [249] | 288.39 | 296.11 [249] | 303.15 | 311.93 [249] | 318.16 | 328.46 [249] | 332.9 |
| 281.48 [249] | 288.64 | 296.36 [249] | 303.4 | 312.21 [249] | 318.4 | 328.75 [249] | 333.16 |
| 281.73 [249] | 288.89 | 296.62 [249] | 303.65 | 312.48 [249] | 318.65 | 329.03 [249] | 333.41 |
| 282.24 [249] | 289.39 | 296.88 [249] | 303.9 | 312.76 [249] | 318.91 | 329.32 [249] | 333.65 |
| 275.35 [249] | 289.39 | 297.13 [249] | 304.15 | 313.03 [249] | 319.15 | 329.61 [249] | 333.9 |
| 282.58 [249] | 289.65 | 297.39 [249] | 304.4 | 313.30 [249] | 319.4 | 329.90 [249] | 334.16 |
| 282.83 [249] | 289.9 | 297.65 [249] | 304.65 | 313.58 [249] | 319.65 | 330.19 [249] | 334.4 |
| 283.07 [249] | 290.15 | 297.90 [249] | 304.9 | 313.85 [249] | 319.9 | 330.48 [249] | 334.66 |
| 283.32 [249] | 290.4 | 298.16 [249] | 305.15 | 314.12 [249] | 320.15 | 330.77 [249] | 334.9 |
| 283.56 [249] | 290.65 | 198.42 [249] | 305.4 | 314.39 [249] | 320.4 | 331.05 [249] | 335.16 |
| 283.81 [249] | 290.9 | 298.68 [249] | 305.65 | 314.67 [249] | 320.66 | 331.35 [249] | 335.4 |
| 284.06 [249] | 291.15 | 298.94 [249] | 305.9 | 314.94 [249] | 320.91 | 331.64 [249] | 335.65 |
| 284.30 [249] | 291.4 | 299.20 [249] | 306.15 | 315.22 [249] | 321.15 | 331.92 [249] | 335.9 |
| 284.55 [249] | 291.65 | 299.45 [249] | 306.4 | 315.49 [249] | 321.4 | 332.21 [249] | 336.16 |
| 284.80 [249] | 291.9 | 299.72 [249] | 306.65 | 315.77 [249] | 321.65 | 332.51 [249] | 336.41 |
| 285.04 [249] | 292.15 | 299.98 [249] | 306.9 | 316.04 [249] | 321.91 | 332.80 [249] | 336.66 |
| 285.29 [249] | 292.4 | 300.23 [249] | 307.15 | 316.32 [249] | 322.16 | 333.09 [249] | 336.91 |
| 285.53 [249] | 292.65 | 300.50 [249] | 307.4 | 316.32 [249] | 322.16 | 333.39 [249] | 337.15 |
| 301.80 [249] | 292.9 | 300.76 [249] | 307.65 | 316.59 [249] | 322.41 | 333.67 [249] | 337.4 |
| 285.78 [249] | 292.9 | 301.02 [249] | 307.9 | 316.87 [249] | 322.66 | 33.97 [249] | 337.66 |
| 286.03 [249] | 293.15 | 301.28 [249] | 308.15 | 317.15 [249] | 322.9 | 334.26 [249] | 337.9 |
| 286.27 [249] | 293.4 | 301.54 [249] | 308.4 | 317.42 [249] | 323.15 | 334.53 [249] | 338.15 |

| $1000\alpha$ ($K^{-1}$) | $T$ (K) | $1000\alpha$ ($K^{-1}$) | $T$ (K) | $1000\alpha$ ($K^{-1}$) | $T$ (K) | $1000\alpha$ ($K^{-1}$) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 0.5938 [249] | 278.15 | 0.6008 [249] | 293.4 | 0.6074 [249] | 308.65 | 0.6134 [249] | 323.65 |
| 0.5939 [249] | 278.4 | 0.6009 [249] | 293.65 | 0.6075 [249] | 308.9 | 0.6135 [249] | 323.9 |
| 0.5940 [249] | 278.65 | 0.6011 [249] | 293.9 | 0.6076 [249] | 309.15 | 0.6136 [249] | 324.15 |
| 0.5941 [249] | 278.9 | 0.6012 [249] | 294.15 | 0.6077 [249] | 309.4 | 0.6137 [249] | 324.4 |
| 0.5943 [249] | 279.15 | 0.6013 [249] | 294.4 | 0.6078 [249] | 309.65 | 0.6138 [249] | 324.65 |
| 0.5944 [249] | 279.4 | 0.6014 [249] | 294.65 | 0.6079 [249] | 309.9 | 0.6139 [249] | 324.9 |
| 0.5945 [249] | 279.65 | 0.6015 [249] | 294.9 | 0.6080 [249] | 310.15 | 0.6140 [249] | 325.16 |
| 0.5946 [249] | 279.9 | 0.6016 [249] | 295.15 | 0.6081 [249] | 310.4 | 0.6141 [249] | 325.4 |
| 0.5947 [249] | 280.15 | 0.6017 [249] | 295.4 | 0.6082 [249] | 310.65 | 0.6142 [249] | 325.65 |
| 0.5948 [249] | 280.4 | 0.6018 [249] | 295.65 | 0.6083 [249] | 310.9 | 0.6143 [249] | 325.91 |
| 0.5950 [249] | 280.65 | 0.6019 [249] | 295.9 | 0.6084 [249] | 311.15 | 0.6144 [249] | 326.16 |
| 0.5951 [249] | 280.9 | 0.6021 [249] | 296.15 | 0.6085 [249] | 311.4 | 0.6145 [249] | 326.41 |
| 0.5953 [249] | 281.4 | 0.6022 [249] | 296.4 | 0.6086 [249] | 311.65 | 0.6146 [249] | 326.66 |
| 0.5954 [249] | 281.65 | 0.6023 [249] | 296.65 | 0.6088 [249] | 311.9 | 0.6147 [249] | 326.91 |
| 0.5956 [249] | 281.9 | 0.6024 [249] | 296.9 | 0.6089 [249] | 312.15 | 0.6148 [249] | 327.16 |
| 0.5957 [249] | 282.15 | 0.6025 [249] | 297.15 | 0.6090 [249] | 312.4 | 0.6148 [249] | 327.4 |
| 0.5958 [249] | 282.4 | 0.6026 [249] | 297.4 | 0.6091 [249] | 312.65 | 0.6149 [249] | 327.66 |
| 0.5959 [249] | 282.65 | 0.6027 [249] | 297.65 | 0.6092 [249] | 312.9 | 0.6150 [249] | 327.9 |
| 0.5960 [249] | 282.9 | 0.6028 [249] | 297.9 | 0.6093 [249] | 313.15 | 0.6151 [249] | 328.15 |
| 0.5961 [249] | 283.15 | 0.6029 [249] | 298.15 | 0.6094 [249] | 313.4 | 0.6152 [249] | 328.4 |
| 0.5963 [249] | 283.4 | 0.6030 [249] | 298.4 | 0.6095 [249] | 313.65 | 0.6153 [249] | 328.65 |
| 0.5964 [249] | 283.65 | 0.6032 [249] | 298.65 | 0.6096 [249] | 313.9 | 0.6154 [249] | 328.91 |
| 0.5965 [249] | 283.9 | 0.6033 [249] | 298.9 | 0.6097 [249] | 314.15 | 0.6155 [249] | 329.15 |
| 0.5966 [249] | 284.15 | 0.6034 [249] | 299.15 | 0.6098 [249] | 314.4 | 0.6156 [249] | 329.41 |
| 0.5967 [249] | 284.4 | 0.6035 [249] | 299.4 | 0.6099 [249] | 314.65 | 0.6157 [249] | 329.65 |
| 0.5968 [249] | 284.64 | 0.6036 [249] | 299.65 | 0.6100 [249] | 314.9 | 0.6158 [249] | 329.9 |
| 0.5970 [249] | 284.9 | 0.6037 [249] | 299.9 | 0.6101 [249] | 315.15 | 0.6159 [249] | 330.15 |
| 0.5971 [249] | 285.15 | 0.6038 [249] | 300.15 | 0.6102 [249] | 315.4 | 0.6160 [249] | 330.41 |
| 0.5972 [249] | 285.4 | 0.6039 [249] | 300.4 | 0.6103 [249] | 315.65 | 0.6161 [249] | 330.65 |
| 0.5973 [249] | 285.65 | 0.6040 [249] | 300.65 | 0.6104 [249] | 315.9 | 0.6162 [249] | 330.9 |
| 0.5974 [249] | 285.9 | 0.6041 [249] | 300.9 | 0.6105 [249] | 316.15 | 0.6162 [249] | 331.16 |
| 0.5975 [249] | 286.15 | 0.6042 [249] | 301.15 | 0.6106 [249] | 316.41 | 0.6163 [249] | 331.4 |
| 0.5977 [249] | 286.4 | 0.6043 [249] | 301.4 | 0.6107 [249] | 316.65 | 0.6164 [249] | 331.65 |
| 0.5978 [249] | 286.65 | 0.6045 [249] | 301.65 | 0.6108 [249] | 316.91 | 0.6165 [249] | 331.9 |
| 0.5979 [249] | 286.9 | 0.6046 [249] | 301.9 | 0.6109 [249] | 317.15 | 0.6166 [249] | 332.15 |
| 0.5980 [249] | 287.15 | 0.6047 [249] | 302.15 | 0.6110 [249] | 317.41 | 0.6167 [249] | 332.41 |
| 0.5981 [249] | 287.4 | 0.6048 [249] | 302.4 | 0.6111 [249] | 317.65 | 0.6168 [249] | 332.65 |
| 0.5982 [249] | 287.64 | 0.6049 [249] | 302.65 | 0.6112 [249] | 317.9 | 0.6169 [249] | 332.9 |
| 0.5983 [249] | 287.9 | 0.6050 [249] | 302.9 | 0.6113 [249] | 318.16 | 0.6170 [249] | 333.16 |
| 0.5985 [249] | 288.15 | 0.6051 [249] | 303.15 | 0.6114 [249] | 318.4 | 0.6172 [249] | 333.65 |

| 1000α ($K^{-1}$) | $T$ (K) | 1000α ($K^{-1}$) | $T$ (K) | 1000α ($K^{-1}$) | $T$ (K) | 1000α ($K^{-1}$) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 0.5986 [249] | 288.39 | 0.6052 [249] | 303.4 | 0.6115 [249] | 318.65 | 0.6173 [249] | 333.9 |
| 0.5987 [249] | 288.64 | 0.6053 [249] | 303.65 | 0.6116 [249] | 318.91 | 0.6173 [249] | 334.16 |
| 0.5988 [249] | 288.89 | 0.6055 [249] | 304.15 | 0.6117 [249] | 319.15 | 0.6174 [249] | 334.4 |
| 0.5989 [249] | 289.15 | 0.6056 [249] | 304.4 | 0.6118 [249] | 319.4 | 0.6175 [249] | 334.66 |
| 0.5990 [249] | 289.39 | 0.6057 [249] | 304.65 | 0.6119 [249] | 319.65 | 0.6176 [249] | 334.9 |
| 0.5991 [249] | 289.65 | 0.6058 [249] | 304.9 | 0.6120 [249] | 319.9 | 0.6177 [249] | 335.16 |
| 0.5993 [249] | 289.9 | 0.6059 [249] | 305.15 | 0.6121 [249] | 320.15 | 0.6178 [249] | 335.4 |
| 0.5994 [249] | 290.15 | 0.6060 [249] | 305.4 | 0.6122 [249] | 320.4 | 0.6179 [249] | 335.65 |
| 0.5995 [249] | 290.4 | 0.6062 [249] | 305.65 | 0.6123 [249] | 320.66 | 0.6180 [249] | 335.9 |
| 0.5996 [249] | 290.65 | 0.6063 [249] | 305.9 | 0.6124 [249] | 320.91 | 0.6181 [249] | 336.16 |
| 0.5997 [249] | 290.9 | 0.6064 [249] | 306.15 | 0.6124 [249] | 321.15 | 0.6182 [249] | 336.41 |
| 0.5998 [249] | 291.15 | 0.6065 [249] | 306.4 | 0.6125 [249] | 321.4 | 0.6182 [249] | 336.66 |
| 0.5999 [249] | 291.4 | 0.6066 [249] | 306.65 | 0.6126 [249] | 321.65 | 0.6183 [249] | 336.91 |
| 0.6000 [249] | 291.65 | 0.6067 [249] | 306.9 | 0.6127 [249] | 321.91 | 0.6184 [249] | 337.15 |
| 0.6002 [249] | 291.9 | 0.6068 [249] | 307.15 | 0.6128 [249] | 322.16 | 0.6185 [249] | 337.4 |
| 0.6003 [249] | 292.15 | 0.6069 [249] | 307.4 | 0.6129 [249] | 322.41 | 0.6186 [249] | 337.66 |
| 0.6004 [249] | 292.4 | 0.6070 [249] | 307.65 | 0.6130 [249] | 322.66 | 0.6187 [249] | 337.9 |
| 0.6005 [249] | 292.65 | 0.6071 [249] | 307.9 | 0.6131 [249] | 322.9 | 0.6188 [249] | 338.15 |
| 0.6006 [249] | 292.9 | 0.6072 [249] | 308.15 | 0.6132 [249] | 323.15 | 0.6054 [249] | 30390 |
| 0.6007 [249] | 293.15 | 0.6073 [249] | 308.4 | 0.6133 [249] | 323.4 | 0.6171 [249] | 333.41 |

### 1586-67: 2-Hydroxyethylammonium DL-lactate

**Abbreviation**: [NHHH,$(CH_2)_2$OH][DL-lactate], [$HO(CH_2)_2NH_3$][DL-lactate]
**Molecular Formula**: $C_5H_{13}NO_4$
**Molar Mass**: 151.16
**Structure**:



**Character**:
**Application**:

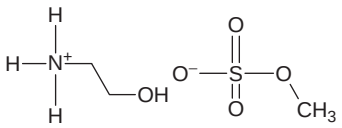
| $T_g$ (K) |
|---|
| 220.15 [245] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.228 [245] | 300.15 | 1324 [245] | 298.15 | 0.0048 [245] | 298.15 |

| $n$ | $T$ (K) | Parachor parameter | $T$ (K) | $\sigma$ (N/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.4702 [245] | 298 | 304.8 [245] | 300 | 0.0572 [245, 246] | 300.1 |

### 1586-417: 2-Hydroxyethylammonium methylsulfate

**Abbreviation**: [NHHH,$(CH_2)_2$OH][$MeSO_4$] [$HO(CH_2)_2NH_3$][$MeSO_4$]
**Molecular Formula**: $C_3H_{11}NO_5S$
**Molar Mass**: 173.19
**Structure**:

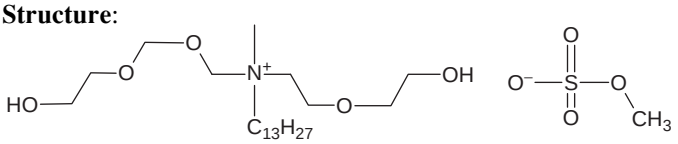


**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 372.15 [245] | 229.15 [245] |

### 1587-417: Cocosalky pentaethoxi methylammonium methylsulfate

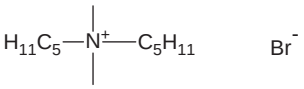
**Abbreviation**: [ECONG500][$MeSO_4$]
**Molecular Formula**: $C_{23}H_{51}NO_9S$
**Molar Mass**: 517.72
**Structure**:



**Character**:
**Application**: [128]

### 1588-12: Dimethyldipentylammonium bromide

**Abbreviation**: [N1155]Br
**Molecular Formula**: $C_{12}H_{28}NBr$
**Molar Mass**: 266.26
**Structure**:

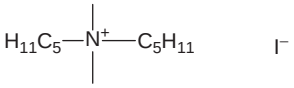


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 349.35 [250] | 493.15-578.15 [250] |

### 1588-13: Dimethyldipentylammonium iodine

**Abbreviation**: [N1155]I
**Molecular Formula**: $C_{12}H_{28}NI$
**Molar Mass**: 313.26
**Structure**:

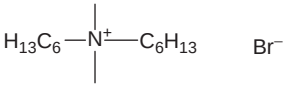


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 359.55 [250] | 503.15-598.15 [250] |

### 1589-12: Dihexyldimethylammonium bromide

**Abbreviation**: [N1166]Br
**Molecular Formula**: $C_{14}H_{32}NBr$
**Molar Mass**: 294.31
**Structure**:

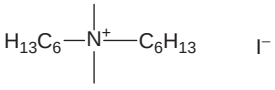


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 327.05 [250] | 488.15-593.15 [250] |

### 1589-13: Dihexyldimethylammonium iodine

**Abbreviation**: [N1166]I
**Molecular Formula**: $C_{14}H_{32}NI$
**Molar Mass**: 341.32
**Structure**:

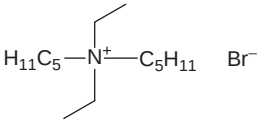


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 318.25 [250] | 498.15-608.15 [250] |

### 1590-12: Diethyldipentylammonium bromide

**Abbreviation**: [N2255]Br
**Molecular Formula**: $C_{14}H_{32}NBr$
**Molar Mass**: 294.31
**Structure**:

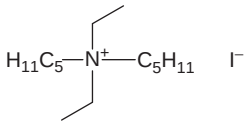


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 330.65 [250] | 478.15-638.15 [250] |

### 1590-13: Diethyldipentylammonium iodine

**Abbreviation**: [N2255]I
**Molecular Formula**: $C_{14}H_{32}NI$
**Molar Mass**: 341.32
**Structure**:

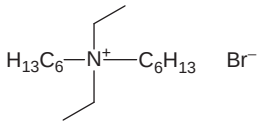


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 367.95 [250] | 488.15-613.15 [250] |

### 1591-12: Diethyldihexylammonium bromide

**Abbreviation**: [N2266]Br
**Molecular Formula**: $C_{16}H_{36}NBr$
**Molar Mass**: 322.37
**Structure**:

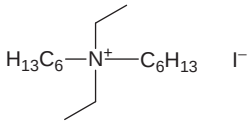


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 347.75 [250] | 473.15-583.15 [250] |

### 1591-13: Diethyldihexylammonium iodine

**Abbreviation**: [N2266]I
**Molecular Formula**: $C_{16}H_{36}NI$
**Molar Mass**: 369.37
**Structure**:

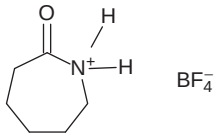


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 345.75 [250] | 493.15-613.15 [250] |

### 1592-21: Caprolactam tetrafluoroborate

**Abbreviation**: [NHC][$BF_4$]
**Molecular Formula**: $C_6H_{12}NOBF_4$
**Molar Mass**: 200.97
**Structure**:



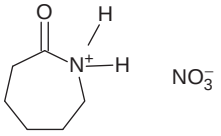
**Character**:
Application

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 199.15 [251] | 512.15 [252] |
| 199.15 [252] | |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) | Electrochemical window (V) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1.33 [252] | 298.15 | 503 [252] | 298.15 | 0.0731 [251] | | 2 [251, 252] | 298 |
| | | 503 [251] | | 0.0731 [252] | 298.15 | | |

### 1592-39: Caprolactam nitrate

**Abbreviation**: [NHC][$NO_3$]
**Molecular Formula**: $C_6H_{12}N_2O_4$
**Molar Mass**: 176.17
**Structure**:



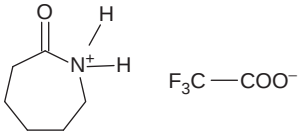
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 318.15 [252] | 461.15 [252] |

| $K$ (S/m) | Electrochemical window (V) |
|---|---|
| 0.084 [251] | 2.2 [251] |

### 1592-61: Caprolactam trifluoroacetate

**Abbreviation**: [NHC][TA]
**Molecular Formula**: $C_8H_{12}F_3NO_3$
**Molar Mass**: 227.18
**Structure**:



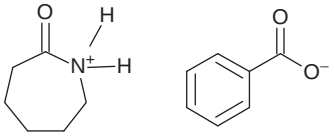
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 200.15 [251] | 408.15 [252] |
| 200.15 [252] | |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) | Electrochemical window (V) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1.24 [252] | 298.15 | 28 [252, 251] | 298.15 | 0.0383 [252, 251] | 298.15 | 2.1 [252, 251] | 298 |

### 1592-64: Caprolactam benzoate

**Abbreviation**: [NHC][ba]
**Molecular Formula**: $C_{13}H_{17}NO_3$
**Molar Mass**: 235.28
**Structure**:

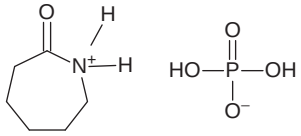


**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 304.15 [252] | 218.15 [252] | 391.15 [252] |

### 1592-510: Caprolactam Dihydrogen phosphate

**Abbreviation**: [NHC][dph]
**Molecular Formula**: $C_6H_{14}NO_5P$
**Molar Mass**: 211.15
**Structure**:

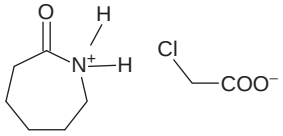


**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 239.15 [252] |

### 1592-631: Caprolactam α-chloride-acetate

**Abbreviation**: [NHC][$ClCH_2CO_2$]
**Molecular Formula**: $C_8H_{14}ClNO_3$
**Molar Mass**: 207.65
**Structure**:

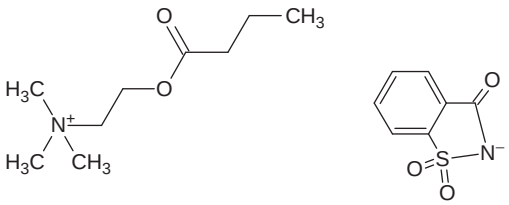


**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 302.15 [252] | 206.15 [252] | 390.15 [252] |

### 1593-312: [$Me_3N(CH_2)_2OC(O)(CH_2)_2CH_3$] Saccharinate

**Abbreviation**: [$Me_3N(CH_2)_2OC(O)(CH_2)_2CH_3$][Sac]
**Molecular Formula**: $C_{16}H_{24}N_2O_5S$
**Molar Mass**: 356.44
**Structure**:

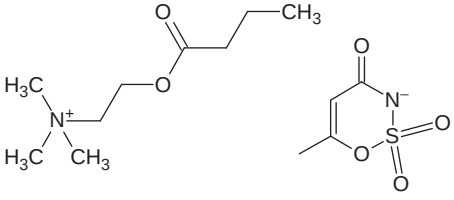


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 362.15 [16] |

### 1593-315: [$Me_3N(CH_2)_2OC(O)(CH_2)_2CH_3$] Acesulfamate

**Abbreviation**: [$Me_3N(CH_2)_2OC(O)(CH_2)_2CH_3$][Ace]
**Molecular Formula**: $C_{13}H_{24}N_2O_6S$
**Molar Mass**: 336.41
**Structure**:

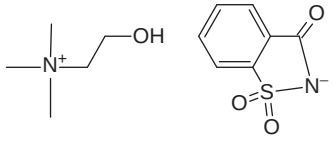


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 322.15 [16] |

### 1594-312: Choline Saccharinate

**Abbreviation**: [N111,2OH][Sac]
**Molecular Formula**: $C_{12}H_{18}N_2SO_4$
**Molar Mass**: 286.35
**Structure**:

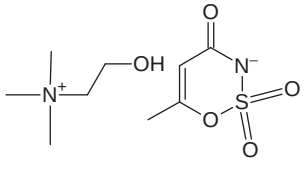


**Character**: Hydrophilic
**Application**: Dissolve proteins

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.383 [253] | 298.15 | 328 [253] | 343.15 | 0.021 [253] | 298.15 |

### 1594-315: 2-Hydroxyethyltrimethylammonium acesulfamate

**Abbreviation**: [N111,2OH][Ace]
**Molecular Formula**: $C_9H_{18}N_2O_5S$
**Molar Mass**: 266.32
**Structure**:

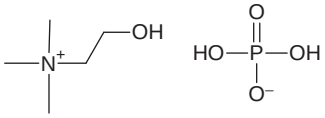


**Character**: Hydrophilic
**Application**:

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.284 [253] | 298.15 | 1072 [253] | 298.15 | 0.045 [253] | 298.15 |

### 1594-510: 2-hydroxyethyltrimethylammonium Dihydrogen phosphate

**Abbreviation**: [N111,2OH][dhp]
**Molecular Formula**: $C_5H_{16}NPO_5$
**Molar Mass**: 201.16
**Structure**:

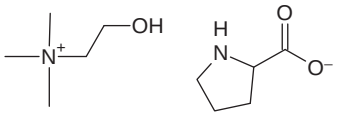


**Character**:
**Application**: Dissolve proteins

| $T_m$ (K) | $T_{s\text{-}s}$ (K) |
|---|---|
| 392.15 [209] | 296.15 [209] |

### 1594-625: 2-Hydroxyethyltrimethylammonium (*S*)-2-pyrrolidinecarboxylic acid

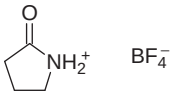
**Abbreviation**: [N111,2OH][Pro]
**Molecular Formula**: $C_{10}H_{22}N_2O_3$
**Molar Mass**: 218.29
**Structure**:



**Character**:
**Application**: Catalyst of the direct aldol reactions between ketones and aromatic aldehydes in water [254]

### 1595-21: Butyrolactam tetrafluoroborate

**Abbreviation**: [PY][$BF_4$]
**Molecular Formula**: $C_4H_8BF_4NO$
**Molar Mass**: 172.92
**Structure**:



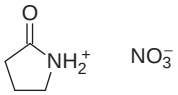
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 200.15 [252] | 506.15 [252] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) | Electrochemical window (V) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1.46 [252] | 298.15 | 350 [252] | 298.15 | 0.0839 [252] | 298.15 | 2.2 [252] | 298 |

### 1595-39: Butyrolactam nitrate

**Abbreviation**: [PY][$NO_3$]
**Molecular Formula**: $C_4H_8N_2O_4$
**Molar Mass**: 148.12
**Structure**:

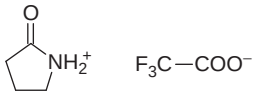


**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 281.15 [252] | 197.15 [252] | 441.15 [252] |

### 1595-61: Butyrolactam trifluoroacetate

**Abbreviation**: [PY][TA]
**Molecular Formula**: $C_6H_8F_3NO_3$
**Molar Mass**: 199.13
**Structure**:



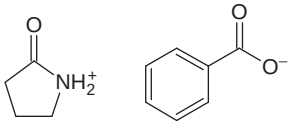
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 183.15 [252] | 398.15 [252] |

| $\rho$ (g cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) | Electrochemical window (V) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1.32 [252] | 298.15 | 11 [252] | 298.15 | 0.144 [252] | 298.15 | 2.4 [252] | 298 |

### 1595-64: Butyrolactam benzoate

**Abbreviation**: [PY][ba]
**Molecular Formula**: $C_{11}H_{13}NO_3$
**Molar Mass**: 207.23
**Structure**:

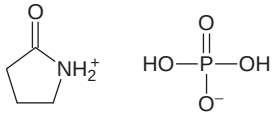


**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 280.15 [252] | 210.15 [252] | 436.15 [252] |

### 1595-510: Butyrolactam Dihydrogen phosphate

**Abbreviation**: [PY][dph]
**Molecular Formula**: $C_4H_{10}NO_5P$
**Molar Mass**: 183.1
**Structure**:

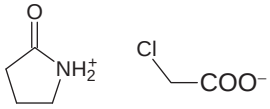


**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 227.15 [252] | 522.15 [252] |

### 1595-631: Butyrolactam α-chloride-acetate

**Abbreviation**: [PY][$ClCH_2CO_2$]
**Molecular Formula**: $C_6H_{10}ClNO_3$
**Molar Mass**: 179.69
**Structure**:

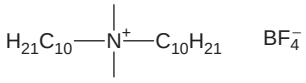


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 305.15 [252] |

### 1596-21: Didecyldimethylammonium tetrafluoroborate

**Abbreviation**: [DDA][$BF_4$]
**Molecular Formula**: $C_{22}H_{48}NBF_4$
**Molar Mass**: 413.43
**Structure**:

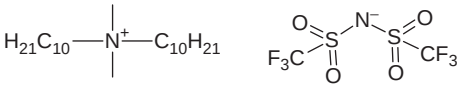


**Character**:
**Application**: Antibacterial

| $T_m$ (K) |
|---|
| 300.65 [255] |

### 1596-31: Didecyldimethylammonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [DDA][$NTf_2$]
**Molecular Formula**: $C_{24}H_{48}F_6N_2O_4S_2$
**Molar Mass**: 606.77
**Structure**:

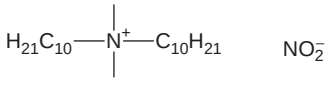


**Character**:
**Application**: Antibacterial

| $T_g$ (K) |
|---|
| 187.65 [255] |

### 1596-38: Didecyldimethylammonium nitrite

**Abbreviation**: [DDA][$NO_2$]
**Molecular Formula**: $C_{22}H_{48}N_2O_2$
**Molar Mass**: 372.63
**Structure**:

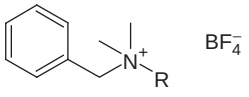


**Character**:
**Application**: Antibacterial

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 270.75 [255] | 179.85 [255] |

### 1597-21: Benzalkonium tetrafluoroborate

**Abbreviation**: [BA][$BF_4$]
**Molecular Formula**:
**Molar Mass**:
**Structure**:



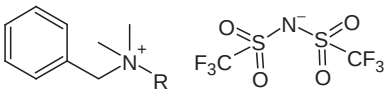
R=$C_8$-$C_{18}$ mixture (predominantly $C_{12}$)

**Character**:
**Application**: Antibacterial

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 329.15 [255] | 229.95 [255] |

### 1597-31: Benzalkonium bis((trifluoromethyl)sulfonyl) imide

**Abbreviation**: [BA][$NTf_2$]
**Molecular Formula**:
**Molar Mass**:
**Structure**:



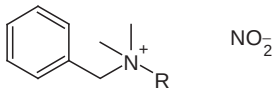
R=$C_8$-$C_{18}$ mixture (predominantly $C_{12}$)

**Character**:
**Application**: Antibacterial

| $T_g$ (K) |
|---|
| 218.55 [255] |

### 1597-38: Benzalkonium nitrite

**Abbreviation**: [BA][$NO_2$]
**Molecular Formula**:
**Molar Mass**:
**Structure**:



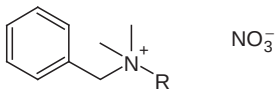
R=$C_8$-$C_{18}$ mixture (predominantly $C_{12}$)

**Character**:
**Application**: Antibacterial

| $T_g$ (K) |
|---|
| 224.95 [255] |

### 1597-39: Benzalkonium nitrate

**Abbreviation**: [BA][$NO_3$]
**Molecular Formula**:
**Molar Mass**:
**Structure**:



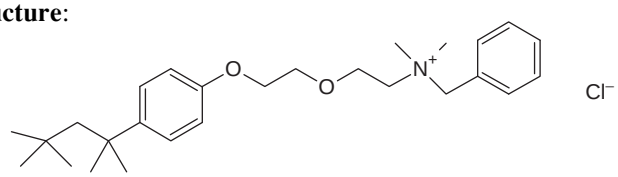
R=$C_8$-$C_{18}$ mixture (predominantly $C_{12}$)

**Character**:
**Application**: Antibacterial

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 309.45 [255] | 216.35 [255] |

### 1598-11: Hamine 1622(benzethonium) chloride

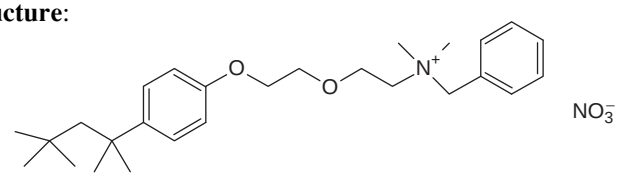
**Abbreviation**: [HA1622]Cl
**Molecular Formula**: $C_{27}H_{42}NO_2Cl$
**Molar Mass**: 448.08
**Structure**:



**Character**:
**Application**: Antibacterial [255]

### 1598-39: Hamine 1622(benzethonium) nitrate

**Abbreviation**: [HA1622][$NO_3$]
**Molecular Formula**: $C_{27}H_{42}N_2O_5$
**Molar Mass**: 474.63
**Structure**:

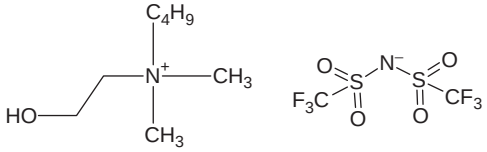


**Character**:
**Application**: Antibacterial

| $T_m$ (K) |
|---|
| 358.15 [255] |

### 1599-31: Hydroxyethyl-butyl-dimethylammonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [N114,EtOH][$NTf_2$]
**Molecular Formula**: $C_{10}H_{20}F_6N_2O_5S_2$
**Molar Mass**: 426.40
**Structure**:

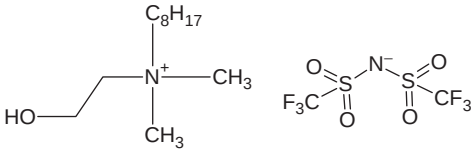


**Character**:
**Application**:

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.440 [10] | 298.15 |

### 15100-31: Hydroxyethyl-octyl-dimethylammonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [N118,EtOH][$NTf_2$]
**Molecular Formula**: $C_{14}H_{28}F_6N_2O_5S_2$
**Molar Mass**: 482.5
**Structure**:

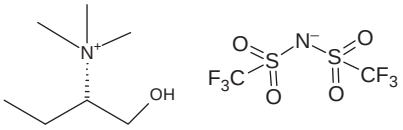


**Character**:
**Application**:

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.306 [10] | 298.15 |

### 15101-31: 2′-Hydroxybutyl-trimethylammonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [N111,BuOH][$NTf_2$]
**Molecular Formula**: $C_9H_{18}F_6N_2O_5S_2$
**Molar Mass**: 412.37
**Structure**:

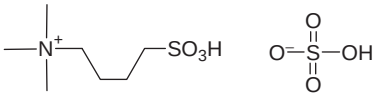


**Character**:
**Application**:

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.484 [10] | 298.15 |

### 15105-421: *N*,*N*,*N*-trimetyl-*N*-butanesulfonic acid ammonium hydrogen sulfate

**Abbreviation**: [TMBSA][$HSO_4$]
**Molecular Formula**: $C_7H_{19}NO_7S_2$
**Molar Mass**: 293.36
**Structure**:

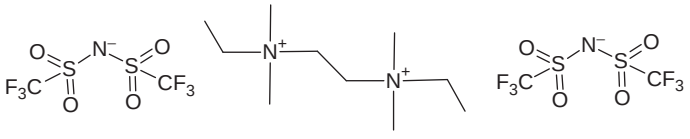


**Character**:
**Application**: Catalyst of Mannich reaction in water

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 262.15 [256] | 570.15 [256] |

### 15106-31: *N*,*N*,*N*′,*N*′-tetramethyl-*N*,*N*′-diethyl-ethylenediammonium di[bis(trifluoromethanesulfonyl) amide]

**Abbreviation**: [$C_2$(N112)$_2$][$NTf_2$]$_2$
**Molecular Formula**: $C_{14}H_{26}F_{12}N_4O_8S_4$
**Molar Mass**: 734.62
**Structure**:

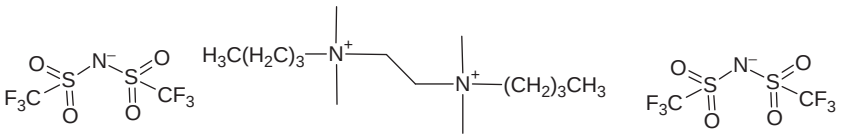


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) | $T_{s\text{-}s}$ (K) |
|---|---|---|
| 460.15 [257] | 628.15 [257] | 430.15 [257] |

**15107-31: *N*,*N*,*N*′,*N*′-tetramethyl-*N*,*N*′-dibutyl-ethylenediammonium di[bis(trifluoromethanesulfonyl) amide]**

**Abbreviation**: $[C_2(N114)_2][NTf_2]_2$
**Molecular Formula**: $C_{18}H_{34}F_{12}N_4O_8S_4$
**Molar Mass**: 790.72
**Structure**:

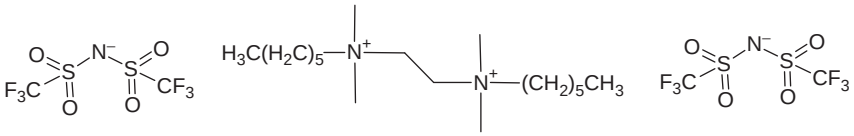


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 398.15 [257] | 615.15 [257] |

**15108-31: *N*,*N*,*N*′,*N*′-tetramethyl-*N*,*N*′-dihexyl-ethylenediammonium di[bis(trifluoromethanesulfonyl) amide]**

**Abbreviation**: $[C_2(N116)_2][NTf_2]_2$
**Molecular Formula**: $C_{22}H_{42}F_{12}N_4O_8S_4$
**Molar Mass**: 846.83
**Structure**:

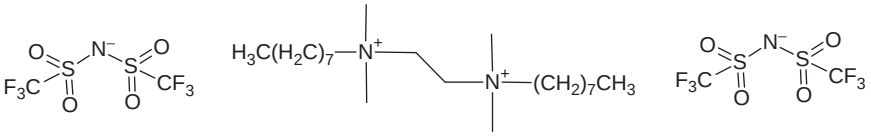


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 357.15 [257] | 646.15 [257] |

**15109-31: *N*,*N*,*N*′,*N*′-tetramethyl-*N*,*N*′-dioctyl-ethylenediammonium di[bis(trifluoromethanesulfonyl) amide]**

**Abbreviation**: $[C_2(N118)_2][NTf_2]_2$
**Molecular Formula**: $C_{26}H_{50}F_{12}N_4O_8S_4$
**Molar Mass**: 902.94
**Structure**:

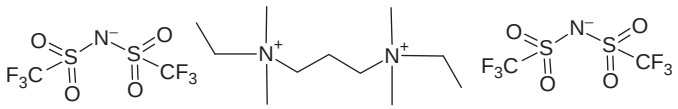


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) | $T_{s\text{-}s}$ (K) |
|---|---|---|
| 353.15 [257] | 655.15 [257] | 250.15 [257] |

**15110-31: *N*,*N*,*N*′,*N*′-tetramethyl-*N*,*N*′-diethyl-1,3-propanediammonium di[bis(trifluoromethanesulfonyl) amide]**

**Abbreviation**: $[C_3(N112)_2][NTf_2]_2$
**Molecular Formula**: $C_{15}H_{28}N_4O_8S_4$
**Molar Mass**: 748.64
**Structure**:

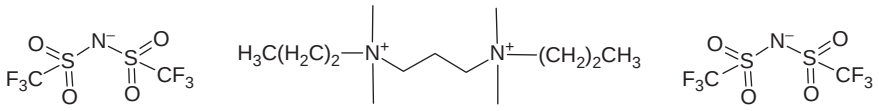


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 451.15 [257] | 650.15 [257] |

**15111-31: *N*,*N*,*N*′,*N*′-tetramethyl-*N*,*N*′-dipropyl-1,3-propanediammonium di[bis(trifluoromethanesulfonyl) amide]**

**Abbreviation**: $[C_3(N113)_2][NTf_2]_2$
**Molecular Formula**: $C_{17}H_{32}F_{12}N_4O_8S_4$
**Molar Mass**: 776.70
**Structure**:

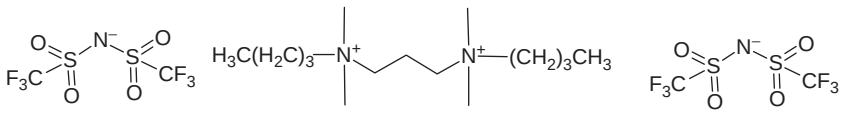


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) | $T_{s\text{-}s}$ (K) |
|---|---|---|
| 397.15 [257] | 635.15 [257] | 329.15 [257] |

**15112-31: *N*,*N*,*N*′,*N*′-tetramethyl-*N*,*N*′-dibutyl-1,3-propanediammonium di[bis(trifluoromethanesulfonyl) amide]**

**Abbreviation**: $[C_3(N114)_2][NTf_2]_2$
**Molecular Formula**: $C_{19}H_{36}F_{12}N_4O_8S_4$
**Molar Mass**: 804.75
**Structure**:

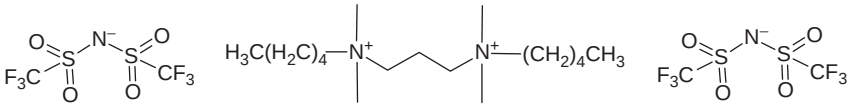


**Character**:
**Application**:

| $T_m$ (K) | $T_c$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|---|
| 334.15 [257] | 296.15 [257] | 227.15 [257] | 637.15 [257] |

**15113-31: *N*,*N*,*N*′,*N*′-tetramethyl-*N*,*N*′-diamyl-1,3-propanediammonium di[bis(trifluoromethanesulfonyl) amide]**

**Abbreviation**: $[C_3(N115)_2][NTf_2]_2$
**Molecular Formula**: $C_{21}H_{40}F_{12}N_4O_8S_4$
**Molar Mass**: 832.80
**Structure**:

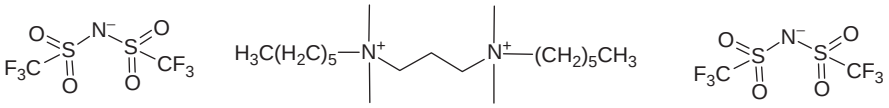


**Character**:
**Application**:

| $T_m$ (K) | $T_c$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|---|
| 324.15 [257] | 286.15 [257] | 228.15 [257] | 636.15 [257] |

**15114-31: *N*,*N*,*N*′,*N*′-tetramethyl-*N*,*N*′-dihexyl-1,3-propanediammonium di[bis(trifluoromethanesulfonyl) amide]**

**Abbreviation**: $[C_3(N116)_2][NTf_2]_2$
**Molecular Formula**: $C_{23}H_{44}F_{12}N_4O_8S_4$
**Molar Mass**: 860.86
**Structure**:

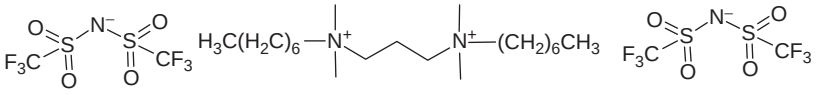


**Character**:
**Application**:

| $T_m$ (K) | $T_c$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|---|
| 337.15 [257] | 263.15 [257] | 227.15 [257] | 651.15 [257] |

**15115-31: *N*,*N*,*N*′,*N*′-tetramethyl-*N*,*N*′-diheptyl-1,3-propanediammonium di[bis(trifluoromethanesulfonyl) amide]**

**Abbreviation**: $[C_3(N117)_2][NTf_2]_2$
**Molecular Formula**: $C_{25}H_{48}F_{12}N_4O_8S_4$
**Molar Mass**: 888.91
**Structure**:

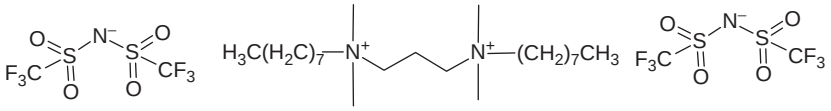


**Character**:
**Application**:

| $T_m$ (K) | $T_c$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|---|
| 320.15 [257] | 246.15 [257] | 224.15 [257] | 662.15 [257] |

**15116-31: *N*,*N*,*N*′,*N*′-tetramethyl-*N*,*N*′-dioctyl-1,3-propanediammonium di[bis(trifluoromethanesulfonyl) amide]**

**Abbreviation**: $[C_3(N118)_2][NTf_2]_2$
**Molecular Formula**: $C_{27}H_{52}F_{12}N_4O_8S_4$
**Molar Mass**: 916.96
**Structure**:

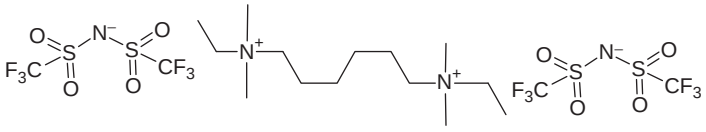


**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) | $T_c$ (K) | $T_{s\text{-}s}$ (K) |
|---|---|---|---|---|
| 320.15 [257] | 226.15 [257] | 630.15 [257] | 249.15 [257] | 299.15 [257] |

**15117-31: *N*,*N*,*N*′,*N*′-tetramethyl-*N*,*N*′-diethyl-1,6-hexanediammonium di[bis(trifluoromethanesulfonyl) amide]**

**Abbreviation**: $[C_6(N112)_2][NTf_2]_2$
**Molecular Formula**: $C_{18}H_{34}F_{12}N_4O_8S_4$
**Molar Mass**: 790.72
**Structure**:

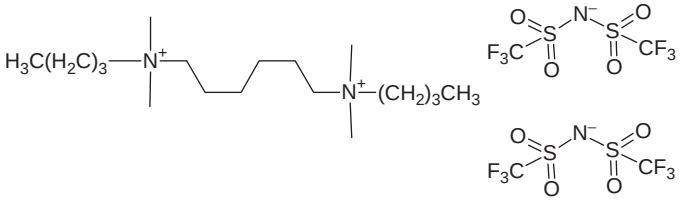


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 318.15 [257] | 686.15 [257] |

**15118-31: *N*,*N*,*N*′,*N*′-tetramethyl-*N*,*N*′-dibutyl-1,6-hexanediammonium di[bis(trifluoromethanesulfonyl) amide]**

**Abbreviation**: $[C_6(N114)_2][NTf_2]_2$
**Molecular Formula**: $C_{22}H_{42}F_{12}N_4O_8S_4$
**Molar Mass**: 846.83
**Structure**:

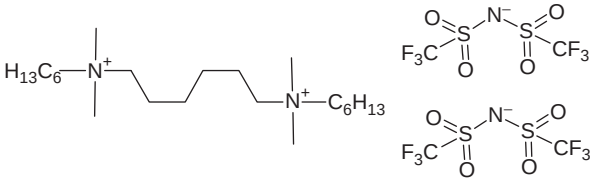


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 359.15 [257] | 674.15 [257] |

**15119-31: *N*,*N*,*N*′,*N*′-tetramethyl-*N*,*N*′-dihexyl-1,6-hexanediammonium di[bis(trifluoromethanesulfonyl) amide]**

**Abbreviation**: $[C_6(N116)_2][NTf_2]_2$
**Molecular Formula**: $C_{26}H_{50}F_{12}N_4O_8S_4$
**Molar Mass**: 902.94
**Structure**:

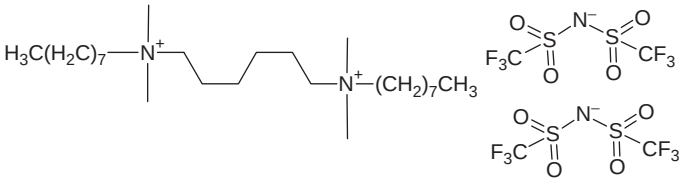


**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 324.15 [257] | 219.15 [257] | 682.15 [257] |

**15120-31: *N*,*N*,*N*′,*N*′-tetramethyl-*N*,*N*′-dioctyl-1,6-hexanediammonium di[bis(trifluoromethanesulfonyl) amide]**

**Abbreviation**: $[C_6(N118)_2][NTf_2]_2$
**Molecular Formula**: $C_{30}H_{58}F_{12}N_4O_8S_4$
**Molar Mass**: 959.04
**Structure**:



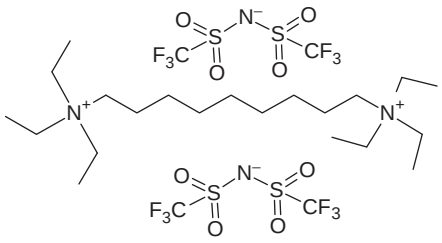
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 217.15 [257] | 682.15 [257] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) | Electrochemical window (V) | $T$ (K) |
|---|---|---|---|---|---|
| 1.17 [257] | 298.15 | 0.005 [257] | 298.15 | 4.7 [257] | 298.15 |

**15121-31: *N*,*N*,*N*,*N′*,*N′*,*N′*-hexaethyl-1,9-nonanediammonium di[bis(trifluoromethanesulfonyl) amide]**

**Abbreviation**: $[C_9(N222)_2][NTf_2]_2$
**Molecular Formula**: $C_{25}H_{48}F_{12}N_4O_8S_4$
**Molar Mass**: 888.91
**Structure**:



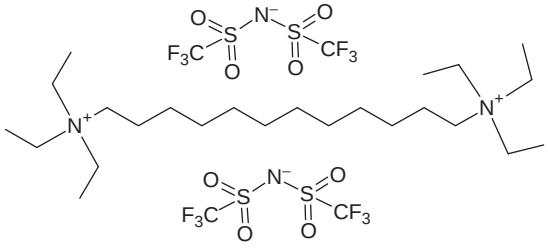
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 220.15 [257] | 683.15 [257] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) | Electrochemical window (V) | $T$ (K) |
|---|---|---|---|---|---|
| 1.25 [257] | 298.15 | 0.014 [257] | 298.15 | 4.3 [257] | 298.15 |

**15122-31: *N*,*N*,*N*,*N′*,*N′*,*N′*-hexaethyl-1,12-dodecanediammonium di[bis(trifluoromethanesulfonyl) amide]**

**Abbreviation**: $[C_{12}(N222)_2][NTf_2]_2$
**Molecular Formula**: $C_{28}H_{54}F_{12}N_4O_8S_4$
**Molar Mass**: 930.99
**Structure**:



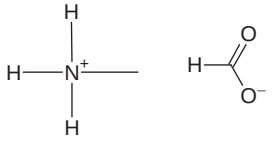
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| <213.15 [257] | 687.15 [257] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $K$ (S/m) | $T$ (K) | Electrochemical window (V) | $T$ (K) |
|---|---|---|---|---|---|
| 1.31 [257] | 298.15 | 0.013 [257] | 298.15 | 4.3 [257] | 298.15 |

### 15123-65: Methylammonium formate

**Abbreviation**: [NHHH1][$HCO_2$]
**Molecular Formula**: $C_2H_7NO_2$
**Molar Mass**: 77.08
**Structure**:



**Character**:
**Application**:

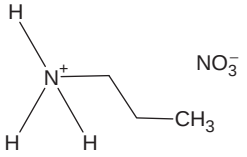
| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 286.15 [245] | 159.15 [245] |
| 286.15 [246] | |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.087 [245] | 300.15 | 17 [245] | 298.15 | 4.38 [245] | 298.15 |

| $n$ | $T$ (K) | Parachor parameter | $T$ (K) | $\sigma$ (N/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.4336 [245] | 298 | 181.7 [245] | 300 | 0.0431 [245, 246] | 300.1 |

### 15124-39: Propylammonium nitrate

**Abbreviation**: [NHHH3][$NO_3$]
**Molecular Formula**: $C_3H_{10}N_2O_3$
**Molar Mass**: 122.12
**Structure**:



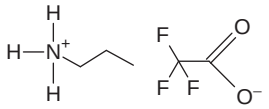
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 277.15 [12] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $n$ |
|---|---|---|---|---|
| 1.157 [12] | 298.15 | 67 [12] | 298.15 | 1.4561 [12] |

### 15124-61: Propylamine trifluoroacetate

**Abbreviation**: [NHHH3][$CF_3COO$]
**Molecular Formula**: $C_5H_{10}NO_2F_3$
**Molar Mass**: 173.13
**Structure**:



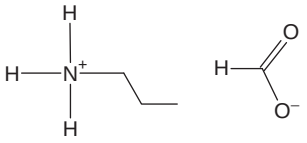
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 339.7 [258] |

| $K$ (S/m) | $T$ (K) |
|---|---|
| 3 [258] | 453.15 |

### 15124-65: Propylammonium formate

**Abbreviation**: [NHHH3][$HCO_2$]
**Molecular Formula**: $C_4H_{11}NO_2$
**Molar Mass**: 105.14
**Structure**:

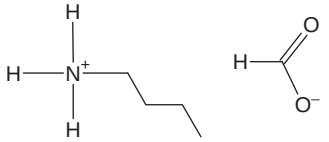


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 323.15 [245, 246] |

### 15125-65: Butylammonium formate

**Abbreviation**: [NHHH4][$HCO_2$]
**Molecular Formula**: $C_5H_{13}NO_2$
**Molar Mass**: 119.16
**Structure**:



**Character**:
**Application**:

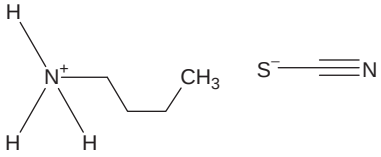
| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 275.15 [245, 246] | 178.15 [245] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 0.968 [245] | 300.15 | 70 [245] | 298.15 | 0.31 [245] | 298.15 |

| $n$ | $T$ (K) | Parachor parameter | $T$ (K) | $\sigma$ (N/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.4422 [245] | 298 | 295.7 [245] | 300 | 0.0333 [245, 246] | 300.1 |

### 15125-1503: Butylammonium thiocyanate

**Abbreviation**: [NHHH4][SCN]
**Molecular Formula**: $C_5H_{12}N_2S$
**Molar Mass**: 132.22
**Structure**:



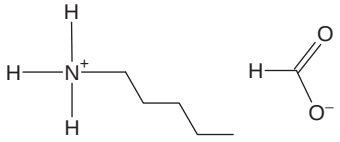
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 293.65 [12] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $n$ |
|---|---|---|---|---|
| 0.949 [12] | 298.15 | 97 [12] | 298.15 | 1.5264 [12] |

### 15126-65: Pentylammonium formate

**Abbreviation**: [NHHH5][$HCO_2$]
**Molecular Formula**: $C_6H_{15}NO_2$
**Molar Mass**: 133.19
**Structure**:



**Character**:
**Application**:

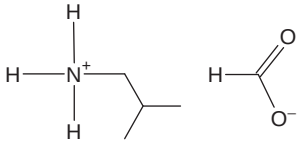
| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 285.15 [245] | 180.15 [245] |
| 285.15 [246] | |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 0.950 [245] | 300.15 | 78 [245] | 298.15 | 0.153 [245] | 298.15 |

| $n$ | $T$ (K) | Parachor parameter | $T$ (K) | $\sigma$ (N/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.4434 [245] | 298 | 333.2 [245] | 300 | 0.0319 [245, 246] | 300.1 |

### 15127-65: 2-Methylpropylammonium formate

**Abbreviation**: [NHHH,$CH_2CH(CH_3)_2$][$HCO_2$]
**Molecular Formula**: $C_5H_{13}NO_2$
**Molar Mass**: 119.16
**Structure**:



**Character**:
**Application**:

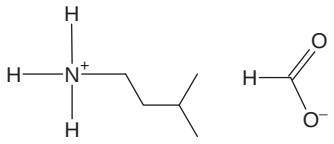
| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 299.15 [245] | 181.15 [245] |
| 299.15 [246] | |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 0.978 [245] | 300.15 | 225 [245] | 298.15 | 0.0699 [245] | 298.15 |

| $n$ | $T$ (K) | Parachor parameter | $T$ (K) | $\sigma$ (N/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.4434 [245] | 298 | 288.0 [245] | 300 | 0.0312 [245, 246] | 300.1 |

### 15128-65: 2-Methylbutylammonium formate

**Abbreviation**: $[NHHH,(CH_2)_2CH(CH_3)_2][HCO_2]$
**Molecular Formula**: $C_6H_{15}NO_2$
**Molar Mass**: 133.19
**Structure**:



**Character**:
**Application**:

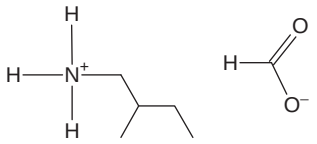
| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 272.15 [245, 246] | 178.15 [245] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 0.965 [245] | 300.15 | 229 [245] | 298.15 | 0.0858 [245] | 298.15 |

| $n$ | $T$ (K) | Parachor parameter | $T$ (K) | $\sigma$ (N/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.4462 [245] | 298 | 325.2 [245] | 300 | 0.0308 [245, 246] | 300.1 |

### 15129-65: 3-Methylbutylammonium formate

**Abbreviation**: $[NHHH,CH_2CH(CH_3)CH_2CH_3][HCO_2]$
**Molecular Formula**: $C_6H_{15}NO_2$
**Molar Mass**: 133.19
**Structure**:

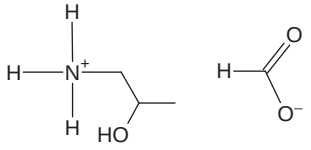


**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) |
|---|---|
| 320.15 [245] | 183.15 [245] |
| 320.15 [246] | |

### 15130-65: 2-Propanolammonium formate

**Abbreviation**: $[NHHH,CH_2CH(OH)CH_3][HCO_2]$
**Molecular Formula**: $C_4H_{11}NO_3$
**Molar Mass**: 121.14
**Structure**:



**Character**:
**Application**:

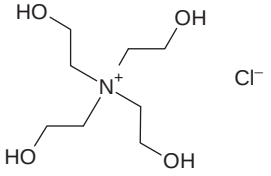
| $T_g$ (K) |
|---|
| 209.15 [245] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.144 [245] | 300.15 | 854 [245] | 298.15 | 0.049 [245] | 298.15 |

| $n$ | $T$ (K) | Parachor parameter | $T$ (K) |
|---|---|---|---|
| 1.4642 [245] | 298 | 276.1 [245] | 300 |

### 15131-11: Tetrakis (2-hydroxyethyl) ammonium chloride

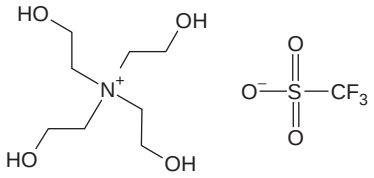
**Abbreviation**: $[N(CH_2CH_2OH)_4]Cl$
**Molecular Formula**: $C_8H_{20}ClNO_4$
**Molar Mass**: 229.7
**Structure**:



**Character**:
**Application**: [259]

### 15131-43: Tetrakis (2-hydroxyethyl) ammonium trifluoromethanesulfonate

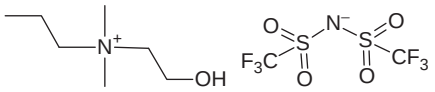
**Abbreviation**: $[N(CH_2CH_2OH)_4][NfO]$
**Molecular Formula**: $C_9H_{20}F_3NO_7S$
**Molar Mass**: 343.32
**Structure**:



**Character**:
**Application**: [259]

### 15132-31: Propylcholinium bis(trifluoromethanesulfonyl) amide

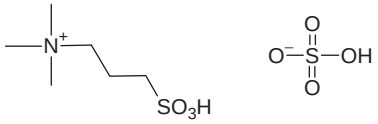
**Abbreviation**: $[N1132OH][NTf_2]$
**Molecular Formula**: $C_9H_{18}F_6N_2O_5S_2$
**Molar Mass**: 412.37
**Structure**:



**Character**:
**Application**: [260]

### 15133-421: 3-Trimethylammoniopropanesulfonic acid hydrosulfate

**Abbreviation**: $[N111,(CH_2)_3SO_3H][HSO_4]$
**Molecular Formula**: $C_6H_{17}NO_7S_2$
**Molar Mass**: 279.33
**Structure**:

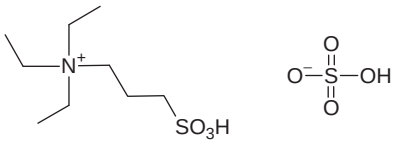


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 261.15 [261] |

### 15134-421: 3-Triethylammoniopropanesulfonic acid hydrosulfate

**Abbreviation**: $[N222,(CH_2)_3SO_3H][HSO_4]$
**Molecular Formula**: $C_9H_{23}NO_7S_2$
**Molar Mass**: 321.41
**Structure**:

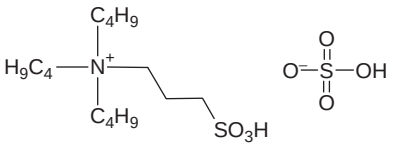


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 264.15 [261] |

### 15135-421: 3-tri-*n*-Butylammoniopropanesulfonic acid hydrosulfate

**Abbreviation**: $[N444,(CH_2)_3SO_3H][HSO_4]$
**Molecular Formula**: $C_{15}H_{35}NO_7S_2$
**Molar Mass**: 405.57
**Structure**:

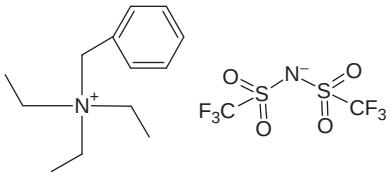


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 266.15 [261] |

### 15137-31: *N*-benzyl-*N*,*N*,*N*-triethylammonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: $[N222,CH_2Ph][NTf_2]$
**Molecular Formula**: $C_{15}H_{22}F_6N_2O_4S_2$
**Molar Mass**: 472.47
**Structure**:

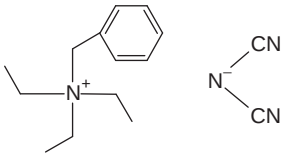


**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 221.42 [137] | >573.15 [137] |

### 15137-34: *N*-benzyl-*N*,*N*,*N*-triethylammonium dicyanoamide

**Abbreviation**: [N222,$CH_2$Ph][dca]
**Molecular Formula**: $C_{15}H_{22}N_4$
**Molar Mass**: 258.36
**Structure**:

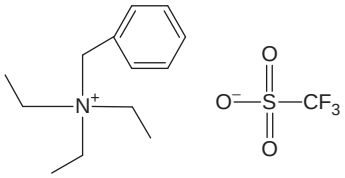


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 356.57 [137] | 509.15 [137] |

### 15137-43: *N*-benzyl-*N*,*N*,*N*-triethylammonium trifluoromethanesulfonate

**Abbreviation**: [N222,$CH_2$Ph][TfO]
**Molecular Formula**: $C_{14}H_{22}F_3NO_3S$
**Molar Mass**: 341.39
**Structure**:

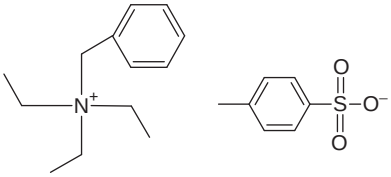


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 382.52 [137] | >573.15 [137] |

### 15137-47: *N*-benzyl-*N*,*N*,*N*-triethylammonium Tosylate

**Abbreviation**: [N222,$CH_2$Ph][Tos]
**Molecular Formula**: $C_{20}H_{29}NO_3S$
**Molar Mass**: 363.51
**Structure**:

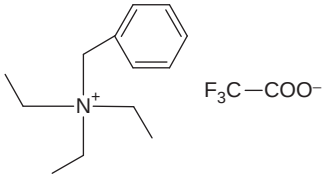


**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 224.45 [137] | 553.15 [137] |

### 15137-61: *N*-benzyl-*N*,*N*,*N*-triethylammonium trifluoroacetate

**Abbreviation**: [N222,$CH_2$Ph][$CF_3CO_2$]
**Molecular Formula**: $C_{15}H_{22}F_3NO_2$
**Molar Mass**: 305.34
**Structure**:



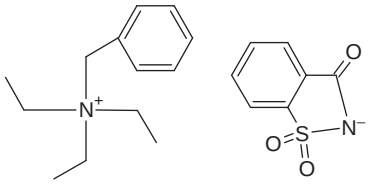
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 224.25 [137] | 472.15 [137] |

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 1616 [137] | 293.15 |

**15137-312: *N*-benzyl-*N*,*N*,*N*-triethylammonium Saccharinate**

**Abbreviation**: [N222,$CH_2$Ph][Sac]
**Molecular Formula**: $C_{20}H_{26}N_2O_3S$
**Molar Mass**: 374.5
**Structure**:

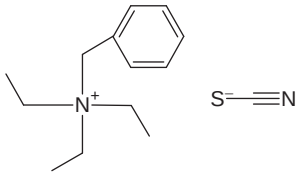


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 424.47 [137] | 482.15 [137] |

**15137-1503: *N*-benzyl-*N*,*N*,*N*-triethylammonium thiocyanate**

**Abbreviation**: [N222,$CH_2$Ph][SCN]
**Molecular Formula**: $C_{14}H_{22}N_2S$
**Molar Mass**: 250.40
**Structure**:

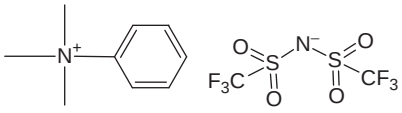


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 360.97 [137] | 361.15 [137] |

**15138-31: *N*-phenyl-*N*,*N*,*N*-trimethylammonium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: [N111,Ph][$NTf_2$]
**Molecular Formula**: $C_{11}H_{14}F_6N_2O_4S_2$
**Molar Mass**: 416.36
**Structure**:



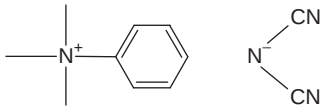
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 215.14 [137] | >573.15 [137] |

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 210 [137] | 293.15 |

**15138-34: *N*-phenyl-*N*,*N*,*N*-trimethylammonium dicyanoamide**

**Abbreviation**: [N111,Ph][dca]
**Molecular Formula**: $C_{11}H_{14}N_4$
**Molar Mass**: 202.26
**Structure**:

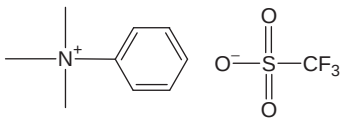


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 390.52 [137] | 468.15 [137] |

**15138-43: *N*-phenyl-*N*,*N*,*N*-trimethylammonium trifluoromethanesulfonate**

**Abbreviation**: [N111,Ph][TfO]
**Molecular Formula**: $C_{10}H_{14}F_3NO_3S$
**Molar Mass**: 285.28
**Structure**:

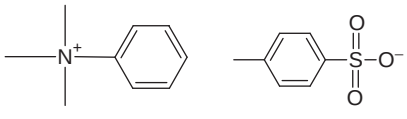


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 356.12 [137] | >573.15 [137] |

**15138-47: *N*-phenyl-*N*,*N*,*N*-trimethylammonium Tosylate**

**Abbreviation**: [N111,Ph][Tos]
**Molecular Formula**: $C_{16}H_{21}NO_3S$
**Molar Mass**: 307.41
**Structure**:

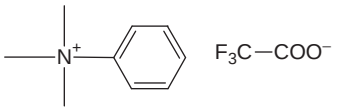


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 422.78 [137] | 548.15 [137] |

### 15138-61: *N*-phenyl-*N*,*N*,*N*-trimethylammonium trifluoroacetate

**Abbreviation**: [N111,Ph][$CF_3CO_2$]
**Molecular Formula**: $C_{11}H_{14}F_3NO_2$
**Molar Mass**: 249.23
**Structure**:

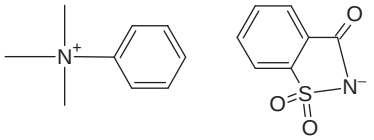


**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 204.58 [137] | 455.15 [137] |

### 15138-312: *N*-phenyl-*N*,*N*,*N*-trimethylammonium Saccharinate

**Abbreviation**: [N111,Ph][Sac]
**Molecular Formula**: $C_{16}H_{18}N_2O_3S$
**Molar Mass**: 318.39
**Structure**:

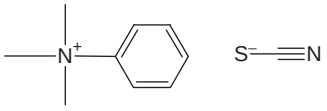


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 466.68 [137] | >573.15 [137] |

### 15138-1503: *N*-phenyl-*N*,*N*,*N*-trimethylammonium thiocyanate

**Abbreviation**: [N111,Ph][SCN]
**Molecular Formula**: $C_{10}H_{14}N_2S$
**Molar Mass**: 194.30
**Structure**:

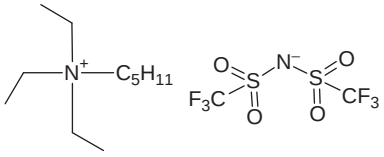


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 389.3 [137] | 389.15 [137] |

### 15139-31: Triethylamylammonium bis((trifluoromethyl) sulfonyl)imide

**Abbreviation**: [N2225][$NTf_2$]
**Molecular Formula**: $C_{13}H_{26}F_6N_2O_4S_2$
**Molar Mass**: 452.48
**Structure**:



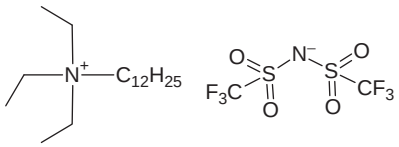
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| < 223.15 [236] | 658.15 [236] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.33 [236] | 298.15 | 172 [236] | 298.15 | 0.098 [236] | 298.15 |

### 15140-31: Triethyldodecylammonium bis ((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [N222,12][$NTf_2$]
**Molecular Formula**: $C_{20}H_{40}F_6N_2O_4S_2$
**Molar Mass**: 550.66
**Structure**:



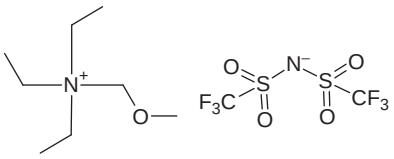
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 280.15 [236] | 663.15 [236] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.22 [236] | 298.15 | 316 [236] | 298.15 | 0.019 [236] | 298.15 |

### 15141-31: Triethyl(methoxymethyl)ammonium bis ((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [N222,1O1][$NTf_2$]
**Molecular Formula**: $C_{10}H_{20}F_6N_2O_5S_2$
**Molar Mass**: 426.39
**Structure**:



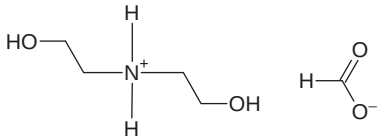
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 270.15 [236] | 560.15 [236] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.44 [236] | 298.15 | 69 [236] | 298.15 | 0.3 [236] | 298.15 |

### 15142-65: 2-Hydroxy diethylammonium formate

**Abbreviation**: [2-HDEA][HCOO]
**Molecular Formula**: $C_5H_{13}NO_4$
**Molar Mass**: 151.16
**Structure**:



**Character**:
**Application**:

| $\rho$ (g/cm$^3$) | $T$ (K) | $\rho$ (g/cm$^3$) | $T$ (K) | $\rho$ (g/cm$^3$) | $T$ (K) | $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1.194041 [249] | 198.148 | 1.196455 [249] | 294.397 | 1.185743 [249] | 310.897 | 1.174248 [249] | 328.149 |
| 1.207250 [249] | 278.153 | 1.196296 [249] | 294.647 | 1.185575 [249] | 311.148 | 1.174079 [249] | 328.399 |
| 1.207096 [249] | 278.398 | 1.196138 [249] | 294.897 | 1.185413 [249] | 311.399 | 1.173908 [249] | 328.649 |
| 1.206928 [249] | 278.645 | 1.195977 [249] | 295.146 | 1.185215 [249] | 311.647 | 1.173737 [249] | 328.899 |
| 1.206764 [249] | 278.894 | 1.195819 [249] | 295.396 | 1.185086 [249] | 311.897 | 1.173566 [249] | 329.149 |
| 1.206595 [249] | 279.143 | 1.195653 [249] | 295.647 | 1.184922 [249] | 312.148 | 1.173226 [249] | 329.648 |
| 1.206429 [249] | 279.398 | 1.195495 [249] | 295.897 | 1.184428 [249] | 312.898 | 1.173052 [249] | 329.899 |
| 1.206263 [249] | 279.647 | 1.195335 [249] | 296.146 | 1.184263 [249] | 313.147 | 1.172885 [249] | 330.149 |
| 1.206098 [249] | 279.896 | 1.195176 [249] | 296.397 | 1.184098 [249] | 313.398 | 1.172712 [249] | 330.4 |
| 1.205932 [249] | 280.146 | 1.195012 [249] | 296.647 | 1.183936 [249] | 313.649 | 1.172539 [249] | 330.648 |
| 1.205766 [249] | 280.397 | 1.194853 [249] | 296.897 | 1.183770 [249] | 313.897 | 1.172199 [249] | 331.15 |
| 1.205430 [249] | 280.896 | 1.194689 [249] | 297.145 | 1.183605 [249] | 314.148 | 1.172025 [249] | 331.399 |
| 1.205262 [249] | 281.145 | 1.194529 [249] | 297.398 | 1.183441 [249] | 314.398 | 1.171853 [249] | 331.648 |
| 1.205098 [249] | 281.395 | 1.194365 [249] | 297.647 | 1.183277 [249] | 314.648 | 1.17047 [249] | 333.651 |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\rho$ (g/cm$^3$) | $T$ (K) | $\rho$ (g/cm$^3$) | $T$ (K) | $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1.204932 [249] | 281.645 | 1.194211 [249] | 297.897 | 1.183111 [249] | 314.898 | 1.170294 [249] | 333.899 |
| 1.204763 [249] | 281.896 | 1.194041 [249] | 298.15 | 1.182944 [249] | 315.148 | 1.170124 [249] | 334.149 |
| 1.204596 [249] | 282.145 | 1.193889 [249] | 298.398 | 1.182779 [249] | 315.397 | 1.169947 [249] | 334.399 |
| 1.204429 [249] | 282.395 | 1.193724 [249] | 298.647 | 1.182618 [249] | 315.648 | 1.169774 [249] | 334.65 |
| 1.204263 [249] | 282.646 | 1.193563 [249] | 298.897 | 1.182447 [249] | 315.897 | 1.169602 [249] | 334.899 |
| 1.204097 [249] | 282.895 | 1.193403 [249] | 299.148 | 1.182282 [249] | 316.148 | 1.169423 [249] | 335.149 |
| 1.203931 [249] | 283.143 | 1.193240 [249] | 299.397 | 1.182120 [249] | 316.398 | 1.170250 [249] | 335.399 |
| 1.203761 [249] | 283.395 | 1.193072 [249] | 299.648 | 1.181953 [249] | 316.646 | 1.170072 [249] | 335.649 |
| 1.203596 [249] | 283.645 | 1.192914 [249] | 299.897 | 1.181787 [249] | 316.898 | 1.170897 [249] | 335.898 |
| 1.203428 [249] | 283.894 | 1.192754 [249] | 300.148 | 1.181622 [249] | 317.147 | 1.177724 [249] | 336.147 |
| 1.203261 [249] | 284.144 | 1.192595 [249] | 300.397 | 1.181457 [249] | 317.397 | 1.169546 [249] | 336.398 |
| 1.203095 [249] | 284.395 | 1.192428 [249] | 300.648 | 1.181290 [249] | 317.648 | 1.172369 [249] | 336.65 |
| 1.202928 [249] | 284.646 | 1.192269 [249] | 300.898 | 1.181123 [249] | 317.898 | 1.169195 [249] | 336.889 |
| 1.202763 [249] | 284.897 | 1.192106 [249] | 301.148 | 1.180960 [249] | 318.148 | 1.168016 [249] | 337.149 |
| 1.202594 [249] | 285.146 | 1.191946 [249] | 301.397 | 1.180791 [249] | 318.398 | 1.167838 [249] | 337.4 |
| 1.202428 [249] | 285.396 | 1.191779 [249] | 301.645 | 1.180625 [249] | 318.648 | 1.167660 [249] | 337.649 |
| 1.202258 [249] | 285.647 | 1.191616 [249] | 301.898 | 1.180461 [249] | 318.897 | 1.167485 [249] | 337.898 |
| 1.202093 [249] | 285.897 | 1.191456 [249] | 302.146 | 1.180293 [249] | 319.148 | 1.167306 [249] | 338.148 |
| 1.201421 [249] | 286.895 | 1.191295 [249] | 302.397 | 1.180128 [249] | 319.398 | 1.205596 [249] | 280645 |
| 1.201254 [249] | 287.145 | 1.191134 [249] | 302.647 | 1.179965 [249] | 319.648 | 1.189346 [249] | 305397 |
| 1.201085 [249] | 287.396 | 1.190966 [249] | 302.897 | 1.179795 [249] | 319.898 | 1.189178 [249] | 305647 |
| 1.200919 [249] | 287.647 | 1.190807 [249] | 303.148 | 1.179628 [249] | 320.149 | 1.189012 [249] | 305897 |
| 1.200751 [249] | 287.895 | 1.190645 [249] | 303.397 | 1.179459 [249] | 320.397 | 1.188850 [249] | 306148 |
| 1.200583 [249] | 288.146 | 1.190481 [249] | 303.648 | 1.179294 [249] | 320.649 | 1.178462 [249] | .321.897 |
| 1.200415 [249] | 288.396 | 1.190318 [249] | 303.898 | 1.179128 [249] | 320.898 | 1.178293 [249] | .322.147 |
| 1.200248 [249] | 288.645 | 1.190159 [249] | 304.147 | 1.178961 [249] | 321.148 | 1.178124 [249] | .322.398 |
| 1.200079 [249] | 288.896 | 1.189991 [249] | 304.397 | 1.178792 [249] | 321.399 | 1.177958 [249] | .322.649 |
| 1.199912 [249] | 289.146 | 1.189827 [249] | 304.648 | 1.178624 [249] | 321.648 | 1.177790 [249] | .322.899 |
| 1.199575 [249] | 289.647 | 1.189665 [249] | 304.897 | 1.177621 [249] | 323.148 | 1.175942 [249] | .325.649 |
| 1.199407 [249] | 289.896 | 1.189506 [249] | 305.148 | 1.177455 [249] | 323.398 | 1.201924 [249] | 286.146 |
| 1.199239 [249] | 290.146 | 1.188692 [249] | 306.397 | 1.177289 [249] | 323.649 | 1.201757 [249] | 286.395 |
| 1.199069 [249] | 290.395 | 1.188527 [249] | 306.647 | 1.177123 [249] | 323.898 | 1.201589 [249] | 286.647 |
| 1.198902 [249] | 290.647 | 1.188361 [249] | 306.897 | 1.176950 [249] | 324.147 | 1.199742 [249] | 289.396 |
| 1.198735 [249] | 290.897 | 1.188200 [249] | 307.147 | 1.176781 [249] | 324.398 | 1.187216 [249] | 308.648 |
| 1.198567 [249] | 291.147 | 1.188037 [249] | 307.397 | 1.17614 [249] | 324.648 | 1.184759 [249] | 312.397 |
| 1.198397 [249] | 291.397 | 1.187875 [249] | 307.647 | 1.176448 [249] | 324.898 | 1.184593 [249] | 312.648 |
| 1.198230 [249] | 291.647 | 1.187709 [249] | 307.898 | 1.176280 [249] | 325.148 | 1.173398 [249] | 329.399 |
| 1.198060 [249] | 291.896 | 1.187545 [249] | 308.146 | 1.176111 [249] | 325.398 | 1.172371 [249] | 330.898 |
| 1.197893 [249] | 292.146 | 1.187384 [249] | 308.399 | 1.175771 [249] | 325.898 | 1.171683 [249] | 331.899 |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\rho$ (g/cm$^3$) | $T$ (K) | $\rho$ (g/cm$^3$) | $T$ (K) | $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1.197728 [249] | 292.396 | 1.187053 [249] | 308.898 | 1.175605 [249] | 326.148 | 1.171510 [249] | 332.149 |
| 1.197569 [249] | 292.647 | 1.186891 [249] | 309.147 | 1.175433 [249] | 326.398 | 1.171336 [249] | 332.399 |
| 1.197415 [249] | 292.896 | 1.186725 [249] | 309.398 | 1.175266 [249] | 326.649 | 1.171163 [249] | 332.650 |
| 1.197254 [249] | 293.147 | 1.186561 [249] | 309.647 | 1.175096 [249] | 326.898 | 1.170991 [249] | 332.898 |
| 1.197094 [249] | 293.397 | 1.186398 [249] | 309.897 | 1.174928 [249] | 327.148 | 1.170816 [249] | 333.149 |
| 1.196937 [249] | 293.647 | 1.186236 [249] | 310.148 | 1.174757 [249] | 327.399 | 1.170646 [249] | 333.398 |
| 1.196776 [249] | 293.896 | 1.186071 [249] | 310.398 | 1.174587 [249] | 327.647 | | |
| 1.196617 [249] | 294.147 | 1.185907 [249] | 310.647 | 1.174417 [249] | 327.897 | | |

| $K$ (S/m) | $T$ (K) | $K$ (S/m) | $T$ (K) | $K$ (S/m) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 0.045276 [249] | 278.15 | 0.097317 [249] | 298.15 | 0.170775 [249] | 318.15 | 0.23958 [249] | 338.15 |
| 0.067617 [249] | 288.15 | 0.131472 [249] | 308.15 | 0.21087 [249] | 328.15 | | |

| $u_s$ (m/s) | $T$ (K) | $u_s$ (m/s) | $T$ (K) | $u_s$ (m/s) | $T$ (K) | $u_s$ (m/s) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1723.99 [249] | 228 | 1815.03 [249] | 291 | 1777.74 [249] | 306 | 1739.73 [249] | 322 |
| 1723.35 [249] | 228 | 1814.40 [249] | 291 | 1777.13 [249] | 306 | 1739.12 [249] | 322 |
| 1722.72 [249] | 228 | 1812.48 [249] | 292 | 1776.53 [249] | 307 | 1738.50 [249] | 322 |
| 1722.08 [249] | 229 | 1811.83 [249] | 292 | 1775.91 [249] | 307 | 1737.87 [249] | 322 |
| 1721.46 [249] | 229 | 1813.76 [249] | 292 | 1775.30 [249] | 307 | 1736.00 [249] | 323 |
| 1720.80 [249] | 229 | 1813.12 [249] | 292 | 1774.69 [249] | 307 | 1736.63 [249] | 323 |
| 1720.15 [249] | 229 | 1810.56 [249] | 293 | 1767.37 [249] | 308 | 1735.37 [249] | 323 |
| 1850.24 [249] | 278 | 1811.20 [249] | 293 | 1768.60 [249] | 308 | 1737.25 [249] | 323 |
| 1849.50 [249] | 278 | 1809.92 [249] | 293 | 1774.09 [249] | 308 | 1734.74 [249] | 324 |
| 1851.77 [249] | 278 | 1809.26 [249] | 293 | 1773.48 [249] | 308 | 1734.11 [249] | 324 |
| 1850.97 [249] | 278 | 1808.61 [249] | 294 | 1771.65 [249] | 309 | 1733.47 [249] | 324 |
| 1848.72 [249] | 279 | 1807.97 [249] | 294 | 1769.82 [249] | 309 | 1732.85 [249] | 324 |
| 1846.49 [249] | 279 | 1807.32 [249] | 294 | 1770.43 [249] | 309 | 1732.21 [249] | 325 |
| 1847.20 [249] | 279 | 1806.66 [249] | 294 | 1771.04 [249] | 309 | 1731.58 [249] | 325 |
| 1847.90 [249] | 279 | 1805.38 [249] | 295 | 1772.26 [249] | 310 | 1730.95 [249] | 325 |
| 1843.66 [249] | 280 | 1804.76 [249] | 295 | 1769.20 [249] | 310 | 1730.32 [249] | 325 |
| 1845.06 [249] | 280 | 1804.12 [249] | 295 | 1767.99 [249] | 310 | 1727.78 [249] | 326 |
| 1845.77 [249] | 280 | 1806.02 [249] | 295 | 1766.15 [249] | 311 | 1729.68 [249] | 326 |
| 1844.35 [249] | 280 | 1803.50 [249] | 296 | 1772.87 [249] | 311 | 1729.05 [249] | 326 |
| 1842.96 [249] | 281 | 1802.87 [249] | 296 | 1766.76 [249] | 311 | 1728.41 [249] | 326 |
| 1842.24 [249] | 281 | 1802.25 [249] | 296 | 1765.54 [249] | 311 | 1727.15 [249] | 327 |
| 1840.87 [249] | 281 | 1801.63 [249] | 296 | 1763.71 [249] | 312 | 1726.52 [249] | 327 |
| 1841.56 [249] | 281 | 1799.77 [249] | 297 | 1763.09 [249] | 312 | 1724.62 [249] | 328 |

| $u_s$ (m/s) | $T$ (K) | $u_s$ (m/s) | $T$ (K) | $u_s$ (m/s) | $T$ (K) | $u_s$ (m/s) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1838.77 [249] | 282 | 1800.39 [249] | 297 | 1762.48 [249] | 312 | 1719.50 [249] | 330 |
| 1839.48 [249] | 282 | 1801.02 [249] | 297 | 1764.32 [249] | 312 | 1718.85 [249] | 330 |
| 1838.10 [249] | 282 | 1799.17 [249] | 297 | 1761.87 [249] | 313 | 1717.21 [249] | 330 |
| 1840.18 [249] | 282 | 1798.54 [249] | 298 | 1761.26 [249] | 313 | 1725.54 [249] | 330 |
| 1837.43 [249] | 283 | 1797.92 [249] | 298 | 1760.64 [249] | 313 | 1715.58 [249] | 331 |
| 1836.72 [249] | 283 | 1797.31 [249] | 298 | 1760.03 [249] | 313 | 1716.88 [249] | 331 |
| 1836.04 [249] | 283 | 1796.69 [249] | 298 | 1759.42 [249] | 314 | 1716.23 [249] | 331 |
| 1835.36 [249] | 283 | 1798.54 [249] | 298.1 | 1758.81 [249] | 314 | 1714.92 [249] | 331 |
| 1834.65 [249] | 284 | 1795.46 [249] | 299 | 1758.20 [249] | 314 | 1714.26 [249] | 332 |
| 1833.93 [249] | 284 | 1794.84 [249] | 299 | 1757.58 [249] | 314 | 1713.60 [249] | 332 |
| 1833.29 [249] | 284 | 1794.23 [249] | 299 | 1755.75 [249] | 315 | 1712.95 [249] | 332 |
| 1832.62 [249] | 284 | 1796.07 [249] | 299 | 1755.13 [249] | 315 | 1712.28 [249] | 332 |
| 1831.96 [249] | 285 | 1793.62 [249] | 300 | 1756.97 [249] | 315 | 1711.61 [249] | 333 |
| 1831.29 [249] | 285 | 1793.00 [249] | 300 | 1756.36 [249] | 315 | 1710.94 [249] | 333 |
| 1830.61 [249] | 285 | 1792.39 [249] | 300 | 1753.29 [249] | 316 | 1710.26 [249] | 333 |
| 1829.97 [249] | 285 | 1791.77 [249] | 300 | 1754.52 [249] | 316 | 1709.58 [249] | 333 |
| 1827.98 [249] | 286 | 1791.16 [249] | 301 | 1753.91 [249] | 316 | 1706.90 [249] | 334 |
| 1829.30 [249] | 286 | 1789.94 [249] | 301 | 1752.68 [249] | 316 | 1708.92 [249] | 334 |
| 1828.65 [249] | 286 | 1789.33 [249] | 301 | 1752.06 [249] | 317 | 1708.24 [249] | 334 |
| 1827.35 [249] | 286 | 1790.55 [249] | 301 | 1751.44 [249] | 317 | 1707.57 [249] | 334 |
| 1826.68 [249] | 287 | 1788.72 [249] | 302 | 1750.83 [249] | 317 | 1704.18 [249] | 335 |
| 1826.02 [249] | 287 | 1788.11 [249] | 302 | 1750.21 [249] | 317 | 1704.86 [249] | 335 |
| 1825.36 [249] | 287 | 1787.50 [249] | 302 | 1749.60 [249] | 318 | 1706.22 [249] | 335 |
| 1824.72 [249] | 287 | 1786.88 [249] | 302 | 1748.99 [249] | 318 | 1705.54 [249] | 335 |
| 1822.76 [249] | 288 | 1786.27 [249] | 303 | 1748.37 [249] | 318 | 1703.51 [249] | 336 |
| 1822.12 [249] | 288 | 1785.67 [249] | 303 | 1747.75 [249] | 318 | 1702.81 [249] | 336 |
| 1824.08 [249] | 288 | 1785.05 [249] | 303 | 1747.14 [249] | 319 | 1702.12 [249] | 336 |
| 1823.41 [249] | 288 | 1784.45 [249] | 303 | 1746.51 [249] | 319 | 1701.43 [249] | 336 |
| 1821.48 [249] | 289 | 1782.01 [249] | 304 | 1745.90 [249] | 319 | 1700.75 [249] | 337 |
| 1820.81 [249] | 289 | 1783.83 [249] | 304 | 1745.29 [249] | 319 | 1700.05 [249] | 337 |
| 1820.18 [249] | 289 | 1783.22 [249] | 304 | 1744.06 [249] | 320 | 1699.35 [249] | 337 |
| 1819.53 [249] | 289 | 1782.61 [249] | 304 | 1742.83 [249] | 320 | 1698.67 [249] | 337 |
| 1818.89 [249] | 290 | 1780.17 [249] | 305 | 1744.67 [249] | 320 | 1725.89 [249] | 337 |
| 1818.23 [249] | 290 | 1779.55 [249] | 305 | 1743.44 [249] | 320 | 1725.26 [249] | 337 |
| 1817.59 [249] | 290 | 1780.80 [249] | 305 | 1742.21 [249] | 321 | 1697.99 [249] | 338 |
| 1816.95 [249] | 290 | 1781.40 [249] | 305 | 1741.59 [249] | 321 | | |
| 1816.31 [249] | 291 | 1778.95 [249] | 306 | 1740.97 [249] | 321 | | |
| 1815.67 [249] | 291 | 1778.34 [249] | 306 | 1740.36 [249] | 321 | | |

| $K_s$ (T·Pa$^{-1}$) | $T$ (K) | $K_s$ (T·Pa$^{-1}$) | $T$ (K) | $K_s$ (T·Pa$^{-1}$) | $T$ (K) | $K_s$ (T·Pa$^{-1}$) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 241.56 [249] | 278.153 | 252.91 [249] | 291.147 | 270.89 [249] | 311.897 | 284.07 [296] | 325.898 |
| 241.80 [249] | 278.398 | 253.12 [249] | 291.397 | 271.12 [249] | 312.148 | 284.32 [249] | 326.148 |
| 242.03 [249] | 278.645 | 253.33 [249] | 291.647 | 271.34 [249] | 312.397 | 284.57 [249] | 326.398 |
| 242.25 [249] | 278.894 | 253.55 [249] | 291.896 | 271.57 [249] | 312.648 | 284.82 [249] | 326.649 |
| 242.49 [249] | 279.143 | 253.76 [249] | 292.146 | 271.80 [249] | 312.898 | 285.07 [249] | 326.898 |
| 242.74 [249] | 279.398 | 253.97 [249] | 292.396 | 272.02 [249] | 313.147 | 285.32 [249] | 327.148 |
| 242.96 [249] | 279.647 | 254.19 [249] | 292.647 | 272.25 [249] | 313.398 | 285.57 [249] | 327.399 |
| 243.18 [249] | 279.896 | 254.40 [249] | 292.896 | 272.48 [249] | 313.649 | 285.82 [249] | 327.647 |
| 243.40 [249] | 280.146 | 254.61 [249] | 293.147 | 272.70 [249] | 313.897 | 286.07 [249] | 327.897 |
| 243.62 [249] | 280.397 | 255.04 [249] | 293.647 | 272.93 [249] | 314.148 | 286.32 [249] | 328.149 |
| 243.84 [249] | 280.645 | 255.26 [249] | 293.896 | 273.16 [249] | 314.398 | 286.57 [249] | 328.399 |
| 244.06 [249] | 280.896 | 255.48 [249] | 294.147 | 273.39 [249] | 314.648 | 286.83 [249] | 328.649 |
| 244.28 [249] | 281.145 | 255.69 [249] | 294.397 | 273.62 [249] | 314.898 | 287.08 [249] | 328.899 |
| 244.50 [249] | 281.395 | 255.91 [249] | 294.647 | 273.85 [249] | 315.148 | 287.33 [249] | 329.149 |
| 244.72 [249] | 281.645 | 256.13 [249] | 294.897 | 274.07 [249] | 315.397 | 287.58 [249] | 329.399 |
| 244.94 [249] | 281.896 | 256.35 [249] | 295.146 | 274.30 [249] | 315.648 | 287.84 [249] | 329.648 |
| 277.33 [249] | 281.897 | 256.56 [249] | 295.396 | 274.54 [249] | 315.897 | 288.10 [249] | 329.899 |
| 245.15 [249] | 282.145 | 256.78 [249] | 295.647 | 274.77 [249] | 316.148 | 288.36 [249] | 330.149 |
| 245.37 [249] | 282.395 | 256.99 [249] | 295.897 | 274.99 [249] | 316.398 | 288.62 [249] | 330.4 |
| 245.60 [249] | 282.646 | 257.20 [249] | 296.146 | 275.23 [249] | 316.646 | 288.88 [249] | 330.648 |
| 245.81 [249] | 282.895 | 257.42 [249] | 296.397 | 275.46 [249] | 316.898 | 289.15 [249] | 330.898 |
| 246.02 [249] | 283.143 | 257.63 [249] | 296.647 | 275.69 [249] | 317.147 | 289.41 [249] | 331.15 |
| 246.25 [249] | 283.395 | 257.84 [249] | 296.897 | 275.93 [249] | 317.397 | 289.68 [249] | 331.399 |
| 246.46 [249] | 283.645 | 258.05 [249] | 297.145 | 276.16 [249] | 317.648 | 289.94 [249] | 331.648 |
| 246.68 [249] | 283.894 | 258.27 [249] | 297.398 | 276.39 [249] | 317.898 | 290.20 [249] | 331.899 |
| 246.91 [249] | 284.144 | 258.48 [249] | 297.647 | 276.62 [249] | 318.148 | 290.47 [249] | 332.149 |
| 247.14 [249] | 284.395 | 259.12 [249] | 298.398 | 276.85 [249] | 318.398 | 290.74 [249] | 332.399 |
| 247.34 [249] | 284.646 | 261.68 [249] | 301.397 | 277.09 [249] | 318.648 | 291.00 [249] | 332.65 |
| 247.56 [249] | 284.897 | 264.92 [249] | 305.148 | 277.56 [249] | 319.148 | 291.27 [249] | 332.898 |
| 247.77 [249] | 285.146 | 265.36 [249] | 305.647 | 277.80 [249] | 319.398 | 291.54 [249] | 333.149 |
| 247.99 [249] | 285.396 | 265.58 [249] | 305.897 | 278.03 [249] | 319.648 | 291.81 [249] | 333.398 |
| 248.21 [249] | 285.647 | 265.79 [249] | 306.148 | 278.26 [249] | 319.898 | 292.09 [249] | 333.651 |
| 248.41 [249] | 285.897 | 266.01 [249] | 306.397 | 278.50 [249] | 320.149 | 292.37 [249] | 333.899 |
| 248.63 [249] | 286.146 | 266.23 [249] | 306.647 | 278.74 [249] | 320.397 | 292.63 [249] | 334.149 |
| 248.84 [249] | 286.395 | 266.45 [249] | 306.897 | 278.97 [249] | 320.649 | 292.91 [249] | 334.399 |
| 249.27 [249] | 286.895 | 266.66 [249] | 307.147 | 279.21 [249] | 320.898 | 293.18 [249] | 334.65 |
| 249.48 [249] | 287.145 | 266.89 [249] | 307.397 | 279.45 [249] | 321.148 | 293.46 [249] | 334.899 |
| 249.06 [249] | 287.145 | 267.11 [249] | 307.647 | 279.69 [249] | 321.399 | 293.74 [249] | 335.149 |

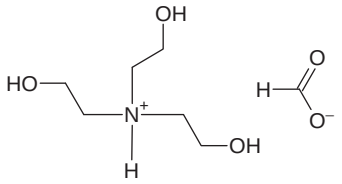
| $K_s$ (T·Pa$^{-1}$) | $T$ (K) | $K_s$ (T·Pa$^{-1}$) | $T$ (K) | $K_s$ (T·Pa$^{-1}$) | $T$ (K) | $K_s$ (T·Pa$^{-1}$) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 249.70 [249] | 287.396 | 267.33 [249] | 307.898 | 279.93 [249] | 321.648 | 294.01 [249] | 335.399 |
| 296.85 [249] | 287.396 | 267.55 [249] | 308.146 | 280.16 [249] | 321.897 | 294.29 [249] | 335.649 |
| 249.91 [249] | 287.647 | 267.77 [249] | 308.399 | 280.40 [249] | 322.147 | 294.57 [249] | 335.898 |
| 250.12 [249] | 287.895 | 267.99 [249] | 308.648 | 280.64 [249] | 322.398 | 295.70 [249] | 335.899 |
| 250.33 [249] | 288.146 | 268.21 [249] | 308.898 | 280.88 [249] | 322.649 | 294.857 [249] | 336.14 |
| 250.55 [249] | 288.396 | 268.43 [249] | 309.147 | 281.36 [249] | 323.148 | 295.14 [249] | 336.398 |
| 250.77 [249] | 288.645 | 268.65 [249] | 309.398 | 281.61 [249] | 323.398 | 295.42 [249] | 336.65 |
| 250.98 [249] | 288.896 | 268.88 [249] | 309.647 | 281.85 [249] | 323.649 | 295.99 [249] | 337.149 |
| 251.19 [249] | 289.146 | 269.10 [249] | 309.897 | 282.09 [249] | 323.898 | 296.27 [249] | 337.4 |
| 251.41 [249] | 289.396 | 269.32 [249] | 310.148 | 282.34 [249] | 324.147 | 296.56 [249] | 337.649 |
| 251.62 [249] | 289.647 | 269.54 [249] | 310.398 | 282.59 [249] | 324.398 | 297.13 [249] | 338.148 |
| 251.83 [249] | 289.896 | 269.77 [249] | 310.647 | 282.84 [249] | 324.648 | 254.83 [249] | 293.397 |
| 252.05 [249] | 290.146 | 269.99 [249] | 310.897 | 283.08 [249] | 324.898 | 281.12 [249] | 337.898 |
| 252.27 [249] | 290.395 | 270.22 [249] | 311.148 | 283.33 [249] | 325.148 | | |
| 252.48 [249] | 290.647 | 270.44 [249] | 311.399 | 283.57 [249] | 325.398 | | |
| 252.69 [249] | 290.897 | 270.67 [249] | 311.647 | 283.82 [249] | 325.649 | | |

| 1000$\alpha$ (K$^{-1}$) | $T$ (K) | 1000$\alpha$ (K$^{-1}$) | $T$ (K) | 1000$\alpha$ (K$^{-1}$) | $T$ (K) | 1000$\alpha$ (K$^{-1}$) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 0.5686 [249] | 278.153 | 0.5462 [249] | 293.397 | 0.5494 [249] | 308.399 | 0.5788 [249] | 323.898 |
| 0.5680 [249] | 278.398 | 0.5461 [249] | 293.647 | 0.5496 [249] | 308.648 | 0.5802 [249] | 324.147 |
| 0.5674 [249] | 278.645 | 0.5459 [249] | 293.896 | 0.5499 [249] | 308.898 | 0.5795 [249] | 324.398 |
| 0.5669 [249] | 278.894 | 0.5458 [249] | 294.147 | 0.5502 [249] | 309.147 | 0.5809 [249] | 324.648 |
| 0.5663 [249] | 279.143 | 0.5457 [249] | 294.397 | 0.5505 [249] | 309.398 | 0.5816 [249] | 324.898 |
| 0.5658 [249] | 279.398 | 0.5455 [249] | 294.647 | 0.5508 [249] | 309.647 | 0.5823 [249] | 325.148 |
| 0.5652 [249] | 279.647 | 0.5454 [249] | 294.897 | 0.5511 [249] | 309.897 | 0.5831 [249] | 325.398 |
| 0.5647 [249] | 279.897 | 0.5453 [249] | 295.146 | 0.5514 [249] | 310.148 | 0.5838 [249] | 325.649 |
| 0.5642 [249] | 280.146 | 0.5452 [249] | 295.396 | 0.5517 [249] | 310.398 | 0.5846 [249] | 325.898 |
| 0.5637 [249] | 280.397 | 0.5451 [249] | 295.647 | 0.5520 [249] | 310.647 | 0.5853 [249] | 326.148 |
| 0.5632 [249] | 280.645 | 0.5450 [249] | 295.897 | 0.5523 [249] | 310.897 | 0.5861 [249] | 326.398 |
| 0.5627 [249] | 280.896 | 0.5449 [249] | 296.146 | 0.5527 [249] | 311.148 | 0.5876 [249] | 326.398 |
| 0.5622 [249] | 281.145 | 0.5447 [249] | 296.397 | 0.5530 [249] | 311.399 | 0.5868 [249] | 326.649 |
| 0.5617 [249] | 281.395 | 0.5447 [249] | 296.647 | 0.5533 [249] | 311.647 | 0.5884 [249] | 327.148 |
| 0.5612 [249] | 281.645 | 0.5447 [249] | 296.897 | 0.5637 [249] | 311.897 | 0.5891 [249] | 327.399 |
| 0.5607 [249] | 281.896 | 0.5447 [249] | 297.145 | 0.5541 [249] | 312.148 | 0.5899 [249] | 327.647 |
| 0.5602 [249] | 282.145 | 0.5446 [249] | 297.398 | 0.5544 [249] | 312.397 | 0.5907 [249] | 327.897 |
| 0.5598 [249] | 282.395 | 0.5446 [249] | 297.647 | 0.5548 [249] | 312.648 | 0.5915 [249] | 328.149 |
| 0.5593 [249] | 282.646 | 0.5446 [249] | 297.897 | 0.5552 [249] | 312.898 | 0.5923 [249] | 328.399 |
| 0.5589 [249] | 282.895 | 0.5445 [249] | 298.148 | 0.5556 [249] | 313.147 | 0.5932 [249] | 328.649 |
| 0.5584 [249] | 283.143 | 0.5445 [249] | 298.398 | 0.5560 [249] | 313.398 | 0.5940 [249] | 328.899 |

| $1000\alpha$ ($K^{-1}$) | $T$ (K) | $1000\alpha$ ($K^{-1}$) | $T$ (K) | $1000\alpha$ ($K^{-1}$) | $T$ (K) | $1000\alpha$ ($K^{-1}$) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 0.5580 [249] | 283.395 | 0.5464 [249] | 298.647 | 0.5564 [249] | 313.649 | 0.5948 [249] | 329.149 |
| 0.5576 [249] | 283.645 | 0.5445 [249] | 298.897 | 0.5568 [249] | 313.897 | 0.5957 [249] | 329.399 |
| 0.5571 [249] | 283.894 | 0.5445 [249] | 299.148 | 0.5572 [249] | 314.148 | 0.5965 [249] | 329.648 |
| 0.5567 [249] | 284.144 | 0.5445 [249] | 299.397 | 0.5576 [249] | 314.398 | 0.5974 [249] | 329.899 |
| 0.5563 [249] | 284.395 | 0.5448 [249] | 299.648 | 0.5580 [249] | 314.648 | 0.5982 [249] | 330.149 |
| 0.5559 [249] | 284.646 | 0.5445 [249] | 299.648 | 0.5585 [249] | 314.898 | 0.5991 [249] | 330.4 |
| 0.5555 [249] | 284.897 | 0.5445 [249] | 299.897 | 0.5589 [249] | 315.148 | 0.6000 [249] | 330.648 |
| 0.5551 [249] | 285.146 | 0.5445 [249] | 300.148 | 0.5594 [249] | 315.397 | 0.6008 [249] | 330.898 |
| 0.5547 [249] | 285.396 | 0.5446 [249] | 300.397 | 0.5598 [249] | 315.648 | 0.6017 [249] | 331.15 |
| 0.5544 [249] | 285.647 | 0.5446 [249] | 300.648 | 0.5603 [249] | 315.897 | 0.6119 [249] | 333.899 |
| 0.5540 [249] | 285.987 | 0.5445 [249] | 300.898 | 0.5608 [249] | 316.148 | 0.6129 [249] | 334.149 |
| 0.5536 [249] | 286.146 | 0.5447 [249] | 301.148 | 0.5612 [249] | 316.398 | 0.6139 [249] | 334.399 |
| 0.5533 [249] | 286.395 | 0.5448 [249] | 301.397 | 0.5617 [249] | 316.646 | 0.6159 [249] | 334.899 |
| 0.5529 [249] | 286.647 | 0.5449 [249] | 301.645 | 0.5622 [249] | 316.898 | 0.6169 [249] | 335.149 |
| 0.5526 [249] | 286.895 | 0.5450 [249] | 301.898 | 0.5627 [249] | 317.147 | 0.6179 [249] | 335.399 |
| 0.5523 [249] | 287.145 | 0.545 [249] | 302.146 | 0.5632 [249] | 317.397 | 0.6189 [249] | 335.649 |
| 0.5520 [249] | 287.396 | 0.5451 [249] | 302.397 | 0.5637 [249] | 317.648 | 0.6199 [249] | 335.898 |
| 0.5516 [249] | 287.647 | 0.5452 [249] | 302.647 | 0.5643 [249] | 317.898 | 0.6209 [249] | 336.147 |
| 0.5513 [249] | 287.895 | 0.5453 [249] | 302.897 | 0.5648 [249] | 318.148 | 0.6219 [249] | 336.398 |
| 0.5510 [249] | 288.146 | 0.5454 [249] | 303.148 | 0.5653 [249] | 318.398 | 0.6230 [249] | 336.65 |
| 0.5507 [249] | 288.396 | 0.5456 [249] | 303.397 | 0.5659 [249] | 318.648 | 0.6240 [249] | 336.899 |
| 0.5504 [249] | 288.645 | 0.5457 [249] | 303.648 | 0.5664 [249] | 318.897 | 0.6251 [249] | 337.149 |
| 0.5501 [249] | 288.896 | 0.5458 [249] | 303.898 | 0.5670 [249] | 319.148 | 0.6261 [249] | 337.4 |
| 0.5499 [249] | 289.146 | 0.5460 [249] | 304.147 | 0.5681 [249] | 319.648 | 0.6272 [249] | 337.649 |
| 0.5496 [249] | 289.396 | 0.5461 [249] | 304.397 | 0.5675 [249] | 319.898 | 0.6283 [249] | 337.898 |
| 0.5493 [249] | 289.647 | 0.5463 [249] | 304.648 | 0.5687 [249] | 319.898 | 0.6249 [249] | 338.148 |
| 0.5491 [249] | 289.896 | 0.5464 [249] | 304.897 | 0.5693 [249] | 320.149 | 0.5761 [249] | 322.899 |
| 0.5488 [249] | 290.146 | 0.5466 [249] | 305.148 | 0.5698 [249] | 320.397 | 0.6026 [249] | 331.399 |
| 0.5486 [249] | 290.395 | 0.5468 [249] | 305.397 | 0.5704 [249] | 320.649 | 0.6035 [249] | 331.648 |
| 0.5484 [249] | 290.647 | 0.5469 [249] | 305.647 | 0.5710 [249] | 320.898 | 0.6044 [249] | 331.899 |
| 0.5481 [249] | 290.897 | 0.5471 [249] | 305.897 | 0.5717 [249] | 321.148 | 0.6053 [249] | 332.149 |
| 0.5479 [249] | 291.147 | 0.5473 [249] | 306.148 | 0.5723 [249] | 321.399 | 0.6063 [249] | 332.399 |
| 0.5477 [249] | 291.397 | 0.5475 [249] | 306.397 | 0.5729 [249] | 321.648 | 0.6072 [249] | 332.650 |
| 0.5475 [249] | 291.647 | 0.5477 [249] | 306.647 | 0.5735 [249] | 321.897 | 0.6081 [249] | 332.898 |
| 0.5473 [249] | 291.896 | 0.5479 [249] | 306.897 | 0.5742 [249] | 322.147 | 0.6091 [249] | 333.149 |
| 0.5471 [249] | 292.146 | 0.5482 [249] | 307.147 | 0.5748 [249] | 322.398 | 0.6100 [249] | 333.398 |
| 0.5469 [249] | 292.396 | 0.5484 [249] | 307.397 | 0.5755 [249] | 322.649 | 0.6110 [249] | 333.651 |
| 0.5467 [249] | 292.647 | 0.5486 [249] | 307.647 | 0.5768 [249] | 323.148 | 0.6149 [249] | 334.650 |
| 0.5466 [249] | 292.896 | 0.5489 [249] | 307.898 | 0.5775 [249] | 323.398 | | |
| 0.5446 [249] | 293.147 | 0.5491 [249] | 308.146 | 0.5781 [249] | 323.649 | | |

**15143-65: 2-Hydroxy triethylammonium formate**

**Abbreviation**: [2-HTEA][$HCO_2$]
**Molecular Formula**: $C_7H_{17}NO_5$
**Molar Mass**: 195.21
**Structure**:




**Character**:
**Application**:

| $\rho$ (g/cm$^3$) | $T$ (K) | $\rho$ (g/cm$^3$) | $T$ (K) | $\rho$ (g/cm$^3$) | $T$ (K) | $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1.221864 [249] | 323.15 | 1.219862 [249] | 326.894 | 1.217498 [249] | 330.896 | 1.215155 [249] | 334.646 |
| 1.221864 [249] | 323.151 | 1.219719 [249] | 327.144 | 1.217344 [249] | 331.146 | 1.214998 [249] | 334.895 |
| 1.221756 [249] | 323.397 | 1.219578 [249] | 327.394 | 1.217189 [249] | 331.396 | 1.214836 [249] | 335.146 |
| 1.221627 [249] | 323.646 | 1.219438 [249] | 327.644 | 1.217039 [249] | 331.645 | 1.214673 [249] | 335.394 |
| 1.221502 [249] | 323.894 | 1.219292 [249] | 327.896 | 1.216882 [249] | 331.895 | 1.214509 [249] | 335.646 |
| 1.221308 [249] | 324.148 | 1.219150 [249] | 328.146 | 1.216728 [249] | 332.145 | 1.214351 [249] | 335.895 |
| 1.221112 [249] | 324.3647 | 1.219001 [249] | 328.397 | 1.216577 [249] | 332.395 | 1.214193 [249] | 336.146 |
| 1.221251 [249] | 324.396 | 1.218852 [249] | 328.646 | 1.216419 [249] | 332.644 | 1.214032 [249] | 336.396 |
| 1.220977 [249] | 324.896 | 1.218703 [249] | 328.896 | 1.216262 [249] | 332.895 | 1.213868 [249] | 336.645 |
| 1.220843 [249] | 325.145 | 1.218554 [249] | 329.145 | 1.216101 [249] | 333.146 | 1.213708 [249] | 336.896 |
| 1.220700 [249] | 325.395 | 1.218404 [249] | 329.397 | 1.215943 [249] | 333.395 | 1.213544 [249] | 337.146 |
| 1.220557 [249] | 325.646 | 1.218259 [249] | 329.645 | 1.215784 [249] | 333.646 | 1.213378 [249] | 337.395 |
| 1.220417 [249] | 325.896 | 1.218108 [249] | 330.145 | 1.215629 [249] | 333.896 | 1.213056 [249] | 337.895 |
| 1.220277 [249] | 326.144 | 1.217959 [249] | 330.396 | 1.215469 [249] | 334.146 | 1.212896 [249] | 338.145 |
| 1.220003 [249] | 326.645 | 1.217655 [249] | 330.646 | 1.215312 [249] | 334.396 | | |

| $K$ (S/m) | $T$ (K) | $K$ (S/m) | $T$ (K) | $K$ (S/m) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 0.184338 | 323.15 | 0.21087 | 328.15 | 0.24948 | 333.15 | 0.28116 | 338.15 |
| 0.197505 | 325.65 | 0.23166 | 330.65 | 0.26433 | 335.65 | | |

| $u_s$ (m/s) | $T$ (K) | $u_s$ (m/s) | $T$ (K) | $u_s$ (m/s) | $T$ (K) | $u_s$ (m/s) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1884.60 [249] | 323 | 1874.29 [249] | 326 | 1862.80 [249] | 330 | 1853.19 [249] | 334 |
| 1872.86 [249] | 323 | 1871.45 [249] | 327 | 1863.53 [249] | 330 | 1851.69 [249] | 334 |
| 1884.00 [249] | 323 | 1872.13 [249] | 327 | 1861.35 [249] | 331 | 1841.05 [249] | 334 |
| 1883.34 [249] | 323 | 1852.43 [249] | 327 | 1860.62 [249] | 331 | 1850.18 [249] | 335 |
| 1884.6 [249] | 323.1 | 1873.58 [249] | 327 | 1859.88 [249] | 331 | 1849.43 [249] | 335 |
| 1882.65 [249] | 324 | 1870.74 [249] | 327 | 1862.07 [249] | 331 | 1848.66 [249] | 335 |
| 1881.98 [249] | 324 | 1868.59 [249] | 328 | 1859.14 [249] | 332 | 1847.91 [249] | 335 |
| 1881.31 [249] | 324 | 1869.31 [249] | 328 | 1858.41 [249] | 332 | 1847.15 [249] | 336 |

| $u_s$ (m/s) | $T$ (K) | $u_s$ (m/s) | $T$ (K) | $u_s$ (m/s) | $T$ (K) | $u_s$ (m/s) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 1881.63 [249] | 324 | 1870.02 [249] | 328 | 1857.67 [249] | 332 | 1846.42 [249] | 336 |
| 1879.22 [249] | 325 | 1867.15 [249] | 329 | 1856.90 [249] | 332 | 1845.63 [249] | 336 |
| 1878.52 [249] | 325 | 1865.71 [249] | 329 | 1856.17 [249] | 333 | 1844.88 [249] | 336 |
| 1877.82 [249] | 325 | 1866.43 [249] | 329 | 1855.43 [249] | 333 | 1844.12 [249] | 337 |
| 1877.12 [249] | 325 | 1867.87 [249] | 329 | 1854.69 [249] | 333 | 1843.35 [249] | 337 |
| 1876.42 [249] | 326 | 1864.27 [249] | 330 | 1853.93 [249] | 333 | 1842.58 [249] | 337 |
| 1874.99 [249] | 326 | 1864.99 [249] | 330 | 1850.94 [249] | 334 | 1841.81 [249] | 338 |

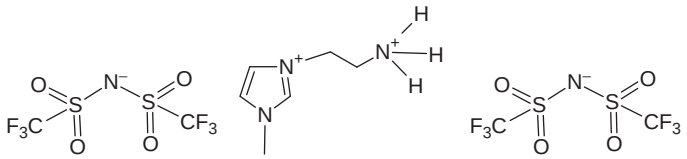
| $K_s$ (T·Pa$^{-1}$) | $T$ (K) | $K_s$ (T·Pa$^{-1}$) | $T$ (K) | $K_s$ (T·Pa$^{-1}$) | $T$ (K) | $K_s$ (T·Pa$^{-1}$) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 230.43 [249] | 323.151 | 233.56 [249] | 327.144 | 236.70 [249] | 330.896 | 240.01 [249] | 334.646 |
| 230.60 [249] | 323.397 | 233.77 [249] | 327.394 | 236.92 [249] | 331.146 | 240.24 [249] | 334.895 |
| 230.78 [249] | 323.646 | 233.97 [249] | 327.644 | 237.13 [249] | 331.396 | 240.47 [249] | 335.146 |
| 230.98 [249] | 323.894 | 234.17 [249] | 327.896 | 237.35 [249] | 331.645 | 240.69 [249] | 335.394 |
| 231.16 [249] | 324.148 | 234.38 [249] | 328.146 | 237.56 [249] | 331.895 | 240.93 [249] | 335.646 |
| 231.35 [249] | 324.396 | 234.59 [249] | 328.397 | 237.78 [249] | 332.145 | 241.15 [249] | 335.895 |
| 231.55 [249] | 324.647 | 234.79 [249] | 328.646 | 238.00 [249] | 332.395 | 241.38 [249] | 336.146 |
| 231.74 [249] | 324.896 | 235.00 [249] | 328.896 | 238.22 [249] | 332.644 | 241.61 [249] | 336.396 |
| 231.94 [249] | 325.145 | 235.21 [249] | 329.145 | 238.45 [249] | 332.895 | 241.85 [249] | 336.645 |
| 232.15 [249] | 325.395 | 235.42 [249] | 329.397 | 238.67 [249] | 333.146 | 242.07 [249] | 336.896 |
| 232.35 [249] | 325.646 | 235.63 [249] | 329.645 | 238.89 [249] | 333.395 | 242.31 [249] | 337.146 |
| 232.55 [249] | 325.896 | 235.84 [249] | 329.895 | 239.11 [249] | 333.646 | 242.54 [249] | 337.395 |
| 232.75 [249] | 326.144 | 236.06 [249] | 330.145 | 239.34 [249] | 333.896 | 242.78 [249] | 337.645 |
| 233.15 [249] | 326.645 | 236.27 [249] | 330.396 | 239.56 [249] | 334.146 | 243.01 [249] | 337.895 |
| 233.35 [249] | 326.894 | 236.48 [249] | 330.646 | 239.79 [249] | 334.396 | 243.25 [249] | 338.145 |

| $1000\alpha$ (K$^{-1}$) | $T$ (K) | $1000\alpha$ (K$^{-1}$) | $T$ (K) | $1000\alpha$ (K$^{-1}$) | $T$ (K) | $1000\alpha$ (K$^{-1}$) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 0.41690634 [249] | 323.151 | 0.4675787 [249] | 327.144 | 0.50249247 [249] | 330.896 | 0.52509245 [249] | 334.646 |
| 0.42043101 [249] | 323.397 | 0.47028767 [249] | 327.394 | 0.50438155 [249] | 331.146 | 0.5261579 [249] | 334.895 |
| 0.42394479 [249] | 323.646 | 0.47294202 [249] | 327.644 | 0.506216 [249] | 331.396 | 0.52717706 [249] | 335.146 |
| 0.42739059 [249] | 323.894 | 0.47556231 [249] | 327.896 | 0.50798881 [249] | 331.645 | 0.52812995 [249] | 335.394 |
| 0.43086403 [249] | 324.148 | 0.47810696 [249] | 328.146 | 0.50971422 [249] | 331.895 | 0.52904314 [249] | 335.646 |
| 0.43420101 [249] | 324.396 | 0.48060683 [249] | 328.397 | 0.51138499 [249] | 332.145 | 0.52989095 [249] | 335.895 |
| 0.43752361 [249] | 324.647 | 0.48303237 [249] | 328.646 | 0.51300114 [249] | 332.395 | 0.53069071 [249] | 336.146 |
| 0.44076533 [249] | 324.896 | 0.48541312 [249] | 328.896 | 0.51455651 [249] | 332.644 | 0.53143254 [249] | 336.396 |
| 0.44395286 [249] | 325.145 | 0.48773006 [249] | 329.145 | 0.51606954 [249] | 332.895 | 0.53211711 [249] | 336.645 |
| 0.44709866 [249] | 325.395 | 0.49001972 [249] | 329.397 | 0.51752749 [249] | 333.146 | 0.53275232 [249] | 336.896 |
| 0.45020209 [249] | 325.646 | 0.49221885 [249] | 329.645 | 0.51891941 [249] | 333.395 | 0.53333026 [249] | 337.146 |

| 1000α ($K^{-1}$) | $T$ (K) | 1000α ($K^{-1}$) | $T$ (K) | 1000α ($K^{-1}$) | $T$ (K) | 1000α ($K^{-1}$) | $T$ (K) |
|---|---|---|---|---|---|---|---|
| 0.45323842 [249] | 325.896 | 0.4943813 [249] | 329.895 | 0.52026767 [249] | 333.646 | 0.53385159 [249] | 337.395 |
| 0.45619648 [249] | 326.144 | 0.49648913 [249] | 330.145 | 0.52155581 [249] | 333.896 | 0.53432049 [249] | 337.645 |
| 0.46200823 [249] | 326.645 | 0.49855042 [249] | 330.396 | 0.52278932 [249] | 334.146 | 0.53473476 [249] | 337.895 |
| 0.46481509 [249] | 326.894 | 0.50054876 [249] | 330.646 | 0.5239682 [249] | 334.396 | 0.5350944 [249] | 338.145 |

**15146-31: 1-(3-Methylimidazolium-1-yl)ethane-(trimethylammonium) di[bis(trifluoromethane-sulfonyl) imide]**

**Abbreviation**: $[MIC2N111][TFSI]_2$
**Molecular Formula**: $C_{10}H_{13}F_{12}N_5O_8S_4$
**Molar Mass**: 687.48
**Structure**:

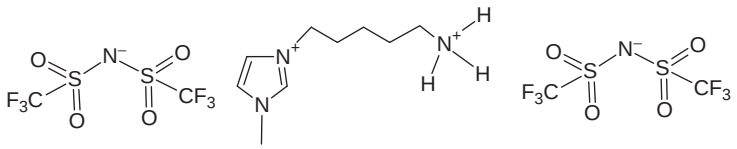


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 406.15 [262] | 633.15 [262] |

**15147-31: 1-(3-Methylimidazolium-1-yl)pentane-(trimethylammonium) di[bis(trifluoromethane-sulfonyl) imide]**

**Abbreviation**: $[MIC5N111][TFSI]_2$
**Molecular Formula**: $C_{13}H_{19}F_{12}N_5O_8S_4$
**Molar Mass**: 729.56
**Structure**:



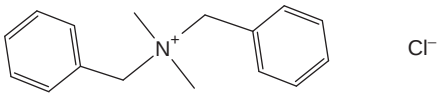
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 220.15 [262] | 693.15 [262] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.47 [262] | 298.15 |

### 15148-11: Dibenzyldimethylammonium chloride

**Abbreviation**: [N11,$(CH_2Ph)_2$]Cl
**Molecular Formula**: $C_{16}H_{20}NCl$
**Molar Mass**: 261.79
**Structure**:

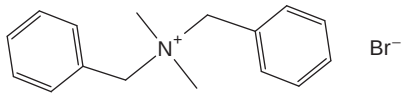



**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 467.15 [263] |

### 15148-12: Dibenzyldimethylammonium bromide

**Abbreviation**: [N11,$(CH_2Ph)_2$]Br
**Molecular Formula**: $C_{16}H_{20}NBr$
**Molar Mass**: 306.24
**Structure**:

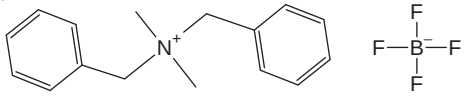



**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 448.15 [253] | 464.15 [253] |

### 15148-21: Dibenzyldimethylammonium tetrafluoroborate

**Abbreviation**: [N11,$(CH_2Ph)_2$][$BF_4$]
**Molecular Formula**: $C_{16}H_{20}NBF_4$
**Molar Mass**: 313.14
**Structure**:

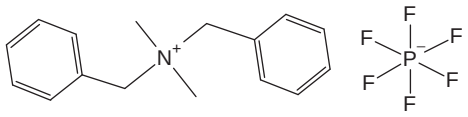



**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 439.15 [263] | 590.15 [263] |

### 15148-51: Dibenzyldimethylammonium hexafluorophosphate

**Abbreviation**: [N11,$(CH_2Ph)_2$][$PF_6$]
**Molecular Formula**: $C_{16}H_{20}NPF_6$
**Molar Mass**: 371.3
**Structure**:

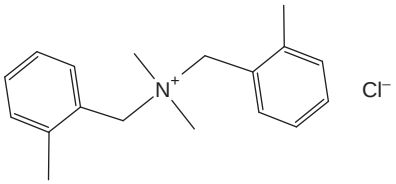



**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 490.95 [263] | 589.15 [263] |

### 15149-11: Dimethyldi(2-methylbenzyl)ammonium chloride

**Abbreviation**: [N11,(2-Me-$CH_2Ph)_2$]Cl
**Molecular Formula**: $C_{18}H_{24}NCl$
**Molar Mass**: 289.84
**Structure**:

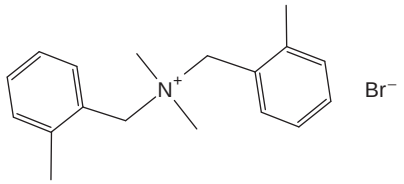



**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 464.15 [263] |

### 15149-12: Dimethyldi(2-methylbenzyl)ammonium bromide

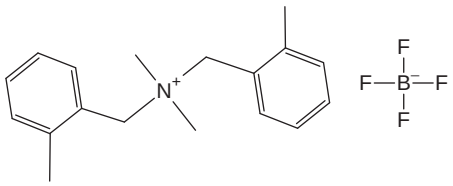
**Abbreviation**: [N11,(2-Me-$CH_2Ph)_2$]Br
**Molecular Formula**: $C_{18}H_{24}NBr$
**Molar Mass**: 334.29
**Structure**:




**Character**:
**Application**: [263]

### 15149-21: Dimethyldi(2-methylbenzyl)ammonium tetrafluoroborate

**Abbreviation**: [N11,(2-Me-$CH_2Ph)_2$][$BF_4$]
**Molecular Formula**: $C_{18}H_{24}NBF_4$
**Molar Mass**: 341.19
**Structure**:

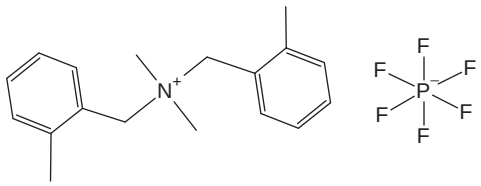


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 503.75 [263] | 550.15 [263] |

### 15149-51: Dimethyldi(2-methylbenzyl)ammonium hexafluorophosphate

**Abbreviation**: [N11,(2-Me-$CH_2Ph)_2$][$PF_6$]
**Molecular Formula**: $C_{18}H_{24}NPF_6$
**Molar Mass**: 399.35
**Structure**:

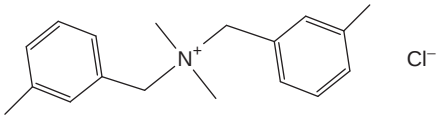


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 542.65 [263] | 560.15 [263] |

### 15150-11: Dimethyldi(3-methylbenzyl)ammonium chloride

**Abbreviation**: [N11,(3-Me-$CH_2Ph)_2$]Cl
**Molecular Formula**: $C_{18}H_{24}NCl$
**Molar Mass**: 289.84
**Structure**:

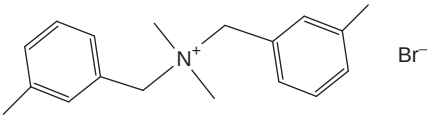


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 422.25 [263] | 464.15 [263] |

### 15150-12: Dimethyldi(3-methylbenzyl)ammonium bromide

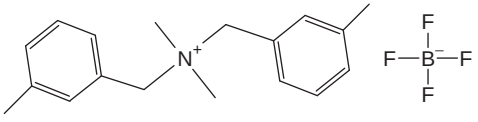
**Abbreviation**: [N11,(3-Me-$CH_2Ph)_2$]Br
**Molecular Formula**: $C_{18}H_{24}NBr$
**Molar Mass**: 334.29
**Structure**:



**Character**:
**Application**: [263]

### 15150-21: Dimethyldi(3-methylbenzyl)ammonium tetrafluoroborate

**Abbreviation**: [N11,(3-Me-$CH_2Ph)_2$][$BF_4$]
**Molecular Formula**: $C_{18}H_{24}NBF_4$
**Molar Mass**: 341.19
**Structure**:

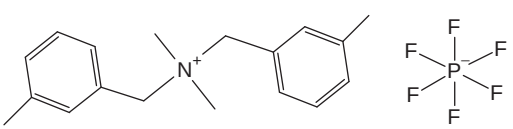


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 436.05 [263] | 583.15 [263] |

### 15150-51: Dimethyldi(3-methylbenzyl)ammonium hexafluorophosphate

**Abbreviation**: [N11,(3-Me-$CH_2Ph)_2$][$PF_6$]
**Molecular Formula**: $C_{18}H_{24}NPF_6$
**Molar Mass**: 399.35
**Structure**:

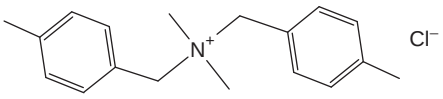


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 434.05 [263] | 568.15 [263] |

### 15151-11: Dimethyldi(4-methylbenzyl)ammonium chloride

**Abbreviation**: [N11,(4-Me-$CH_2Ph)_2$]Cl
**Molecular Formula**: $C_{18}H_{24}NCl$
**Molar Mass**: 289.84
**Structure**:

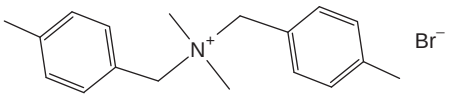



**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 474.15 [263] |

### 15151-12: Dimethyldi(4-methylbenzyl)ammonium bromide

**Abbreviation**: [N11,(4-Me-$CH_2Ph)_2$]Br
**Molecular Formula**: $C_{18}H_{24}NBr$
**Molar Mass**: 334.29
**Structure**:

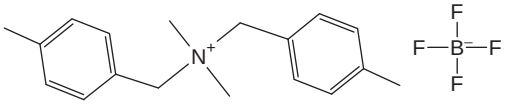



**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 475.15 [263] | 468.15 [263] |

### 15151-21: Dimethyldi(4-methylbenzyl)ammonium tetrafluoroborate

**Abbreviation**: [N11,(4-Me-$CH_2Ph)_2$][$BF_4$]
**Molecular Formula**: $C_{18}H_{24}NBF_4$
**Molar Mass**: 341.19
**Structure**:

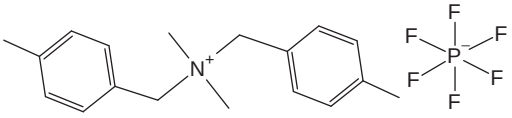



**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 478.65 [263] | 563.15 [263] |

### 15151-51: Dimethyldi(4-methylbenzyl)ammonium hexafluorophosphate

**Abbreviation**: [N11,(4-Me-$CH_2Ph)_2$][$PF_6$]
**Molecular Formula**: $C_{18}H_{24}NPF_6$
**Molar Mass**: 399.35
**Structure**:

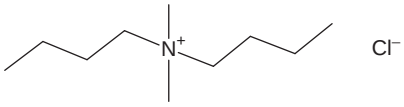



**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 490.95 [263] | 563.15 [263] |

### 15152-11: Dibutyldimethylammonium chloride

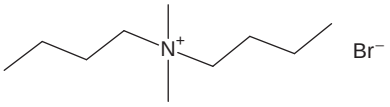
**Abbreviation**: [N1144]Cl
**Molecular Formula**: $C_{10}H_{24}NCl$
**Molar Mass**: 193.76
**Structure**:




**Character**:
**Application**: [263]

### 15152-12: Dibutyldimethylammonium bromide

**Abbreviation**: [N1144]Br
**Molecular Formula**: $C_{10}H_{24}NBr$
**Molar Mass**: 238.21
**Structure**:

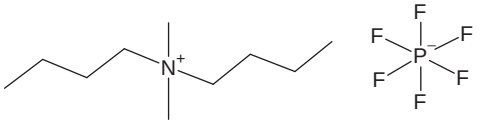



**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 428.65 [263] | 499.15 [263] |

### 15152-51: Dibutyldimethylammonium hexafluorophosphate

**Abbreviation**: [N1144][$PF_6$]
**Molecular Formula**: $C_{10}H_{24}NPF_6$
**Molar Mass**: 303.27
**Structure**:

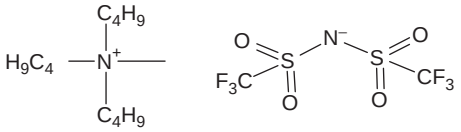


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 436.65 [263] | 615.15 [263] |

### 15153-31: Tributyl-methylammonium di[bis(trifluoromethanesulfonyl)amide]

**Abbreviation**: [N1444][$NTf_2$]
**Molecular Formula**: $C_{15}H_{30}F_6N_2O_4S_2$
**Molar Mass**: 480.53
**Structure**:

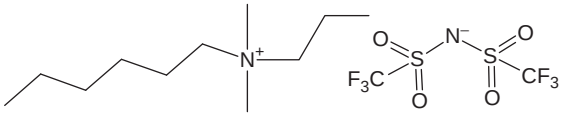


**Character**:
**Application**:

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.253 [31] | 303.15 | 386 [31] | 303.15 |

### 15154-31: Dimethyl(hexyl(i-propyl))ammonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [N1136][$Tf_2N$]
**Molecular Formula**: $C_{13}H_{26}F_6N_2O_4S_2$
**Molar Mass**: 452.48
**Structure**:

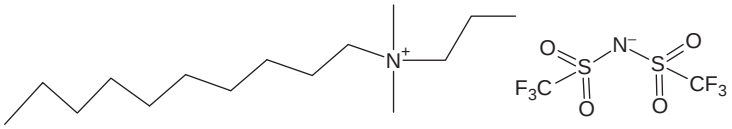


**Character**:
**Application**:

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.2816 [48] | 303.15 |

### 15155-31: Dimethyl(decyl(i-propyl))ammonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [N(10)113][$Tf_2N$]
**Molecular Formula**: $C_{17}H_{34}F_6N_2O_4S_2$
**Molar Mass**: 508.58
**Structure**:

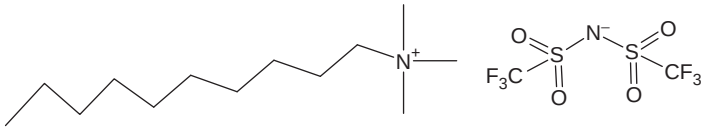


**Character**:
**Application**:

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.1977 [48] | 303.15 |

**15156-31: Trimethyl(decyl)ammonium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: [N(10)111][$Tf_2N$]
**Molecular Formula**: $C_{15}H_{30}F_6N_2O_4S_2$
**Molar Mass**: 480.53
**Structure**:

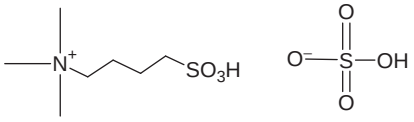


**Character**:
**Application**:

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.2222 [48] | 303.15 |

**15157-421: *N*-(4-sulfonic acid) butyl trimethylammonium hydrogen sulfate**

**Abbreviation**: [N111,$(CH_2)_4SO_3H$][$HSO_4$]
**Molecular Formula**: $C_7H_{19}NO_7S_2$
**Molar Mass**: 293.36
**Structure**:

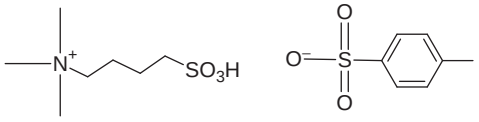


**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 619.5 [264] |

**15157-427: *N*-(4-sulfonic acid) butyl trimethylammonium toluenesulfonate**

**Abbreviation**: [N111,$(CH_2)_4SO_3H$][$CH_3PhSO_3$]
**Molecular Formula**: $C_{14}H_{25}NO_6S_2$
**Molar Mass**: 367.48
**Structure**:

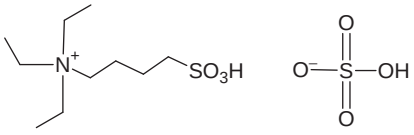


**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 606.5 [264] |

**15158-421: *N*-(4-sulfonic acid) butyl triethylammonium hydrogen sulfate**

**Abbreviation**: [N222,$(CH_2)_4SO_3H$][$HSO_4$]
**Molecular Formula**: $C_{10}H_{25}NO_7S_2$
**Molar Mass**: 335.44
**Structure**:



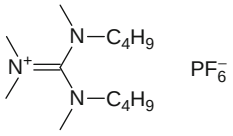
**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 587.5 [264] |

# 12 Guanidinium

**1601-51: [Bis(butyl-methyl-amino)-methylene] dimethyl-ammonium hexafluorophosphate**

**Abbreviation**: $[C_{13}guan][PF_6]$, $[(MeNBu)_2C{=}NMe_2][PF_6]$
**Molecular Formula**: $C_{13}H_{30}F_6N_3P$
**Molar Mass**: 373.37
**Structure**:

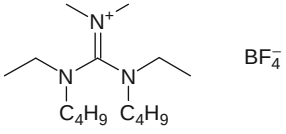


**Character**:
**Application**:

| Water content (<100wt%,100ppm) |
|---|
| 9.4 [265] |

**1602-21: [Bis(butyl-ethyl-amino)-methylene] dimethyl-ammonium tetrafluoroborate**

**Abbreviation**: $[C_{15}guan][BF_4]$, $[(EtNBu)_2C{=}NMe_2][BF_4]$
**Molecular Formula**: $C_{15}H_{34}BF_4N_3$
**Molar Mass**: 343.26
**Structure**:

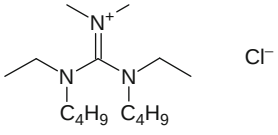


**Character**:
**Application**:

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.05 [265] | 298.15 |

**1602-11: [Bis(butyl-ethyl-amino)-methylene] dimethyl-ammonium chloride**

**Abbreviation**: $[C_{15}guan]Cl$, $[(EtNBu)_2C{=}NMe_2]Cl$
**Molecular Formula**: $C_{15}H_{34}ClN_3$
**Molar Mass**: 291.91
**Structure**:

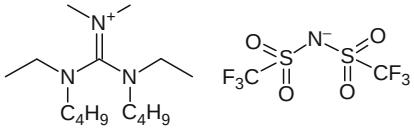


**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 194.15 [265] |

**1602-31: [Bis(butyl-ethyl-amino)-methylene] dimethyl-ammonium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: $[C_{15}guan][TFSI]$, $[(EtNBu)_2C{=}NMe_2][TFSI]$
**Molecular Formula**: $C_{17}H_{34}F_6N_4O_4S_2$
**Molar Mass**: 536.6
**Structure**:



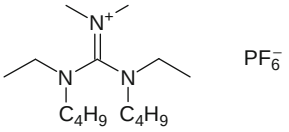
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 198.05 [265] |

| $\rho$ (g/cm$^3$) | $T$ (K) | Water content (<100wt%,100ppm) |
|---|---|---|
| 1.36 [265] | 298.15 | 2.7 [265] |

**1602-51: [Bis(butyl-ethyl-amino)-methylene] dimethyl-ammonium hexafluorophosphate**

**Abbreviation**: $[C_{15}guan][PF_6]$, $[(EtNBu)_2C{=}NMe_2][PF_6]$
**Molecular Formula**: $C_{15}H_{34}F_6N_3P$
**Molar Mass**: 401.42
**Structure**:

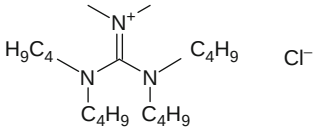


**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 205.35 [265] |

**1603-11: [Bis(bis-butyl-amino)-methylene] dimethyl-ammonium chloride**

**Abbreviation**: $[C_{19}guan]Cl$, $[((C_4H_9)_2N)_2C{=}NMe_2]Cl$
**Molecular Formula**: $C_{19}H_{42}ClN_3$
**Molar Mass**: 348.02
**Structure**:

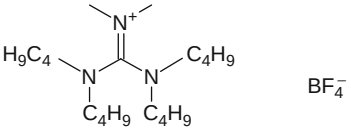


**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 217.85 [265] |

**1603-21: [Bis(bis-butyl-amino)-methylene] dimethyl-ammonium tetrafluoroborate**

**Abbreviation**: $[C_{19}guan][BF_4]$, $[((C_4H_9)_2N)_2C{=}NMe_2][BF_4]$
**Molecular Formula**: $C_{19}H_{42}BF_4N_3$
**Molar Mass**: 399.37
**Structure**:

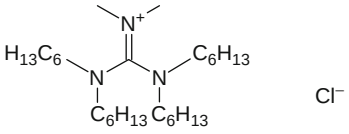


**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 215.45 [265] |

**1604-11: [Bis(bis-hexyl-amino)-methylene] dimethyl-ammonium chloride**

**Abbreviation**: $[C_{27}guan]Cl$, $[((C_6H_{13})_2N)_2C{=}NMe_2]Cl$
**Molecular Formula**: $C_{27}H_{58}ClN_3$
**Molar Mass**: 460.22
**Structure**:



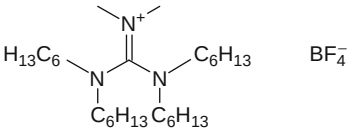
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 210.15 [265] |

| $\rho$ (g/cm$^3$) | $T$ (K) | Water content (<100wt%,100ppm) |
|---|---|---|
| 0.9 [265] | 298.15 | 37.2 [265] |

### 1604-21: [Bis(bis-hexyl-amino)-methylene] dimethyl-ammonium tetrafluoroborate

**Abbreviation**: $[C_{27}guan][BF_4]$, $[((C_6H_{13})_2N)_2C{=}NMe_2][BF_4]$
**Molecular Formula**: $C_{27}H_{58}BF_4N_3$
**Molar Mass**: 511.57
**Structure**:



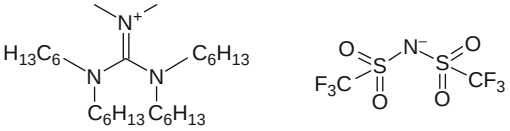
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 197.55 [265] |

| $\rho$ (g/cm$^3$) | $T$ (K) | Water content (<100wt%,100ppm) |
|---|---|---|
| 0.97 [265] | 298.15 | 15.6 [265] |

### 1604-31: [Bis(bis-hexyl-amino)-methylene] dimethyl-ammonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: $[C_{27}guan][TFSI]$, $[((C_6H_{13})_2N)_2C{=}NMe_2][TFSI]$
**Molecular Formula**: $C_{29}H_{58}F_6N_4O_4S_2$
**Molar Mass**: 704.92
**Structure**:



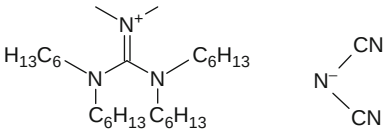
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 201.75 [265] | >573.15 [137] |
| 201.04 [137] | |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | Water content (<100wt%, 100ppm) |
|---|---|---|---|---|---|---|
| 1.2 [265] | 298.15 | 298 [137] | 298.15 | 269 [265] | 313.15 | 4.5 [265] |
| | | 335 [265] | 303.15 | 182 [265] | 323.15 | |
| | | 296 [265] | 308.15 | 124 [265] | 333.15 | |

### 1604-34: [Bis(bis-hexyl-amino)-methylene] dimethyl-ammonium dicyanoamide

**Abbreviation**: $[((C_6H_{13})_2N)_2C{=}NMe_2][dca]$
**Molecular Formula**: $C_{29}H_{58}N_6$
**Molar Mass**: 490.81
**Structure**:



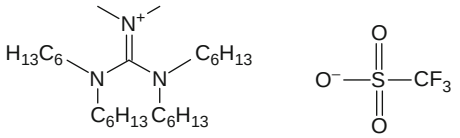
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 195.97 [137] | 523.15 [137] |

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 267 [137] | 293.15 |

### 1604-43: [Bis(bis-hexyl-amino)-methylene] dimethyl-ammonium trifluoromethanesulfonate

**Abbreviation**: $[((C_6H_{13})_2N)_2C{=}NMe_2][TfO]$
**Molecular Formula**: $C_{28}H_{58}F_3N_3O_3S$
**Molar Mass**: 573.84
**Structure**:



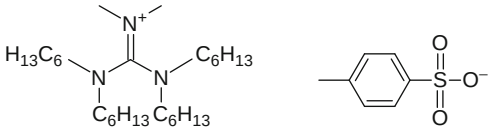
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 194.44 [137] | >573.15 [137] |

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 178 [137] | 293.15 |

### 1604-47: [Bis(bis-hexyl-amino)-methylene] dimethyl-ammonium tosylate

**Abbreviation**: $[((C_6H_{13})_2N)_2C{=}NMe_2][Tos]$
**Molecular Formula**: $C_{34}H_{65}N_3O_3S$
**Molar Mass**: 595.96
**Structure**:



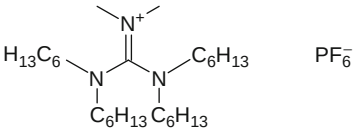
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 203.25 [137] | 473.15 [137] |

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 398 [137] | 293.15 |

### 1604-51: [Bis(bis-hexyl-amino)-methylene] dimethyl-ammonium hexafluorophosphate

**Abbreviation**: $[C_{27}guan][PF_6]$, $[((C_6H_{13})_2N)_2C{=}NMe_2][PF_6]$
**Molecular Formula**: $C_{27}H_{58}F_6N_3P$
**Molar Mass**: 569.73
**Structure**:



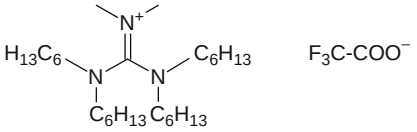
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 212.65 [265] |

| Water content (<100wt%,100ppm) |
|---|
| 2.9 [265] |

### 1604-61: [Bis(bis-hexyl-amino)-methylene] dimethyl-ammonium trifluoroacetate

**Abbreviation**: $[((C_6H_{13})_2N)_2C{=}NMe_2][CF_3CO_2]$
**Molecular Formula**: $C_{29}H_{58}F_3N_3O_2$
**Molar Mass**: 537.78
**Structure**:



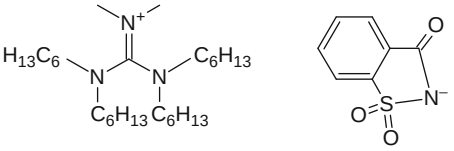
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 192.49 [137] | 463.15 [137] |

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 194 [137] | 293.15 |

### 1604-312: [Bis(bis-hexyl-amino)-methylene] dimethyl-ammonium saccharinate

**Abbreviation**: $[((C_6H_{13})_2N)_2C{=}NMe_2][Sac]$
**Molecular Formula**: $C_{34}H_{62}N_4O_3S$
**Molar Mass**: 606.95
**Structure**:



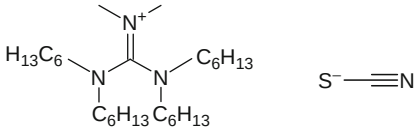
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 216.44 [137] | >573.15 [137] |

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 1175 [137] | 293.15 |

### 1604-1503: [Bis(bis-hexyl-amino)-methylene] dimethyl-ammonium thiocyanate

**Abbreviation**: $[((C_6H_{13})_2N)_2C{=}NMe_2][SCN]$
**Molecular Formula**: $C_{28}H_{58}N_4S$
**Molar Mass**: 482.85
**Structure**:

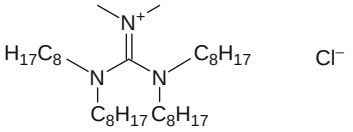


**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 200.72 [137] | 548.15 [137] |

### 1605-11: [Bis(bis-octyl-amino)-methylene] dimethyl-ammonium chloride

**Abbreviation**: $[C_{35}guan]Cl$, $[((C_8H_{17})_2N)_2C{=}NMe_2]Cl$
**Molecular Formula**: $C_{35}H_{74}ClN_3$
**Molar Mass**: 572.43
**Structure**:



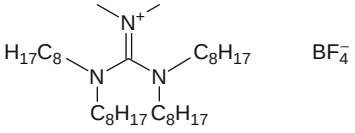
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 197.15 [265] |

| $\rho$ (g/cm$^3$) | $T$ (K) | Water content (<100wt%,100ppm) |
|---|---|---|
| 0.96 [265] | 298.15 | 47.8 [265] |

### 1605-21: [Bis(bis-octyl-amino)-methylene] dimethyl-ammonium tetrafluoroborate

**Abbreviation**: $[C_{35}guan][BF_4]$, $[((C_8H_{17})_2N)_2C{=}NMe_2][BF_4]$
**Molecular Formula**: $C_{35}H_{74}BF_4N_3$
**Molar Mass**: 623.79
**Structure**:



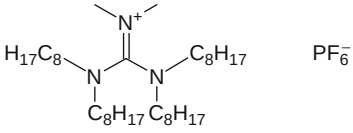
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 197.85 [265] |

| $\rho$ (g/cm$^3$) | $T$ (K) | Water content (<100wt%,100ppm) |
|---|---|---|
| 0.97 [265] | 298.15 | 7.6 [265] |

### 1605-51: [Bis(bis-octyl-amino)-methylene] dimethyl-ammonium hexafluorophosphate

**Abbreviation**: $[C_{35}guan][PF_6]$, $[((C_8H_{17})_2N)_2C{=}NMe_2][PF_6]$
**Molecular Formula**: $C_{35}H_{74}PF_6N_3$
**Molar Mass**: 681.95
**Structure**:



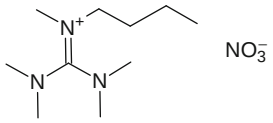
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 195.15 [265] |

| $\rho$ (g/cm$^3$) | $T$ (K) | Water content (<100wt%,100ppm) |
|---|---|---|
| 0.91 [265] | 298.15 | 3.9 [265] |

### 1607-39: *N*,*N*,*N*′,*N*′,*N*″-Pentamethyl-*N*″-butyl-guanidinium nitrate

**Abbreviation**: $[(Me_2N)_2C{=}NMe(n\text{-}Bu)][NO_3]$
**Molecular Formula**: $C_{10}H_{24}N_4O_3$
**Molar Mass**: 248.32
**Structure**:

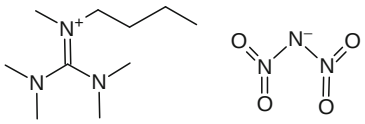


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 345.15 [266] | 587.15 [266] |

### 1607-311: *N*,*N*,*N*′,*N*′,*N*″-Pentamethyl-*N*″-butyl-guanidinium dinitramide

**Abbreviation**: $[(Me_2N)_2C{=}NMe(n\text{-}Bu)][N(NO_2)_2]$
**Molecular Formula**: $C_{10}H_{24}N_6O_4$
**Molar Mass**: 292.34
**Structure**:

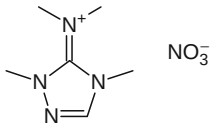


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 348.15 [266] | 469.15 [266] |

### 1608-39: 1,4-Dimethyl-5-(*N*,*N*-dimethyl ammonium)-1,2,2-triazole nitrate

**Abbreviation**: $[(Me_2)N{=}(Me_2Taz)][NO_3]$
**Molecular Formula**: $C_6H_{13}N_5O_3$
**Molar Mass**: 203.2
**Structure**:

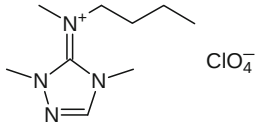


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 347.15 [266] | 502.15 [266] |

### 1609-14: 1,4-Dimethyl-5-(*N*-methyl-*N*-butyl ammonium)-1,2,2-triazole perchlorate

**Abbreviation**: $[(MeBu)N{=}(Me_2Taz)][ClO_4]$
**Molecular Formula**: $C_9H_{19}N_4ClO_4$
**Molar Mass**: 282.72
**Structure**:

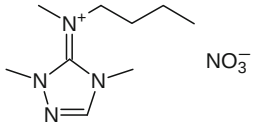


**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 214.15 [266] | 557.15 [266] |

### 1609-39: 1,4-Dimethyl-5-(*N*-methyl-*N*-butyl ammonium)-1,2,2-triazole nitrate

**Abbreviation**: $[(MeBu)N{=}(Me_2Taz)][NO_3]$
**Molecular Formula**: $C_9H_{19}N_5O_3$
**Molar Mass**: 245.28
**Structure**:

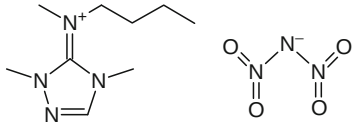


**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 204.15 [266] | 484.15 [266] |

### 1609-311: 1,4-Dimethyl-5-(*N*-methyl-*N*-butyl ammonium)-1,2,2-triazole dinitramide

**Abbreviation**: $[(MeBu)N{=}(Me_2Taz)][N(NO_2)_2]$
**Molecular Formula**: $C_9H_{19}N_7O_4$
**Molar Mass**: 289.29
**Structure**:

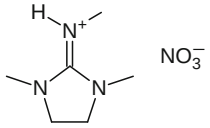


**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 207.15 [266] | 470.15 [266] |

### 1610-39: 1,3-Dimethyl-2-(*N*-methyl ammonium) imidazolidine nitrate

**Abbreviation**: [MeN=($Me_2$Imn)][$NO_3$]
**Molecular Formula**: $C_6H_{14}N_4O_3$
**Molar Mass**: 190.2
**Structure**:



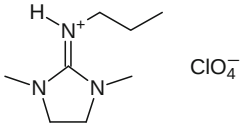
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 276.15 [266] | 403.15 [266] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.34 [266] | 298.15 |

### 1611-14: 1,3-Dimethyl-2-(*N*-propyl ammonium) imidazolidine perchlorate

**Abbreviation**: [PrN=($Me_2$Imn)][$ClO_4$]
**Molecular Formula**: $C_8H_{18}N_3ClO_4$
**Molar Mass**: 255.7
**Structure**:



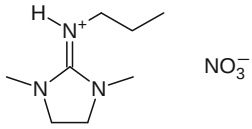
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 279.15 [266] | 544.15 [266] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.32 [266] | 298.15 |

### 1611-39: 1,3-Dimethyl-2-(*N*-propyl ammonium) imidazolidine nitrate

**Abbreviation**: [PrN=($Me_2$Imn)][$NO_3$]
**Molecular Formula**: $C_8H_{18}N_4O_3$
**Molar Mass**: 218.25
**Structure**:



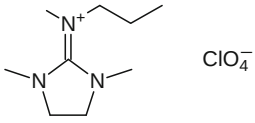
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| <195.15 [266] | 401.15 [266] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.24 [266] | 298.15 |

### 1612-14: 1,3-Dimethyl-2-(*N*-methyl-*N*-propyl ammonium)imidazolidine perchlorate

**Abbreviation**: [(MePr)N=($Me_2$Imn)][$ClO_4$]
**Molecular Formula**: $C_9H_{20}N_3ClO_4$
**Molar Mass**: 269.73
**Structure**:

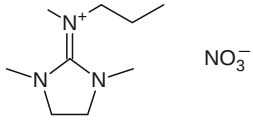


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 312.15 [266] |

### 1612-39: 1,3-Dimethyl-2-(*N*-methyl-*N*-propyl ammonium)imidazolidine nitrate

**Abbreviation**: [(MePr)N=($Me_2$Imn)][$NO_3$]
**Molecular Formula**: $C_9H_{20}N_4O_3$
**Molar Mass**: 232.28
**Structure**:

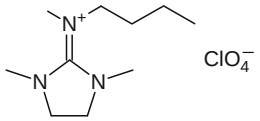


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 304.15 [266] | 545.15 [266] |

### 1613-14: 1,3-Dimethyl-2-(*N*-methyl-*N*-butyl ammonium)imidazolidine perchlorate

**Abbreviation**: [(MeBu)N=($Me_2$Imn)][$ClO_4$]
**Molecular Formula**: $C_{10}H_{22}N_3ClO_4$
**Molar Mass**: 283.75
**Structure**:



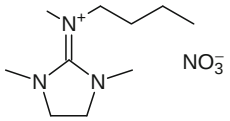
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 301.15 [266] | 576.15 [266] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.32 [266] | 298.15 |

### 1613-39: 1,3-Dimethyl-2-(*N*-methyl-*N*-butyl ammonium)imidazolidine nitrate

**Abbreviation**: [(MeBu)N=($Me_2$Imn)][$NO_3$]
**Molecular Formula**: $C_{10}H_{22}N_4O_3$
**Molar Mass**: 246.31
**Structure**:



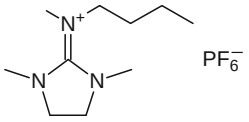
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 280.15 [266] | 519.15 [266] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.23 [266] | 298.15 |

### 1613-51: 1,3-Dimethyl-2-(*N*-methyl-*N*-butyl ammonium) imidazolidine hexafluorophosphate

**Abbreviation**: [(MeBu)N=($Me_2$Imn)][$PF_6$]
**Molecular Formula**: $C_{10}H_{22}N_3PF_6$
**Molar Mass**: 329.27
**Structure**:



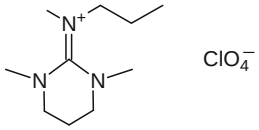
**Character**:
**Application**: Medium for the selective oxidation of benzyl alcohols

| $T_m$ (K) |
|---|
| 257.85 [269] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.301 [269] | 298.15 |

### 1614-14: 1,3-Dimethyl-3,4,5,6-tetrahydro-2-(*N*-propyl ammonium)pyrimidine perchlorate

**Abbreviation**: [PrN=($Me_2$Pym)][$ClO_4$]
**Molecular Formula**: $C_9H_{20}N_3ClO_4$
**Molar Mass**: 269.73
**Structure**:

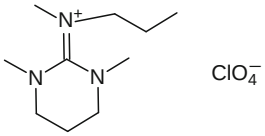


**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 203.15 [266] | 538.15 [266] |

**1615-14: 1,3-Dimethyl-3,4,5,6-tetrahydro-2-(*N*-methyl-*N*-propyl ammonium)pyrimidine perchlorate**

**Abbreviation**: [(MePr)N=($Me_2$Pym)][$ClO_4$]
**Molecular Formula**: $C_{10}H_{22}N_3ClO_4$
**Molar Mass**: 283.75
**Structure**:

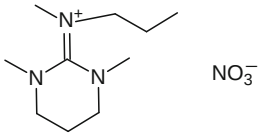


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 401.15 [266] | 546.15 [266] |

**1615-39: 1,3-Dimethyl-3,4,5,6-tetrahydro-2-(*N*-methyl-*N*-propyl ammonium)pyrimidine nitrate**

**Abbreviation**: [(MePr)N=($Me_2$Pym)][$NO_3$]
**Molecular Formula**: $C_{10}H_{22}N_4O_3$
**Molar Mass**: 246.31
**Structure**:

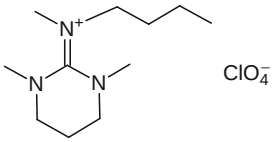


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 330.15 [266] | 581.15 [266] |

**1616-14: 1,3-Dimethyl-3,4,5,6-tetrahydro-2-(*N*-methyl-*N*-butyl ammonium)pyrimidine perchlorate**

**Abbreviation**: [(MeBu)N=($Me_2$Pym)][$ClO_4$]
**Molecular Formula**: $C_{11}H_{24}N_3ClO_4$
**Molar Mass**: 297.78
**Structure**:

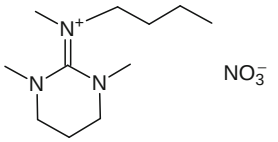


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 351.15 [266] | 549.15 [266] |

**1616-39: 1,3-Dimethyl-3,4,5,6-tetrahydro-2-(*N*-methyl-*N*-butyl ammonium)pyrimidine nitrate**

**Abbreviation**: [(MeBu)N=($Me_2$Pym)][$NO_3$]
**Molecular Formula**: $C_{11}H_{24}N_4O_3$
**Molar Mass**: 260.33
**Structure**:



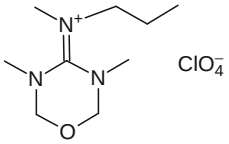
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 279.15 [266] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.31 [266] | 298.15 |

**1617-14: Tetrahydro-3,5-dimethyl-4-(*N*-methyl-*N*-propyl ammonium)-1,3,5-oxadiazine perchlorate**

**Abbreviation**: [(MePr)N=($Me_2$Oxad)][$ClO_4$]
**Molecular Formula**: $C_9H_{20}N_3OClO_4$
**Molar Mass**: 285.73
**Structure**:

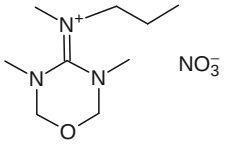


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 367.15 [266] | 517.15 [266] |

**1617-39: Tetrahydro-3,5-dimethyl-4-(*N*-methyl-*N*-propyl ammonium)-1,3,5-oxadiazine nitrate**

**Abbreviation**: [(MePr)N=($Me_2$Oxad)][$NO_3$]
**Molecular Formula**: $C_9H_{20}N_4O_4$
**Molar Mass**: 248.28
**Structure**:

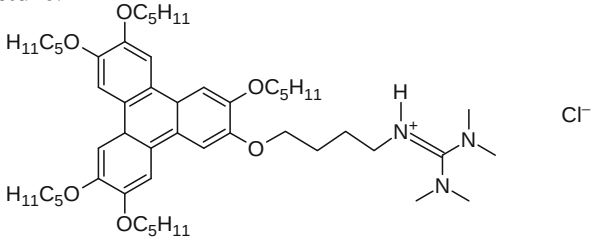


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 338.15 [266] | 511.15 [266] |

### 1618-11: Pentapentyloxytriphenylene guanidinium chloride

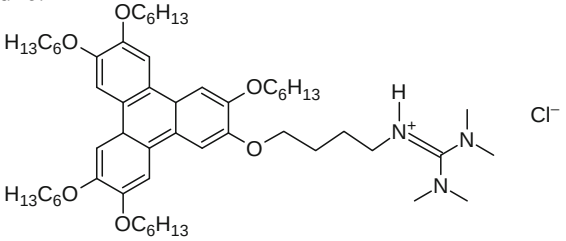
**Abbreviation**: $[(Me_2N)_2C{=}N[C_4O(Ph)_3(C_5O)_5]]Cl$
**Molecular Formula**: $C_{52}H_{84}N_3O_6Cl$
**Molar Mass**: 882.69
**Structure**:



**Character**:
**Application**: [267]

### 1619-11: Pentahexyloxytriphenylene guanidinium chloride

**Abbreviation**: $[(Me_2N)_2C{=}N[C_4O(Ph)_3(C_6O)_5]]Cl$
**Molecular Formula**: $C_{57}H_{94}N_3O_6Cl$
**Molar Mass**: 952.83
**Structure**:

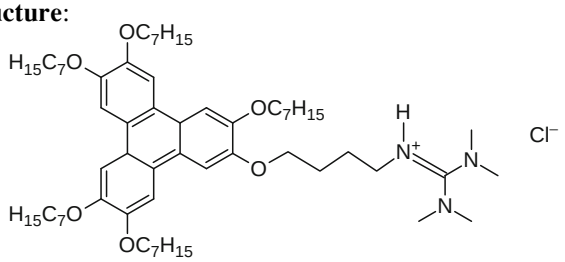


**Character**:
**Application**: [267]

| $T_m$ (K) | $T_c$ (K) | $T_g$ (K) |
|---|---|---|
| 319.15 | 379.15 | 354.15 |

### 1620-11: Pentaheptyloxytriphenylene guanidinium chloride

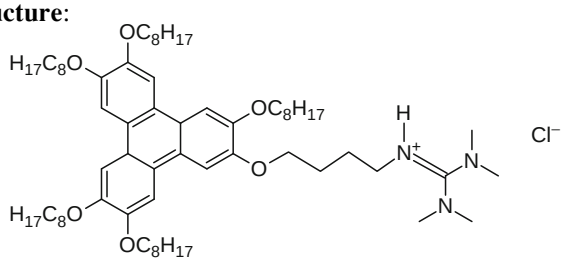
**Abbreviation**: $[(Me_2N)_2C{=}N[C_4O(Ph)_3(C_7O)_5]]Cl$
**Molecular Formula**: $C_{62}H_{104}N_3O_6Cl$
**Molar Mass**: 1022.96
**Structure**:



**Character**:
**Application**: [267]

### 1621-11: Pentaoctyloxytriphenylene guanidinium chloride

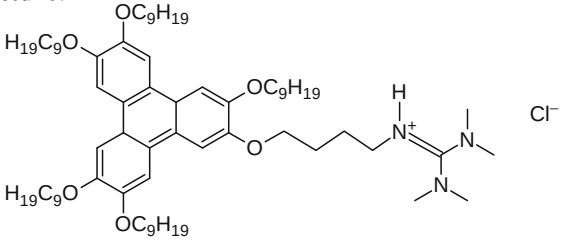
**Abbreviation**: $[(Me_2N)_2C{=}N[C_4O(Ph)_3(C_8O)_5]]Cl$
**Molecular Formula**: $C_{67}H_{114}N_3O_6Cl$
**Molar Mass**: 1093.09
**Structure**:



**Character**:
**Application**: [267]

### 1622-11: Pentanonyloxytriphenylene guanidinium chloride

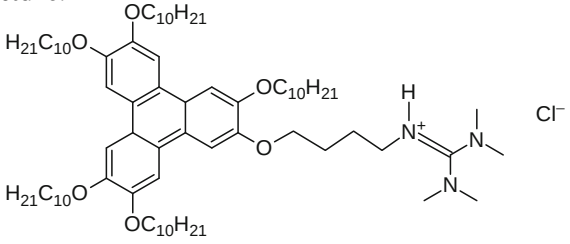
**Abbreviation**: $[(Me_2N)_2C{=}N[C_4O(Ph)_3(C_9O)_5]]Cl$
**Molecular Formula**: $C_{72}H_{124}N_3O_6Cl$
**Molar Mass**: 1163.22
**Structure**:



**Character**:
**Application**: [267]

### 1623-11: Pentadecyloxytriphenylene guanidinium chloride

**Abbreviation**: $[(Me_2N)_2C{=}N[C_4O(Ph)_3(C_{10}O)_5]]Cl$
**Molecular Formula**: $C_{77}H_{134}N_3O_6Cl$
**Molar Mass**: 1233.36
**Structure**:

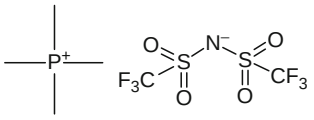


**Character**:
**Application**: [267]

# 13 Phosphonium

**1701-31: tetramethylphosphonium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: [P1111][TFSI]
**Molecular Formula**: $C_6H_{12}F_6NO_4PS_2$
**Molar Mass**: 371.26
**Structure**:

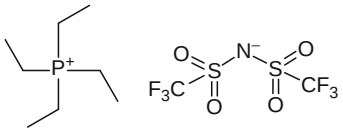


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 422.45-423.45 [228] | 693.15 [228] |

**1702-31: Tetraethylphosphonium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: [P2222][TFSI]
**Molecular Formula**: $C_{10}H_{20}F_6NO_4PS_2$
**Molar Mass**: 427.37
**Structure**:

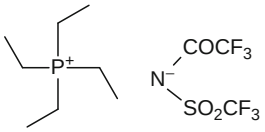


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 391.15 [43] |

**1702-35: Tetraethylphosphonium 2,2,2-trifluoro-*N*-(trifluoromethylsulfonyl)acetamide**

**Abbreviation**: [P2222][TSAC]
**Molecular Formula**: $C_{11}H_{20}F_6NO_3PS$
**Molar Mass**: 391.31
**Structure**:

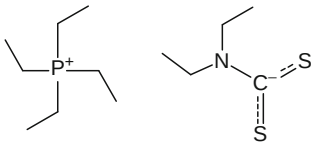


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 292.15 [43] |

**1702-74: Tetraethylphosphonium diethyldithiocarbamate**

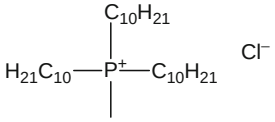
**Abbreviation**: [P2222][dtc]
**Molecular Formula**: $C_{13}H_{30}NPS_2$
**Molar Mass**: 295.49
**Structure**:



**Character**:
**Application**: [268]

### 1703-11: Tridecylmethylphosphonium chloride

**Abbreviation**: [P1,10$_3$]Cl
**Molecular Formula**: $C_{31}H_{66}ClP$
**Molar Mass**: 505.29
**Structure**:



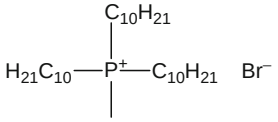
**Character**:
**Application**:

| $T_m$ (K) | $T_f$ (K) |
|---|---|
| 372.05 [119] | 374.15 [119] |
| 374.95 [119] | |

| Fusion Entropy (kJ·mol$^{-1}$) | Crystallization Enthalpy (kJ·mol$^{-1}$) |
|---|---|
| 5.8 [119] | 2.1 [119] |
| 10.5 [119] | 9.9 [119] |
| 1.5 [119] | |

### 1703-12: Tridecylmethylphosphonium bromide

**Abbreviation**: [P1,10$_3$]Br
**Molecular Formula**: $C_{31}H_{66}BrP$
**Molar Mass**: 549.74
**Structure**:



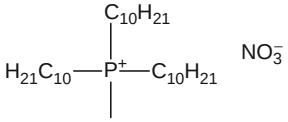
**Character**:
**Application**:

| $T_m$ (K) | $T_f$ (K) |
|---|---|
| 368.35 [119] | 369.85 [119] |

| Fusion Entropy (kJ·mol$^{-1}$) | Crystallization Enthalpy (kJ·mol$^{-1}$) |
|---|---|
| 2.5 [119] | 1.0 [119] |
| 9.7 [119] | 8.2 [119] |
| 9.4 [119] | |

### 1703-39: Tridecylmethylphosphonium nitrate

**Abbreviation**: [P1,10$_3$][$NO_3$]
**Molecular Formula**: $C_{31}H_{66}NO_3P$
**Molar Mass**: 531.84
**Structure**:



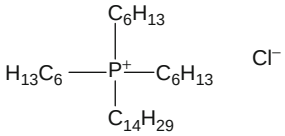
**Character**:
**Application**:

| $T_m$ (K) | $T_f$ (K) |
|---|---|
| 332.85 [119] | 335.25 [119] |
| | 356.95 [119] |

| Fusion Entropy (kJ·mol$^{-1}$) | Crystallization Enthalpy (kJ·mol$^{-1}$) |
|---|---|
| 2.9 [119] | 2.7 [119] |
| 1.7 [119] | 1.5 [119] |

### 1704-11: Trihexyl-tetradecylphosphonium chloride

**Abbreviation**: [P666,14]Cl
**Molecular Formula**: $C_{32}H_{68}PCl$
**Molar Mass**: 519.31
**Structure**:



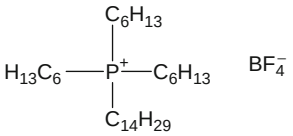
**Character**:
**Application**: Anti-microbial, anti-electrostatic

| $T_m$ (K) |
|---|
| Liquid [270] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $n$ | $T$ (K) |
|---|---|---|---|---|---|
| 0.895 [271] | 292.15 | 2077.91 [271] | 303.15 | 1.4841 [271] | 295.15 |
| 0.8801 [48] | 303.15 | | | | |

### 1704-21: Trihexyl-tetradecylphosphonium tetrafluoroborate

**Abbreviation**: [P666,14][$BF_4$]
**Molecular Formula**: $C_{32}H_{68}PBF_4$
**Molar Mass**: 570.66
**Structure**:



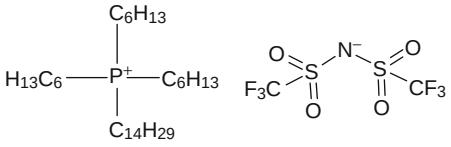
**Character**:
**Application**: Anti-microbial, anti-electrostatic

| $T_m$ (K) |
|---|
| 311.65 [270] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $n$ | $T$ (K) |
|---|---|---|---|---|---|
| 0.941 [271] | 295.15 | 1021.30 [271] | 303.15 | 1.4564 [271] | 295.15 |

### 1704-31: Trihexyl-tetradecylphosphonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [P666,14][TFSI]
**Molecular Formula**: $C_{34}H_{68}F_6NO_4PS_2$
**Molar Mass**: 764.01
**Structure**:



**Character**:
**Application**:

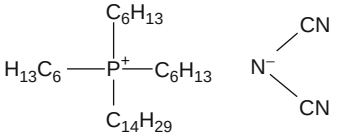
| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| Liquid [270] | 197.15 [268] | 673.15 [268] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $n$ | $T$ (K) |
|---|---|---|---|---|---|
| 1.08 [268] | 293.15 | 165 [130] | 293.15 | 1.4507 [271] | 295.15 |
| 1.065 [271] | 295.15 | 450 [268] | 293.15 | | |
| 1.0483 [48] | 303.15 | 218.60 [271] | 303.15 | | |
| | | 14.1 [130] | 353.15 | | |

| Electrochemical window (V) | Anodic limit (V) | Cathode limit (V) |
|---|---|---|
| 6.5 [36] | 3.1 | −3.4 |

### 1704-34: Trihexyl-tetradecylphosphonium dicyanoamide

**Abbreviation**: [P666,14][dca]
**Molecular Formula**: $C_{34}H_{68}N_3P$
**Molar Mass**: 549.9
**Structure**:



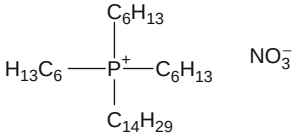
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| Liquid [270] | 206.15 [268] | 668.15 [268] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $n$ | $T$ (K) |
|---|---|---|---|---|---|
| 0.904 [268] | 293.15 | 490 [268] | 293.15 | 1.4840 [271] | 295.15 |
| 0.903 [271] | 295.15 | 268.63 [271] | 303.15 | | |
| 0.9173 [48] | 303.15 | | | | |

### 1704-39: Trihexyl-tetradecylphosphonium nitrate

**Abbreviation**: [P666,14][$NO_3$]
**Molecular Formula**: $C_{32}H_{68}PNO_3$
**Molar Mass**: 545.86
**Structure**:

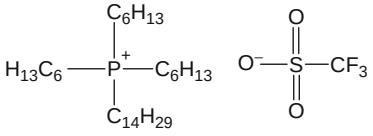


**Character**:
**Application**: Anti-microbial, anti-electrostatic

| $T_m$ (K) |
|---|
| Liquid [270] |

### 1704-43: Trihexyl-tetradecylphosphonium trifluoromethanesulfonate

**Abbreviation**: [P666,14][TfO]
**Molecular Formula**: $C_{33}H_{68}F_3PO_3S$
**Molar Mass**: 632.93
**Structure**:



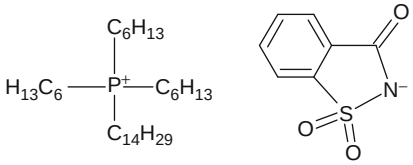
**Character**:
**Application**: Anti-microbial, anti-electrostatic

| $T_m$ (K) |
|---|
| Liquid [270] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $n$ | $T$ (K) |
|---|---|---|---|---|---|
| 0.994 [271] | 295.15 | 561.85 [271] | 303.15 | 1.4585 [271] | 295.15 |

### 1704-312: Trihexyl-tetradecylphosphonium saccharinate

**Abbreviation**: [P666,14][SAC]
**Molecular Formula**: $C_{39}H_{72}NO_3PS$
**Molar Mass**: 666.03
**Structure**:

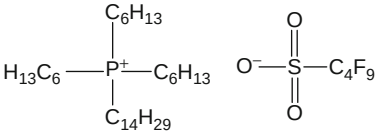


**Character**:
**Application**: [271]

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $n$ | $T$ (K) |
|---|---|---|---|---|---|
| 0.980 | 295.15 | 585.32 | 303.15 | 1.5047 | 295.15 |

### 1704-45: Trihexyl-tetradecylphosphonium perfluorobutylsulfonate

**Abbreviation**: [P666,14][NfO]
**Molecular Formula**: $C_{36}H_{68}F_9PO_3S$
**Molar Mass**: 782.95
**Structure**:



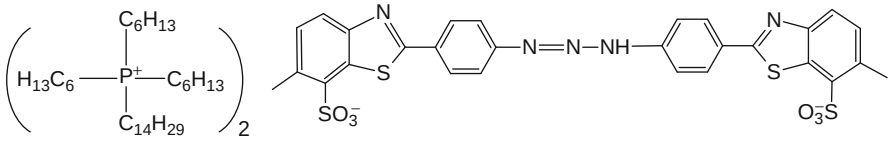
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 205.15 [268] | 663.15 [268] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.079 [268] | 293.15 | 805 [268] | 293.15 |

### 1704-415: di[trihexyl-tetradecylphosphonium] thiazolium yellow G

**Abbreviation**: [P666,14]$_2$[ThY]
**Molecular Formula**: $C_{92}H_{155}N_5O_6P_2S_4$
**Molar Mass**: 1617.46
**Structure**:

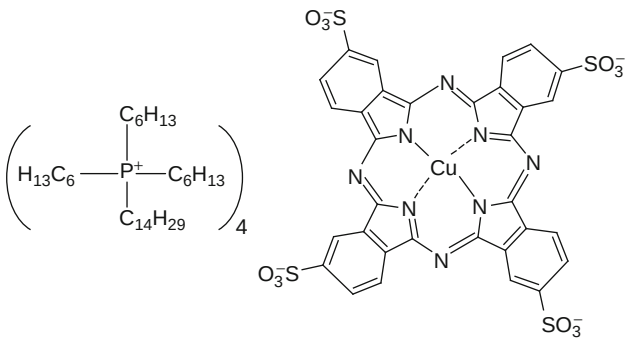


**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 338.15 [268] | 668.15 [268] |

### 1704-416: tetra[trihexyl-tetradecylphosphonium] copper phthalocyaninetetrasulfonate

**Abbreviation**: [P666,14]$_4$[CuPc]
**Molecular Formula**: $C_{160}H_{284}N_8P_4O_{12}S_4Cu$
**Molar Mass**: 2827.71
**Structure**:

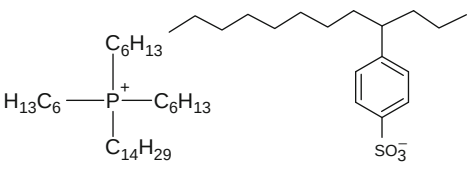


**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 228.15 [268] | 673.15 [268] |

### 1704-423: Trihexyl-tetradecylphosphonium dodecylbenzene sulfonate

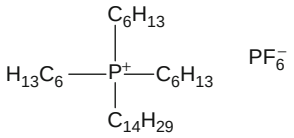
**Abbreviation**: [P666,14][DBS]
**Molecular Formula**: $C_{50}H_{97}O_3PS$
**Molar Mass**: 809.34
**Structure**:



**Character**:
**Application**: [273]

### 1704-51: Trihexyl-tetradecylphosphonium hexafluorophosphate

**Abbreviation**: [P666,14][$PF_6$]
**Molecular Formula**: $C_{32}H_{68}P_2F_6$
**Molar Mass**: 628.82
**Structure**:

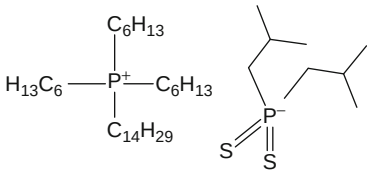


**Character**:
**Application**: Anti-microbial, anti-electrostatic

| $T_m$ (K) |
|---|
| 312.65 [270] |

### 1704-57: Trihexyl-tetradecylphosphonium diisobutyldithiophosphinate

**Abbreviation**: [P666,14][$(i\text{-}Bu)_2PS_2$]
**Molecular Formula**: $C_{40}H_{86}P_2S_2$
**Molar Mass**: 693.19
**Structure**:

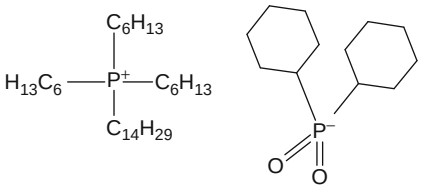


**Character**:
**Application**: Anti-microbial, anti-electrostatic

| $T_m$ (K) |
|---|
| Liquid [270] |

### 1704-58: Trihexyl-tetradecylphosphonium dicyclohexylphosphinate

**Abbreviation**: [P666,14][$(Cyc\text{-}C_6)_2PO_2$]
**Molecular Formula**: $C_{44}H_{90}P_2O_2$
**Molar Mass**: 713.13
**Structure**:

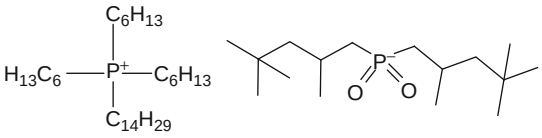


**Character**:
**Application**: Anti-microbial, anti-electrostatic

| $T_m$ (K) |
|---|
| Liquid [270] |

### 1704-59: Trihexyl-tetradecylphosphonium bis(2,4,4-trimethylpentyl)phosphinate

**Abbreviation**: [P666,14][$(i\text{-}C_8)_2PO_2$]
**Molecular Formula**: $C_{48}H_{102}P_2O_2$
**Molar Mass**: 773.27
**Structure**:



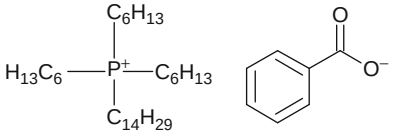
**Character**:
**Application**: Anti-microbial, anti-electrostatic

| $T_m$ (K) |
|---|
| Liquid [270] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 0.8857 [272] | 298.15 | 707 [272] | 298.15 |

### 1704-64: Trihexyl-tetradecylphosphonium benzoate

**Abbreviation**: [P666,14][ba]
**Molecular Formula**: $C_{39}H_{73}PO_2$
**Molar Mass**: 604.97
**Structure**:

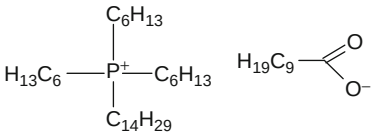


**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 197.7 [121] | 490.65 [121] |

### 1704-66: Trihexyl-tetradecylphosphonium decanoate

**Abbreviation**: [P666,14][$C_8CO_2$]
**Molecular Formula**: $C_{42}H_{87}PO_2$
**Molar Mass**: 655.11
**Structure**:

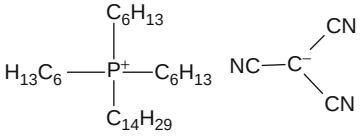


**Character**:
**Application**: Anti-microbial, anti-electrostatic

| $T_m$ (K) |
|---|
| Liquid [270] |

### 1704-72: Trihexyl-tetradecylphosphonium tricyanomethanide

**Abbreviation**: [P666,14][$C(CN)_3$]
**Molecular Formula**: $C_{36}H_{68}N_3P$
**Molar Mass**: 573.92
**Structure**:



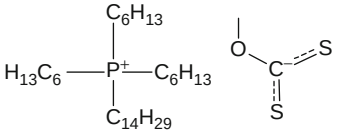
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 208.15 [268] | 688.15 [268] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 0.901 [268] | 293.15 | 320 [268] | 293.15 |

### 1704-73: Trihexyl-tetradecylphosphonium methylxanthate

**Abbreviation**: [P666,14][Xan]
**Molecular Formula**: $C_{34}H_{71}POS_2$
**Molar Mass**: 591.03
**Structure**:



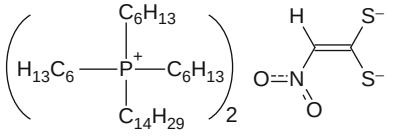
**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 563.15 [268] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 0.92 [268] | 293.15 | 1480 [268] | 293.15 |

### 1704-1501: Di[trihexyl-tetradecylphosphonium] nitrodithioacetate

**Abbreviation**: [P666,14]$_2$[K-salt]
**Molecular Formula**: $C_{66}H_{137}NP_2O_2S_2$
**Molar Mass**: 1102.88
**Structure**:



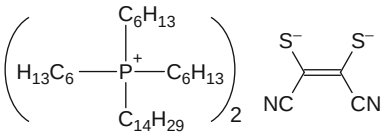
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 194.15 [268] | 623.15 [268] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 0.96 [268] | 293.15 | 560 [268] | 293.15 |

### 1704-1502: Di[trihexyl-tetradecylphosphonium] dithiomaleonitrile

**Abbreviation**: [P666,14]$_2$[dtmn]
**Molecular Formula**: $C_{68}H_{136}N_2P_2S_2$
**Molar Mass**: 1107.9
**Structure**:




**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 202.15 [268] | 633.15 [268] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 0.942 [268] | 293.15 | 4780 [268] | 293.15 |

### 1704-1601: Di[trihexyl-tetradecylphosphonium] bis-dithiomaleonitrile cobalt(II)

**Abbreviation**: [P666,14]$_2$[Co(dtmn)2]
**Molecular Formula**: $C_{72}H_{136}N_4P_2S_4Co$
**Molar Mass**: 1307.02
**Structure**:
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 208.15 [268] | 643.15 [268] |

### 1704-1602: Di[trihexyl-tetradecylphosphonium] bis-dithiomaleonitrile nickel(II)

**Abbreviation**: [P666,14]$_2$[Ni(dtmn)$_2$]
**Molecular Formula**: $C_{72}H_{136}N_4P_2S_4Ni$
**Molar Mass**: 1306.78
**Structure**:
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 203.15 [268] | 653.15 [268] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 0.994 [268] | 293.15 | 6480 [268] | 293.15 |

### 1704-1603: Di[trihexyl-tetradecylphosphonium] tetra-dicyanoamide cobalt(II)

**Abbreviation**: [P666,14]$_2$[Co(N(CN)$_2$)$_4$]
**Molecular Formula**: $C_{72}H_{136}N_{12}P_2Co$
**Molar Mass**: 1290.81
**Structure**:
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 203.15 [268] | 648.15 [268] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 0.907 [268] | 293.15 | 310 [268] | 293.15 |

**1704-1604: Di[trihexyl-tetradecylphosphonium] tetra-thiocynate cobalt(II)**

**Abbreviation**: $[P666,14]_2[Co(NCS)_4]$
**Molecular Formula**: $C_{68}H_{136}N_4P_2S_4Co$
**Molar Mass**: 1258.98
**Structure**:
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 201.15 [268] | 678.15 [268] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 0.963 [268] | 293.15 | 2436 [268] | 293.15 |

**1704-1605: Di[trihexyl-tetradecylphosphonium] tetra-selenocyno cobalt(II)**

**Abbreviation**: $[P666,14]_2[Co(NCSe)_4]$
**Molecular Formula**: $C_{68}H_{136}N_4P_2Se_4Co$
**Molar Mass**: 1446.56
**Structure**:
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 203.15 [268] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.02 [268] | 293.15 | 660 [268] | 293.15 |

**1704-1606: Di[trihexyl-tetradecylphosphonium] hexa-thiocynate nickel(IV)**

**Abbreviation**: $[P666,14]_2[Ni(NCS)_6]$
**Molecular Formula**: $C_{70}H_{136}N_6P_2S_6Ni$
**Molar Mass**: 1374.91
**Structure**:
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 213.15 [268] | 653.15 [268] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 0.902 [268] | 293.15 | 760 [268] | 293.15 |

**1704-1607: Tetra[trihexyl-tetradecylphosphonium] hexa-cyanide iron(IV)**

**Abbreviation**: $[P666,14]_4[Fe(CN)_6]$
**Molecular Formula**: $C_{134}H_{272}N_6P_4Fe$
**Molar Mass**: 2147.37
**Structure**:
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 203.15 [268] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 0.942 [268] | 293.15 | 5790 [268] | 293.15 |

**1704-1608: Trihexyl-tetradecylphosphonium bis-dicarbollyl cobalt(III)**

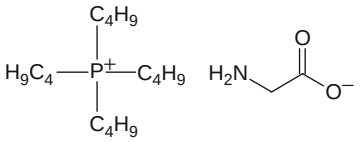
**Abbreviation**: [P666,14][CoCB]
**Molecular Formula**: $C_{36}H_{90}B_{18}PCo$
**Molar Mass**: 807.6
**Structure**:
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 202.15 [268] | 693.15 [268] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1 [268] | 293.15 | 3702 [268] | 293.15 |

### 1705-69: Tetra(*n*-butyl)phosphonium glycine

**Abbreviation**: $[(C_4H_9)_4P][Gly]$
**Molecular Formula**: $C_{18}H_{40}NO_2P$
**Molar Mass**: 333.49
**Structure**:



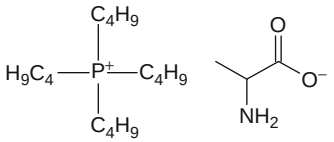
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 198.33 [274] | 473 [274] |

| $\rho$ (g/cm$^3$) | $\eta_D$ (cp) | $K$ (S/m) |
|---|---|---|
| 0.963 [274] | 232.85 [274] | 0.0485 ± 0.1% [274] |

### 1705-610: Tetra(*n*-butyl)phosphonium alanine

**Abbreviation**: $[(C_4H_9)_4P][Ala]$
**Molecular Formula**: $C_{19}H_{42}NO_2P$
**Molar Mass**: 347.51
**Structure**:



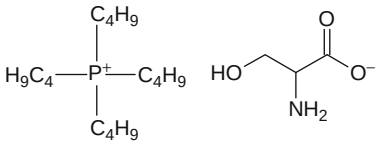
**Character**:
**Application**: $CO_2$ absorbent

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 197.66 [274] | 475 [274] |

| $\rho$ (g/cm$^3$) | $\eta_D$ (cp) | $K$ (S/m) |
|---|---|---|
| 0.95 [274] | 226.69 [274] | 0.0418 ± 0.1% [274] |

### 1705-614: Tetra(*n*-butyl)phosphonium serine

**Abbreviation**: $[(C_4H_9)_4P][Ser]$
**Molecular Formula**: $C_{19}H_{42}NO_3P$
**Molar Mass**: 363.52
**Structure**:



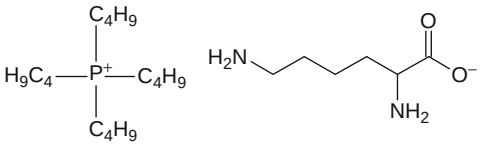
**Character**:
**Application**: $CO_2$ absorbent

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 211.7 [274] | 493 [274] |

| $\rho$ (g/cm$^3$) | $\eta_D$ (cp) | $K$ (S/m) |
|---|---|---|
| 0.991 [274] | 734.2 [274] | 0.0168 ± 0.1% [274] |

### 1705-622: Tetra(*n*-butyl)phosphonium lysine

**Abbreviation**: $[(C_4H_9)_4P][Lys]$
**Molecular Formula**: $C_{22}H_{49}N_2O_2P$
**Molar Mass**: 404.61
**Structure**:



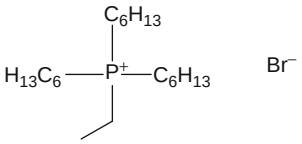
**Character**:
**Application**: $CO_2$ absorbent

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 208.01 [274] | 498 [274] |

| $\rho$ (g/cm$^3$) | $\eta_D$ (cp) | $K$ (S/m) |
|---|---|---|
| 0.973 [274] | 744.71 [274] | 0.0104 ± 0.1% [274] |

### 1706-12: Ethyltrihexylphosphonium bromide

**Abbreviation**: [P666,2]Br
**Molecular Formula**: $C_{20}H_{44}PBr$
**Molar Mass**: 395.44
**Structure**:

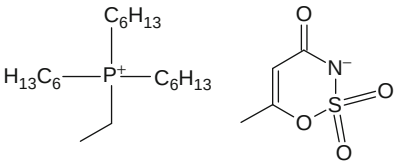


**Character**:
**Application**: Anti-microbial, anti-electrostatic

| $T_m$ (K) |
|---|
| 332.65 [270] |

### 1706-315: Ethyltrihexylphosphonium acesulfamate

**Abbreviation**: [P666,2][Ace]
**Molecular Formula**: $C_{24}H_{48}NPO_4S$
**Molar Mass**: 477.68
**Structure**:



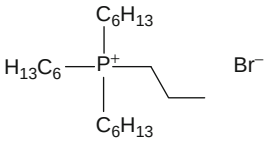
**Character**:
**Application**: Solvent extraction, anti-electrostatic agents, electrolyte

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 200.15 [275] | 457.15 [275] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.0597 [275] | 293.15 |

### 1707-12: Propyltrihexylphosphonium bromide

**Abbreviation**: [P666,3]Br
**Molecular Formula**: $C_{21}H_{46}PBr$
**Molar Mass**: 409.47
**Structure**:

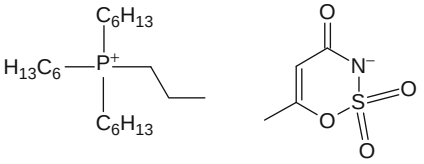


**Character**:
**Application**: Anti-microbial, anti-electrostatic

| $T_m$ (K) |
|---|
| Liquid [270] |

### 1707-315: Propyltrihexylphosphonium acesulfamate

**Abbreviation**: [P666,3][Ace]
**Molecular Formula**: $C_{25}H_{50}NPO_4S$
**Molar Mass**: 491.71
**Structure**:



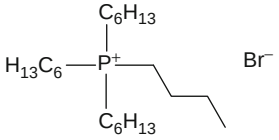
**Character**:
**Application**: Solvent extraction, anti-electrostatic agents, electrolyte

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 201.15 [275] | 458.15 [275] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.0422 [275] | 293.15 |

### 1708-12: Butyltrihexylphosphonium bromide

**Abbreviation**: [P666,4]Br
**Molecular Formula**: $C_{22}H_{48}PBr$
**Molar Mass**: 423.49
**Structure**:

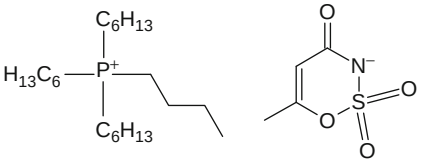



**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 303.15 [270] |

### 1708-315: Butyltrihexylphosphonium acesulfamate

**Abbreviation**: [P666,4][Ace]
**Molecular Formula**: $C_{26}H_{52}NPO_4S$
**Molar Mass**: 505.74
**Structure**:



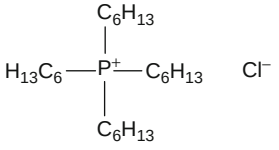

**Character**:
**Application**: Solvent extraction, anti-electrostatic agents, electrolyte

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 202.15 [275] | 459.15 [275] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.0237 [275] | 293.15 |

### 1709-11: Tetrahexylphosphonium chloride

**Abbreviation**: [P6666]Cl
**Molecular Formula**: $C_{24}H_{52}PCl$
**Molar Mass**: 407.1
**Structure**:

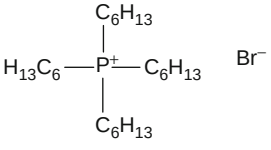



**Character**:
**Application**: Anti-microbial, anti-electrostatic

| $T_m$ (K) |
|---|
| Liquid [270] |

### 1709-12: Tetrahexylphosphonium bromide

**Abbreviation**: [P6666]Br
**Molecular Formula**: $C_{24}H_{52}PBr$
**Molar Mass**: 451.55
**Structure**:

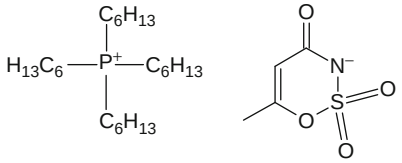



**Character**:
**Application**: Anti-microbial, anti-electrostatic

| $T_m$ (K) |
|---|
| 343.15 [270] |

### 1709-315: Tetrahexylphosphonium acesulfamate

**Abbreviation**: [P6666][Ace]
**Molecular Formula**: $C_{28}H_{56}NPO_4S$
**Molar Mass**: 533.79
**Structure**:



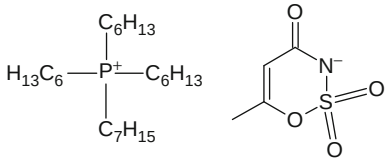
**Character**:
**Application**: Solvent extraction, anti-electrostatic agents, electrolyte

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 207.15 [275] | 485.15 [275] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.016 [275] | 293.15 |

### 1710-315: Heptyltrihexylphosphonium acesulfamate

**Abbreviation**: [P666,7][Ace]
**Molecular Formula**: $C_{29}H_{58}NPO_4S$
**Molar Mass**: 547.81
**Structure**:



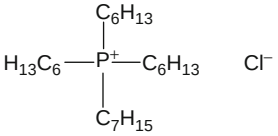
**Character**:
**Application**: Solvent extraction, anti-electrostatic agents, electrolyte

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 204.15 [275] | 493.15 [275] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.0087 [275] | 293.15 |

### 1710-11: Heptyltrihexylphosphonium chloride

**Abbreviation**: [P666,7]Cl
**Molecular Formula**: $C_{25}H_{54}PCl$
**Molar Mass**: 421.12
**Structure**:

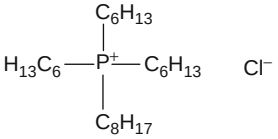


**Character**:
**Application**: Anti-microbial, anti-electrostatic

| $T_m$ (K) |
|---|
| Liquid [270] |

### 1711-11: Octyltrihexylphosphonium chloride

**Abbreviation**: [P666,8]Cl
**Molecular Formula**: $C_{26}H_{56}PCl$
**Molar Mass**: 435.15
**Structure**:

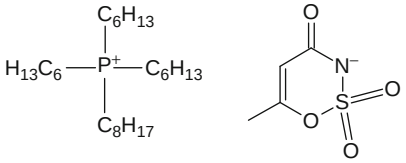


**Character**:
**Application**: Anti-microbial, anti-electrostatic

| $T_m$ (K) |
|---|
| Liquid [270] |

### 1711-315: Octyltrihexylphosphonium acesulfamate

**Abbreviation**: [P666,8][Ace]
**Molecular Formula**: $C_{30}H_{60}NPO_4S$
**Molar Mass**: 561.84
**Structure**:



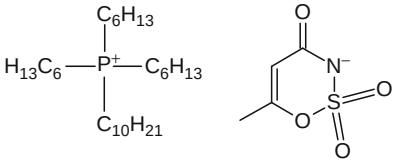
**Character**:
**Application**: Solvent extraction, anti-electrostatic agents, electrolyte

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 203.15 [275] | 467.15 [275] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.0021 [275] | 293.15 |

### 1712-315: Decyltrihexylphosphonium acesulfamate

**Abbreviation**: [P666,10][Ace]
**Molecular Formula**: $C_{32}H_{64}NPO_4S$
**Molar Mass**: 589.89
**Structure**:



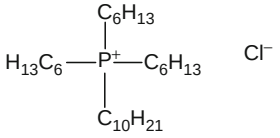
**Character**:
**Application**: Solvent extraction, anti-electrostatic agents, electrolyte

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 203.15 [275] | 486.15 [275] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 0.9903 [275] | 293.15 |

### 1712-11: Decyltrihexylphosphonium chloride

**Abbreviation**: [P666,10]Cl
**Molecular Formula**: $C_{28}H_{60}PCl$
**Molar Mass**: 463.2
**Structure**:

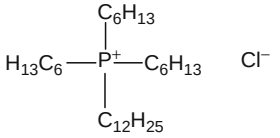


**Character**:
**Application**: Anti-microbial, anti-electrostatic

| $T_m$ (K) |
|---|
| Liquid [270] |

### 1713-11: Dodecyltrihexylphosphonium chloride

**Abbreviation**: [P666,12]Cl
**Molecular Formula**: $C_{30}H_{64}PCl$
**Molar Mass**: 491.26
**Structure**:

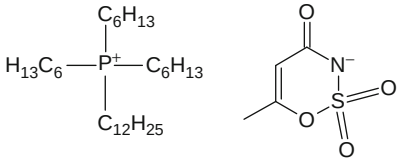


**Character**:
**Application**: Anti-microbial, anti-electrostatic

| $T_m$ (K) |
|---|
| Liquid [270] |

### 1713-315: Dodecyltrihexylphosphonium acesulfamate

**Abbreviation**: [P666,12][Ace]
**Molecular Formula**: $C_{34}H_{68}NPO_4S$
**Molar Mass**: 617.95
**Structure**:



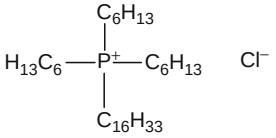
**Character**:
**Application**: Solvent extraction, anti-electrostatic agents, electrolyte

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 201.15 [275] | 476.15 [275] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 0.9801 [275] | 293.15 |

### 1714-11: Hexadecyltrihexylphosphonium chloride

**Abbreviation**: [P666,16]Cl
**Molecular Formula**: $C_{34}H_{72}PCl$
**Molar Mass**: 547.36
**Structure**:

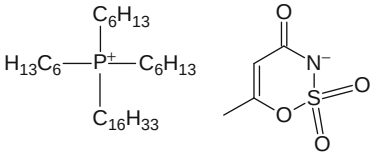


**Character**:
**Application**: Anti-microbial, anti-electrostatic

| $T_m$ (K) |
|---|
| Liquid [270] |

### 1714-315: Hexadecyltrihexylphosphonium acesulfamate

**Abbreviation**: [P666,16][Ace]
**Molecular Formula**: $C_{38}H_{76}NPO_4S$
**Molar Mass**: 674.05
**Structure**:



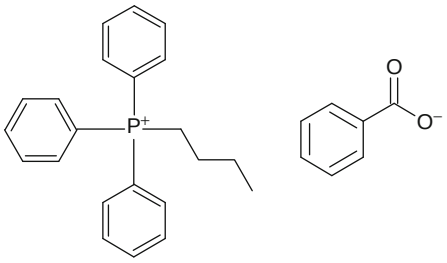
**Character**:
**Application**: Solvent extraction, anti-electrostatic agents, electrolyte

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 203.15 [275] | 483.15 [275] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 0.9576 [275] | 293.15 |

### 1715-64: Butyltriphenylphosphonium benzoate

**Abbreviation**: $[B(ph)_3P][ba]$
**Molecular Formula**: $C_{29}H_{29}PO_2$
**Molar Mass**: 440.51
**Structure**:

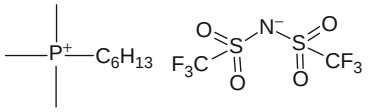


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 291.71 [121] | 508.95 [121] |

### 1716-31: Hexyltrimethylphosphonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [P1116][TFSI]
**Molecular Formula**: $C_{11}H_{22}F_6NPO_4S_2$
**Molar Mass**: 441.39
**Structure**:



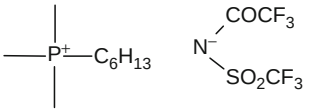
**Character**:
**Application**: Electrolyte

| $T_m$ (K) |
|---|
| 294.15 [59] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.34 [59] | 298.15 | 150 [59] | 298.15 | 0.092 [59] | 298.15 |

### 1716-35: Hexyltrimethylphosphonium 2,2,2-trifluoro-*N*-(trifluoromethylsulfonyl)acetamide

**Abbreviation**: [P1116][TSAC]
**Molecular Formula**: $C_{12}H_{22}F_6NPO_3S$
**Molar Mass**: 405.34
**Structure**:



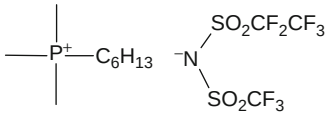
**Character**:
**Application**: Electrolyte

| $T_m$ (K) |
|---|
| 280.45 [59] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.28 [59] | 298.15 | 91 [59] | 298.15 | 0.14 [59] | 298.15 |

### 1716-316: Hexyltrimethylphosphonium *N*-(trifluoromethylsulfonyl)pentafluoroethylsulfonamide

**Abbreviation**: [P1116][C1C2]
**Molecular Formula**: $C_{12}H_{22}F_8NPO_4S_2$
**Molar Mass**: 491.4
**Structure**:

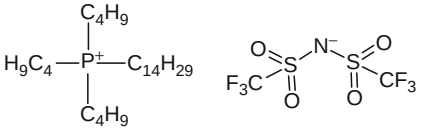


**Character**:
**Application**: Electrolyte

| $T_m$ (K) |
|---|
| 313.15 [59] |

### 1717-31: Tributyl-tetradecylphosphonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [P444,14][TFSI]
**Molecular Formula**: $C_{28}H_{56}F_6NO_4PS_2$
**Molar Mass**: 679.84
**Structure**:



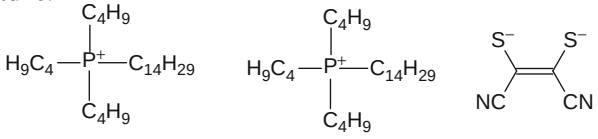
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 213.15 [268] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.112 [268] | 293.15 | 464 [268] | 293.15 |

### 1717-1502: di[Tributyl-tetradecylphosphonium] dithiomaleonitrile

**Abbreviation**: [P444,14]$_2$[dtmn]
**Molecular Formula**: $C_{56}H_{112}N_2P_2S_2$
**Molar Mass**: 939.58
**Structure**:

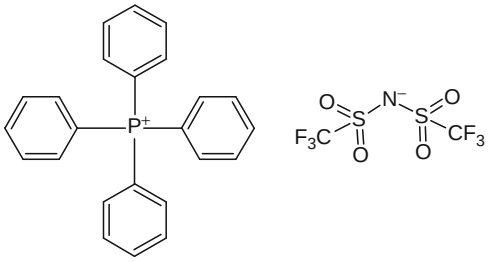


**Character**:
**Application**:

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 7480 [268] | 293.15 |

### 1718-31: Tetraphenylphosphonium bis((trifluoromethyl) sulfonyl)imide

**Abbreviation**: [P(ph)$_4$][TFSI]
**Molecular Formula**: $C_{26}H_{20}F_6NO_4PS_2$
**Molar Mass**: 619.53
**Structure**:

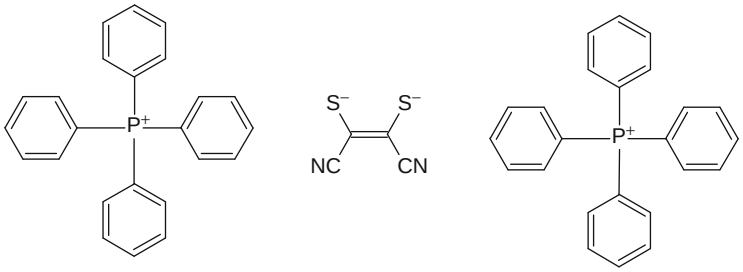


**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 433.15 [268] |

### 1718-1502: Di[tetraphenylphosphonium] dithiomaleonitrile

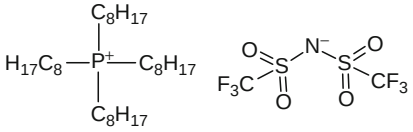
**Abbreviation**: [P(ph)4]$_2$[dtmn]
**Molecular Formula**: $C_{52}H_{40}N_2P_2S_2$
**Molar Mass**: 818.98
**Structure**:



**Character**:
**Application**: [268]

### 1719-31: Tetraoctylphosphonium bis((trifluoromethyl) sulfonyl)imide

**Abbreviation**: [P8888][TFSI]
**Molecular Formula**: $C_{34}H_{68}F_6NO_4PS_2$
**Molar Mass**: 764
**Structure**:

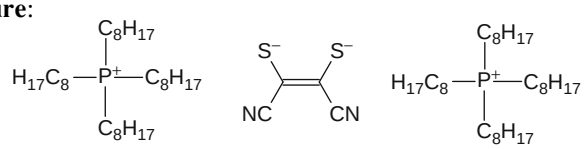


**Character**:
**Application**:

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $n$ | $T$ (K) |
|---|---|---|---|---|---|
| 1.071 [268] | 293.15 | 418 [268] | 293.15 | 1.4511 [271] | 295.15 |
| 1.067 [271] | 295.15 | 185.11 [271] | 303.15 | | |

### 1719-1502: Di(tetraoctylphosphonium) dithiomaleonitrile

**Abbreviation**: $[P8888]_2[dtmn]$
**Molecular Formula**: $C_{68}H_{136}N_2P_2S_2$
**Molar Mass**: 1107.9
**Structure**:

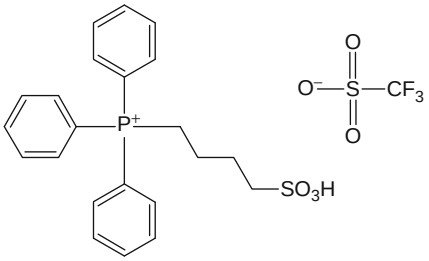


**Character**:
**Application**:

| $\eta_D$ (cp) | $T$ (K) |
|---|---|
| 5590 [268] | 293.15 |

### 1720-43: Triphenyl(4-sulfonylbutyl)phosphonium trifluoromethanesulfonate

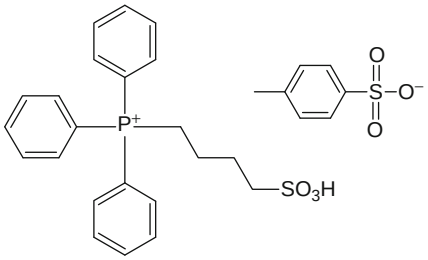
**Abbreviation**: $[Ph_3PC_4SO_3H][TfO]$
**Molecular Formula**: $C_{23}H_{24}F_3PO_6S_2$
**Molar Mass**: 548.53
**Structure**:



**Character**:
**Application**: Media and catalyst in acid-catalyzed reactions [159]

### 1720-47: Triphenyl(4-sulfonylbutyl)phosphonium tosylate

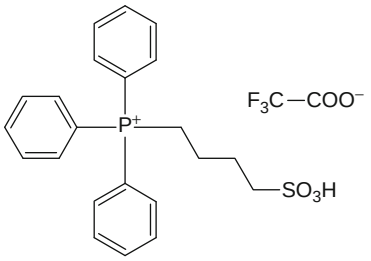
**Abbreviation**: $[Ph_3PC_4SO_3H][Tos]$
**Molecular Formula**: $C_{29}H_{31}PO_6S_2$
**Molar Mass**: 570.66
**Structure**:



**Character**:
**Application**: Media and catalyst in acid-catalyzed reactions [159]

**1720-61: Triphenyl(4-sulfonylbutyl)phosphonium trifluoroacetate**

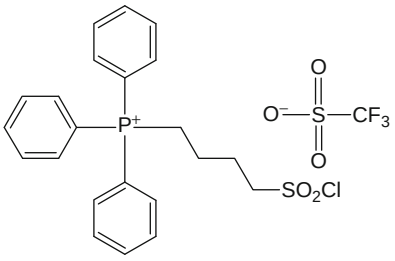
**Abbreviation**: $[Ph_3PC_4SO_3H][TA]$
**Molecular Formula**: $C_{24}H_{24}F_3PO_5S$
**Molar Mass**: 512.48
**Structure**:




**Character**:
**Application**: Media and catalyst in acid-catalyzed reactions [159]

**1721-43: Triphenyl(4-chlorosulfonylbutyl)phosphonium trifluoromethanesulfonate**

**Abbreviation**: $[Ph_3PC_4SO_2Cl][TfO]$
**Molecular Formula**: $C_{23}H_{23}F_3PO_5S_2Cl$
**Molar Mass**: 566.98
**Structure**:

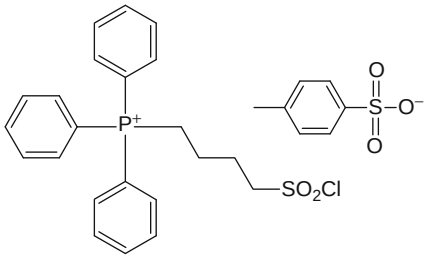



**Character**:
**Application**: Media and catalyst in acid-catalyzed reactions

| $T_m$ (K) |
|---|
| 363.15-365.15 [159] |

**1721-47: Triphenyl(4-chlorosulfonylbutyl)phosphonium tosylate**

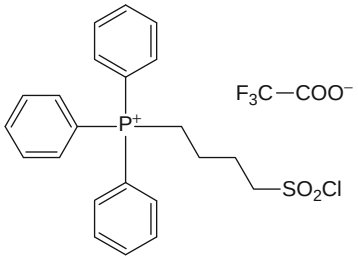
**Abbreviation**: $[Ph_3PC_4SO_2Cl][Tos]$
**Molecular Formula**: $C_{29}H_{30}PO_5S_2Cl$
**Molar Mass**: 589.1
**Structure**:




**Character**:
**Application**: Media and catalyst in acid-catalyzed reactions [159]

**1721-61: Triphenyl(4-chlorosulfonylbutyl)phosphonium trifluoroacetate**

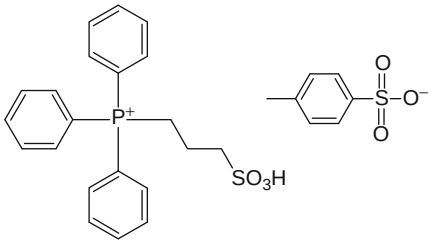
**Abbreviation**: $[Ph_3PC_4SO_2Cl][TA]$
**Molecular Formula**: $C_{24}H_{23}F_3PO_4SCl$
**Molar Mass**: 530.92
**Structure**:




**Character**:
**Application**: Media and catalyst in acid-catalyzed reactions [159]

**1722-47: Triphenyl(3-sulfonylpropyl)phosphonium tosylate**

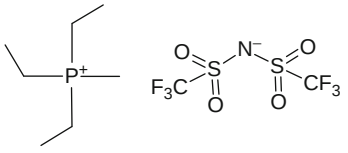
**Abbreviation**: $[Ph_3PC_3SO_3H][Tos]$
**Molecular Formula**: $C_{28}H_{29}O_6PS_2$
**Molar Mass**: 556.63
**Structure**:




**Character**:
**Application**: [167]

**1723-31: Triethylmethylphosphonium bis (trifluoromethyl) sulfonyl)imide**

**Abbreviation**: $[P2221][NTf_2]$
**Molecular Formula**: $C_9H_{18}F_6NO_4PS_2$
**Molar Mass**: 413.34
**Structure**:

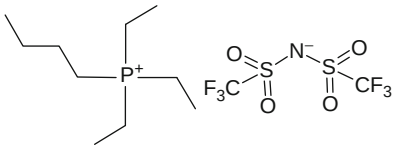



**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 370.15 [236] |

### 1724-31: triethylbutylphosphonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [P2224][$NTf_2$]
**Molecular Formula**: $C_{12}H_{24}F_6NO_4PS_2$
**Molar Mass**: 455.42
**Structure**:

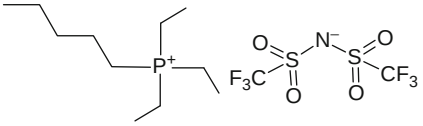


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 328.15 [236] |

### 1725-31: Triethylamylphosphonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [P2225][$NTf_2$]
**Molecular Formula**: $C_{13}H_{26}F_6NO_4PS_2$
**Molar Mass**: 469.44
**Structure**:



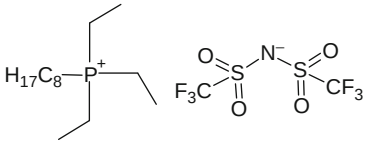
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 290.15 [236] | 653.15 [236] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.32 [236] | 298.15 | 88 [236] | 298.15 | 0.173 [236] | 298.15 |

### 1726-31: Triethyloctylphosphonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [P2228][$NTf_2$]
**Molecular Formula**: $C_{13}H_{26}F_6NO_4PS_2$
**Molar Mass**: 511.52
**Structure**:



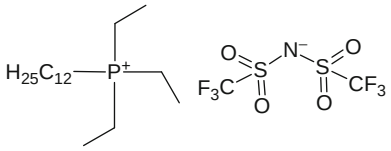
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| <223.15 [236] | 673.15 [236] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.26 [236] | 298.15 | 129 [236] | 298.15 | 0.098 [236] | 298.15 |

### 1727-31: Triethyldodecylphosphonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [P222,12][$NTf_2$]
**Molecular Formula**: $C_{20}H_{40}F_6NO_4PS_2$
**Molar Mass**: 567.63
**Structure**:



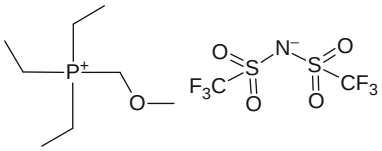
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 286.15 [236] | 681.15 [236] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.21 [236] | 298.15 | 180 [236] | 298.15 | 0.047 [236] | 298.15 |

### 1728-31: Triethyl(methoxymethyl)phosphonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [P222,1O1][$NTf_2$]
**Molecular Formula**: $C_{10}H_{20}F_6NO_5PS_2$
**Molar Mass**: 443.36
**Structure**:



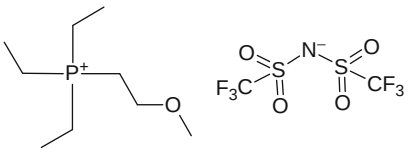
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 287.15 [236] | 661.15 [236] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.42 [236] | 298.15 | 35 [236] | 298.15 | 0.44 [236] | 298.15 |

### 1729-31: Triethyl(2-methoxyethyl)phosphonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [P222,2O1][$NTf_2$]
**Molecular Formula**: $C_{11}H_{22}F_6NO_5PS_2$
**Molar Mass**: 457.39
**Structure**:



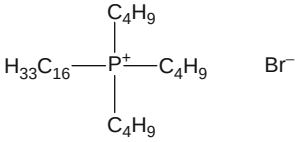
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 283.15 [236] | 677.15 [236] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.39 [236] | 298.15 | 44 [236] | 298.15 | 0.358 [236] | 298.15 |

### 1730-12: Hexadecyltributylphosphonium bromide

**Abbreviation**: [P444,16]Br
**Molecular Formula**: $C_{28}H_{60}PBr$
**Molar Mass**: 507.65
**Structure**:

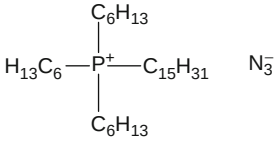


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 331.15-333.15 [276] |

### 1731-318: *n*-Pentadecyl(tri-*n*-hexyl)phosphonium azide

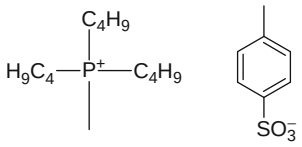
**Abbreviation**: [P666,15]$N_3$
**Molecular Formula**: $C_{33}H_{70}PN_3$
**Molar Mass**: 539.9
**Structure**:



**Character**:
**Application**: [277]

### 1732-47: Methyl(tri-*n*-butyl)phosphonium tosylate

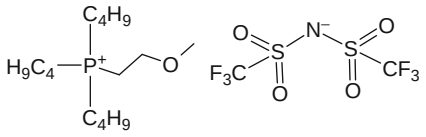
**Abbreviation**: [P1444][Tos]
**Molecular Formula**: $C_{20}H_{37}O_3PS$
**Molar Mass**: 388.54
**Structure**:



**Character**:
**Application**: [277]

### 1733-31: 2-Methoxyethyl(tri-*n*-butyl)phosphonium bis(trifluoromethanesulfonyl)imide

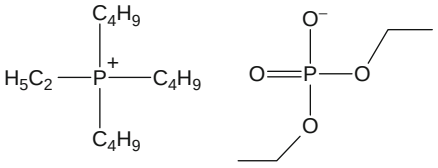
**Abbreviation**: $[MEBu_3P][NTf_2]$
**Molecular Formula**: $C_{17}H_{34}F_6NO_5PS_2$
**Molar Mass**: 541.55
**Structure**:



**Character**:
**Application**: [277]

### 1734-512: Tributyl(ethyl)phosphonium diethylphosphate

**Abbreviation**: [P2444][DEP]
**Molecular Formula**: $C_{18}H_{42}O_4P_2$
**Molar Mass**: 384.47
**Structure**:

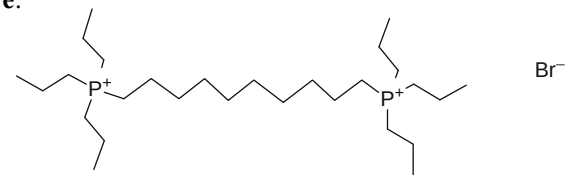


**Character**:
**Application**:

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 0.9957 [48] | 303.15 |

### 1735-12: 1,10-Di(tripropylphosphonium)decane bromide

**Abbreviation**: $[C_{10}(P333)_2]Br$
**Molecular Formula**: $C_{28}H_{62}P_2Br$
**Molar Mass**: 540.64
**Structure**:

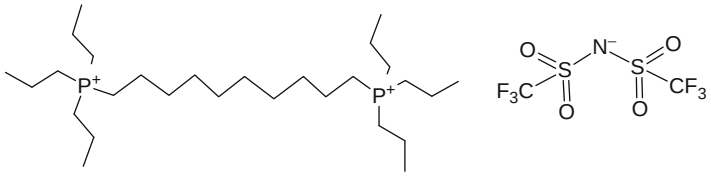


**Character**:
**Application**:

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.113 [271] | 295.15 |

### 1735-31: 1,10-Di(tripropylphosphonium)decane bis(trifluoromethane)sulfonamide

**Abbreviation**: $[C_{10}(P333)_2][NTf_2]$
**Molecular Formula**: $C_{30}H_{62}F_6NO_4P_2S_2$
**Molar Mass**: 740.88
**Structure**:

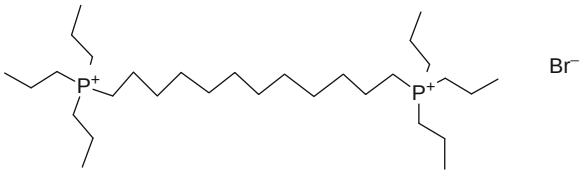


**Character**:
**Application**:

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.293 [271] | 295.15 |

**1736-12: 1,12-Di(tripropylphosphonium)dodecane bromide**

**Abbreviation**: $[C_{12}(P333)_2]Br$
**Molecular Formula**: $C_{30}H_{66}P_2Br$
**Molar Mass**: 568.7
**Structure**:

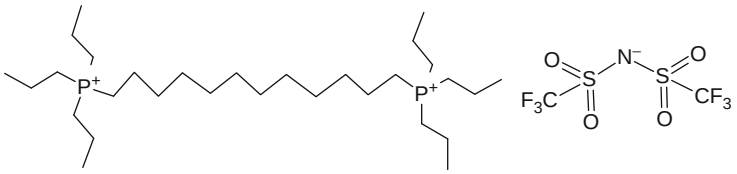



**Character**:
**Application**:

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.141 [271] | 295.15 |

**1736-31: 1,12-Di(tripropylphosphonium)dodecane bis(trifluoromethane)sulfonamide**

**Abbreviation**: $[C_{12}(P333)_2][NTf_2]$
**Molecular Formula**: $C_{32}H_{66}F_6NO_4P_2S_2$
**Molar Mass**: 768.94
**Structure**:

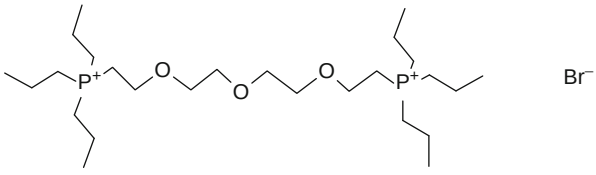



**Character**:
**Application**: [271]

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $n$ | $T$ (K) |
|---|---|---|---|---|---|
| 1.267 | 295.15 | 1265.83 | 303.15 | 1.4514 | 295.15 |

**1737-12: 1,11-Di(tripropylphosphonium)-3,6,9-trioxaundecane bromide**

**Abbreviation**: $[PEG_3(P333)_2]Br$
**Molecular Formula**: $C_{26}H_{58}P_2O_3Br$
**Molar Mass**: 560.59
**Structure**:

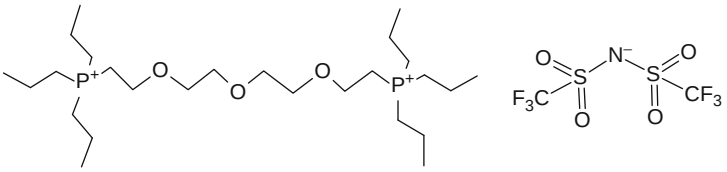



**Character**:
**Application**:

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.193 [271] | 295.15 |

**1737-31: 1,11-Di(tripropylphosphonium)-3,6,9-trioxaundecane bis(trifluoromethane)sulfonamide**

**Abbreviation**: $[PEG_3(P333)_2][NTf_2]$
**Molecular Formula**: $C_{28}H_{58}F_6NO_7P_2S_2$
**Molar Mass**: 760.83
**Structure**:



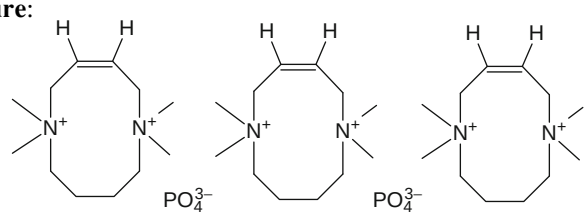
**Character**:
**Application**: [271]

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $n$ | $T$ (K) |
|---|---|---|---|---|---|
| 1.331 | 295.15 | 460.85 | 303.15 | 1.4469 | 295.15 |

# 14 Polymeric ammonium

**1901-52: (*z*)-1,1,6,6-Tetramethyl-3-en-1,6-diazecanediaminium phosphate**

**Abbreviation**: $[Com1]_3[PO_4]_2$
**Molecular Formula**: $C_{36}H_{78}N_6O_8P_2$
**Molar Mass**: 784.99
**Structure**:

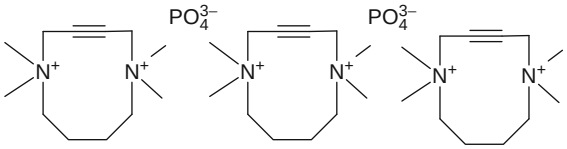



**Character**:
**Application**:

| $\rho$ (g/cm$^3$) | $K$ (S/m) | $T$ (K) |
|---|---|---|
| 1.82 [278] | 3.8 [278] | 298.15 |
| | 5.2 [278] | 313.15 |
| | 5 [278] | 333.15 |

**1902-52: 1,1,6,6-Tetramethyl-3-yn-1,6-diazecanediaminium phosphate**

**Abbreviation**: $[Com2]_3[PO_4]_2$
**Molecular Formula**: $C_{36}H_{72}N_6P_2O_8$
**Molar Mass**: 778.94
**Structure**:

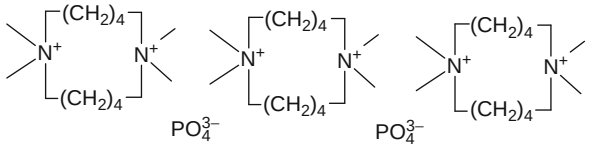



**Character**:
**Application**:

| $\rho$ (g/cm$^3$) | $K$ (S/m) | $T$ (K) |
|---|---|---|
| 1.58 [278] | 5.3 [278] | 298.15 |
| | 5.6 [278] | 313.15 |
| | 7.1 [278] | 333.15 |

**1903-52: 1,1,6,6-Tetramethyl-1,6-diazecanediaminium phosphate**

**Abbreviation**: $[Com3]_3[PO_4]_2$
**Molecular Formula**: $C_{48}H_{108}N_6P_2O_8$
**Molar Mass**: 959.35
**Structure**:

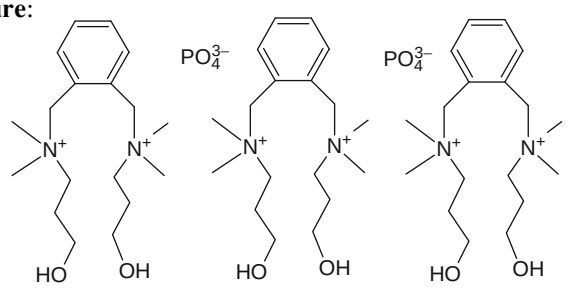



**Character**:
**Application**:

| $\rho$ (g/cm$^3$) | $K$ (S/m) | $T$ (K) |
|---|---|---|
| 1.82 [278] | 6.3 [278] | 298.15 |
| | 7.1 [278] | 333.15 |

**1904-52: *N*-(2-(((3-hydroxypropyl)dimethylammonio) methyl)benzyl)-3-hydroxy-*N*,*N*-dimethylpropyl-1-aminium phosphate**

**Abbreviation**: $[Com4]_3[PO_4]_2$
**Molecular Formula**: $C_{54}H_{102}N_6O_{14}P_2$
**Molar Mass**: 1121.37
**Structure**:

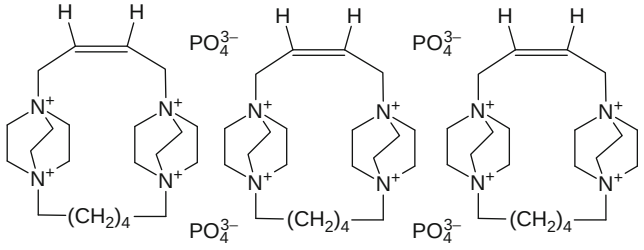



**Character**:
**Application**:

| $\rho$ (g/cm$^3$) | $K$ (S/m) | $T$ (K) |
|---|---|---|
| 1.9 [278] | 4.2 [278] | 298.15 |
| | 5.3 [278] | 313.15 |
| | 6.7 [278] | 333.15 |

**1905-52: (1,4),(1,4),(9,12),(9,12)-Tetradimethylene-6-en-1,4,9,12-tetrakisazacyclohexadecane tetraminium phosphate**

**Abbreviation**: $[Com5]_3[PO_4]_4$
**Molecular Formula**: $C_{66}H_{126}N_{12}O_{16}P_4$
**Molar Mass**: 1467.67
**Structure**:

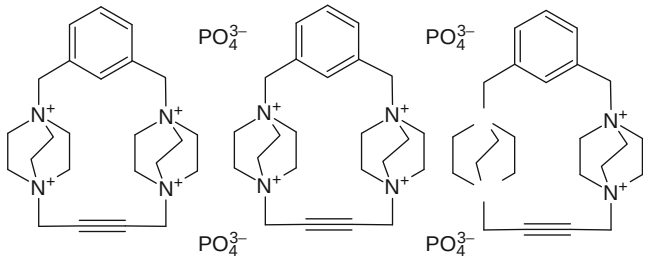



**Character**:
**Application**:

| $\rho$ (g/cm$^3$) | $K$ (S/m) | $T$ (K) |
|---|---|---|
| 1.58 [278] | 6.4 [278] | 298.15 |
| | 8.1 [278] | 313.15 |
| | 8.7 [278] | 333.15 |

**1906-52: 6,8-(1′,3′-Phenylene)-(1,4),(1,4),(10,13),(10,13)-tetradimethylene-1,4,10,13-tetrakisazacycloheptadecane tetraminium phosphate**

**Abbreviation**: $[Com6]_3[PO_4]_4$
**Molecular Formula**: $C_{72}H_{108}N_{12}O_{16}P_4$
**Molar Mass**: 1521.59
**Structure**:

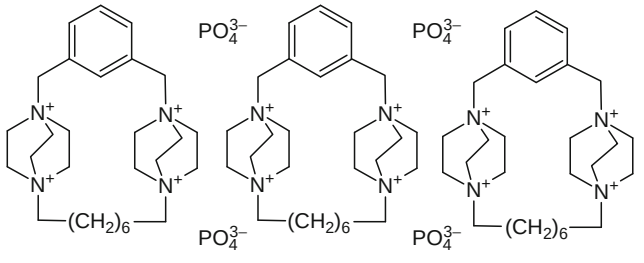



**Character**:
**Application**:

| $\rho$ (g/cm$^3$) | $K$ (S/m) | $T$ (K) |
|---|---|---|
| 1.96 [278] | 2.6 [278] | 298.15 |
| | 2.7 [278] | 313.15 |
| | 4.2 [278] | 333.15 |

**1907-52: 6,8-(1′,3′-Phenylene)-(1,4),(1,4),(10,13),(10,13)-tetradimethylene-1,4,10,13-tetrakisazacyclohenicosane tetraminium phosphate**

**Abbreviation**: $[Com7]_3[PO_4]_4$
**Molecular Formula**: $C_{84}H_{144}N_{12}O_{16}P_4$
**Molar Mass**: 1702.00
**Structure**:

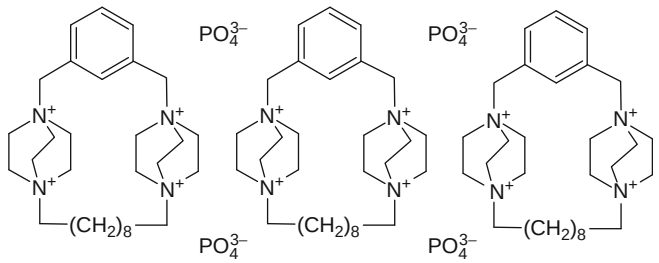



**Character**:
**Application**:

| $\rho$ (g/cm$^3$) | $K$ (S/m) | $T$ (K) |
|---|---|---|
| 1.78 [278] | 5.7 [278] | 298.15 |
| | 6.3 [278] | 313.15 |
| | 6.1 [278] | 333.15 |

**1908-52: 6,8-(1′,3′-Phenylene)-(1,4),(1,4),(10,13),(10,13)-tetradimethylene-1,4,10,13-tetrakisazacyclotricosane tetraminium phosphate**

**Abbreviation**: $[Com8]_3[PO_4]_4$
**Molecular Formula**: $C_{90}H_{156}N_{12}O_{16}P_4$
**Molar Mass**: 1786.16
**Structure**:



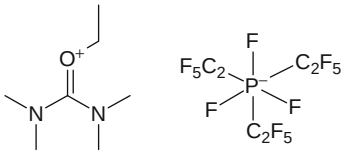

**Character**:
**Application**:

| $\rho$ (g/cm$^3$) | $K$ (S/m) | $T$ (K) |
|---|---|---|
| 1.86 [278] | 6.3 [278] | 298.15 |
| | 5.2 [278] | 313.15 |
| | 8.2 [278] | 333.15 |

# 15 Uronium

**20001-54: *O*-ethyl-tetramethyluronium tris(pentafluoroethyl)trifluorophosphate**

**Abbreviation**: $[(CH_3)_2N]_2C(OC_2H_5)][(C_2F_5)_3PF_3]$
**Molecular Formula**: $C_{13}H_{17}F_{18}N_2OP$
**Molar Mass**: 590.23
**Structure**:

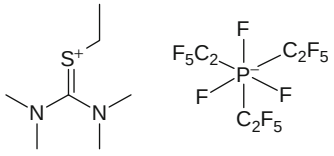


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 305.15-307.15 [36] | 493.15 [36] |

**20002-54: *S*-ethyl-tetramethylthiouronium tris(pentafluoroethyl)trifluorophosphate**

**Abbreviation**: $[(CH_3)_2N]_2C(SC_2H_5)][(C_2F_5)_3PF_3]$
**Molecular Formula**: $C_{13}H_{17}F_{18}N_2SP$
**Molar Mass**: 606.30
**Structure**:



**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 273.15-275.15 [36] |

# 16 Sodium

**21001-91: $Na_{13}[La(TiW_{11}O_{39})_2]$**

**Abbreviation**: $Na_{13}$ $[La(TiW_{11}O_{39})_2]$
**Molecular Formula**: $Na_{13}LaTi_2W_{22}O_{78}$
**Molar Mass**: 5825.94
**Structure**:
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 253.0 [279] |

| $K$ (S/m) | T (K) |
|---|---|
| 1.10 [279] | 298.15 |

**21001-92: $Na_{13}[Ce(TiW_{11}O_{39})_2]$**

**Abbreviation**: $Na_{13}[Ce(TiW_{11}O_{39})_2]$
**Molecular Formula**: $Na_{13}CeTi_2W_{22}O_{78}$
**Molar Mass**: 5827.15
**Structure**:
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 263.0 [279] |

| $K$ (S/m) | T (K) |
|---|---|
| 2.02 [279] | 298.15 |

**21001-93: $Na_{13}[Pr(TiW_{11}O_{39})_2]$**

**Abbreviation**: $Na_{13}[Pr(TiW_{11}O_{39})_2]$
**Molecular Formula**: $Na_{13}PrTi_2W_{22}O_{78}$
**Molar Mass**: 5827.94
**Structure**:
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 253.0 [279] |

| $K$ (S/m) | T (K) |
|---|---|
| 1.85 [279] | 298.15 |

**21001-94: $Na_{13}[Sm(TiW_{11}O_{39})_2]$**

**Abbreviation**: $Na_{13}[Sm(TiW_{11}O_{39})_2]$
**Molecular Formula**: $Na_{13}SmTi_2W_{22}O_{78}$
**Molar Mass**: 5837.39
**Structure**:
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 256.0 [279] |

| $K$ (S/m) | T (K) |
|---|---|
| 2.24 [279] | 298.15 |

### 21001-95: $Na_{13}[Gd(TiW_{11}O_{39})_2]$

**Abbreviation**: $Na_{13}[Gd(TiW_{11}O_{39})_2]$
**Molecular Formula**: $Na_{13}GdTi_2W_{22}O_{78}$
**Molar Mass**: 5844.28
**Structure**:
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 265.1 [279] |

| $K$ (S/m) | T (K) |
|---|---|
| 2.30 [279] | 298.15 |

### 21001-96: $Na_{13}[Dy(TiW_{11}O_{39})_2]$

**Abbreviation**: $Na_{13}[Dy(TiW_{11}O_{39})_2]$
**Molecular Formula**: $Na_{13}DyTi_2W_{22}O_{78}$
**Molar Mass**: 5849.53
**Structure**:
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 265.2 [279] |

| $K$ (S/m) | T (K) |
|---|---|
| 1.92 [279] | 298.15 |

### 21001-97: $Na_{13}[Er(TiW_{11}O_{39})_2]$

**Abbreviation**: $Na_{13}[Er(TiW_{11}O_{39})_2]$
**Molecular Formula**: $Na_{13}ErTi_2W_{22}O_{78}$
**Molar Mass**: 5854.29
**Structure**:
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 261.0 [279] |

| $K$ (S/m) | T (K) |
|---|---|
| 1.92 [279] | 298.15 |

### 21001-98: $Na_{13}[Tm(TiW_{11}O_{39})_2]$

**Abbreviation**: $Na_{13}[Tm(TiW_{11}O_{39})_2]$
**Molecular Formula**: $Na_{13}TmTi_2W_{22}O_{78}$
**Molar Mass**: 5855.97
**Structure**:
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 260.2 [279] |

| $K$ (S/m) | T (K) |
|---|---|
| 1.59 [279] | 298.15 |

### 21001-99: $Na_{13}[Yb(TiW_{11}O_{39})_2]$

**Abbreviation**: $Na_{13}[Yb(TiW_{11}O_{39})_2]$
**Molecular Formula**: $Na_{13}YbTi_2W_{22}O_{78}$
**Molar Mass**: 5860.07
**Structure**:
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 267.2 [279] |

| $K$ (S/m) | T (K) |
|---|---|
| 1.77 [279] | 298.15 |

### 21001-1001: $Na_5[CrTiW_{11}O_{39}]$

**Abbreviation**: $Na_5[CrTiW_{11}O_{39}]$
**Molecular Formula**: $Na_5CrTiW_{11}O_{39}$
**Molar Mass**: 2861.03
**Structure**:
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 261.5 [279] |

| $K$ (S/m) | T (K) |
|---|---|
| 1.62 [279] | 298.15 |

### 21001-1002: $Na_5[MnTiW_{11}O_{39}]$

**Abbreviation**: $Na_5[MnTiW_{11}O_{39}]$
**Molecular Formula**: $Na_5MnTiW_{11}O_{39}$
**Molar Mass**: 2863.97
**Structure**:
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 253.0 [279] |

| $K$ (S/m) | T (K) |
|---|---|
| 1.80 [279] | 298.15 |

### 21001-1003: $Na_5[FeTiW_{11}O_{39}]$

**Abbreviation**: $Na_5[FeTiW_{11}O_{39}]$
**Molecular Formula**: $Na_5FeTiW_{11}O_{39}$
**Molar Mass**: 2864.88
**Structure**:
**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 257.6 [279] |

| $K$ (S/m) | T (K) |
|---|---|
| 2.66 [279] | 298.15 |

### 21001-1004: $Na_6[ZnTiW_{11}O_{39}]$

**Abbreviation**: $Na_6[ZnTiW_{11}O_{39}]$
**Molecular Formula**: $Na_6ZnTiW_{11}O_{39}$
**Molar Mass**: 2897.43
**Structure**:
**Character**:
**Application**:

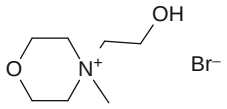
| $T_m$ (K) |
|---|
| 257.4 [279] |

| $K$ (S/m) | T (K) |
|---|---|
| 2.01 [279] | 298.15 |

# 17 Morpholinium

### 22001-12: *N*-(2-hydroxyethyl)-*N*-methyl morphorinium bromide

**Abbreviation**: [HEMMor]Br
**Molecular Formula**: $C_7H_{16}NO_2Br$
**Molar Mass**: 226.11
**Structure**:



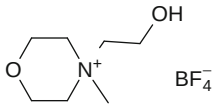

**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 423.15 ± 2 [146] |

| Electrochemical window (V) | $T$ (K) |
|---|---|
| 4 [146] | RT |

### 22001-21: *N*-(2-hydroxyethyl)-*N*-methyl morphorinium tetrafluoroborate

**Abbreviation**: [HEMMor][$BF_4$]
**Molecular Formula**: $C_7H_{16}NO_2BF_4$
**Molar Mass**: 233.01
**Structure**:



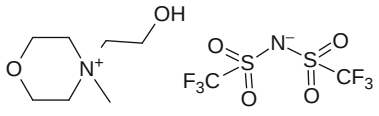

**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 214.15 ± 2 [146] | 573.15 ± 2 [146] |

| $K$ (S/m) | $T$ (K) | Water content (<100wt %,100ppm) | Electrochemical window (V) | $T$ (K) |
|---|---|---|---|---|
| 0.0087 [146] | 298.15 | 192.4ppm [146] | 5.7 [146] | RT |

### 22001-31: *N*-(2-hydroxyethyl)-*N*-methyl morphorinium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [HEMMor][TFSI]
**Molecular Formula**: $C_9H_{16}F_6N_2O_6S_2$
**Molar Mass**: 426.36
**Structure**:



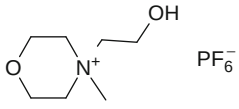

**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 223.15 ± 2 [146] | 643.15 ± 2 [146] |

| $K$ (S/m) | $T$ (K) | Water content (<100wt %,100ppm) | Electrochemical window (V) | $T$ (K) |
|---|---|---|---|---|
| 0.0085 [146] | 298.15 | 123ppm [146] | 6.2 [146] | RT |

### 22001-51: *N*-(2-hydroxyethyl)-*N*-methyl morphorinium hexafluorophosphate

**Abbreviation**: [HEMMor][$PF_6$]
**Molecular Formula**: $C_7H_{16}NO_2PF_6$
**Molar Mass**: 291.17
**Structure**:



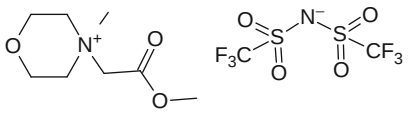

**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 433.55 ± 2 [146] | 188.15 ± 2 [146] | 553.15 ± 2 [146] |

| $K$ (S/m) | $T$ (K) | Water content (<100wt %,100ppm) | Electrochemical window (V) | $T$ (K) |
|---|---|---|---|---|
| 0.000066 [146] | 298.15 | 78ppm [146] | 5.2 [146] | RT |

### 22002-31: Methyl-*N*-methylmorpholinium-*N*-acetate bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [MEMMor][TFSI]
**Molecular Formula**: $C_{10}H_{16}F_6N_2O_7S_2$
**Molar Mass**: 454.37
**Structure**:

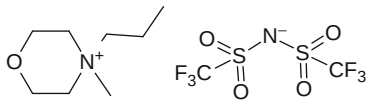


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 231.15 [148] | 583.15 [148] |

### 22003-31: *N*-propyl-*N*-methylmorpholinium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [MO1,3][$NTf_2$]
**Molecular Formula**: $C_{10}H_{18}F_6N_2O_5S_2$
**Molar Mass**: 424.38
**Structure**:



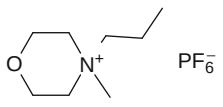
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 235.15 [280] | 473.15 [280] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.54 [280] | 298.15 |

### 22003-51: *N*-propyl-*N*-methylmorpholinium hexafluorophosphate

**Abbreviation**: [MO1,3][$PF_6$]
**Molecular Formula**: $C_8H_{18}NOPF_6$
**Molar Mass**: 289.2
**Structure**:

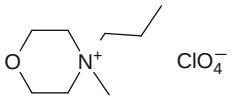


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 359.15 [280] | 473.15 [280] |

### 22003-14: *N*-propyl-*N*-methylmorpholinium perchlorate

**Abbreviation**: [MO1,3][$ClO_4$]
**Molecular Formula**: $C_8H_{18}NO_5Cl$
**Molar Mass**: 243.68
**Structure**:

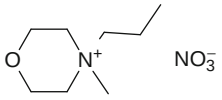


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 364.15 [280] | 585.15 [280] |

### 22003-39: *N*-propyl-*N*-methylmorpholinium nitrate

**Abbreviation**: [MO1,3][$NO_3$]
**Molecular Formula**: $C_8H_{18}N_2O_4$
**Molar Mass**: 206.24
**Structure**:

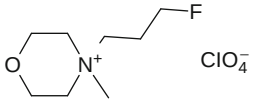


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 331.15 [280] | 558.15 [280] |

### 22004-14: *N*-(3-fluoropropyl)-*N*-methylmorpholinium perchlorate

**Abbreviation**: [MO1,$(CH_2)_3$F][$ClO_4$]
**Molecular Formula**: $C_8H_{17}FNO_5Cl$
**Molar Mass**: 261.68
**Structure**:



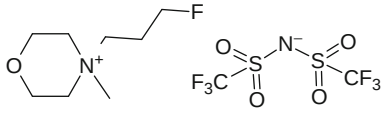
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| <195.15 [280] | 549.15 [280] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.5 [280] | 298.15 |

**22004-31: *N*-(3-fluoropropyl)-*N*-methylmorpholinium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: [MO1,$(CH_2)_3$F][$NTf_2$]
**Molecular Formula**: $C_{10}H_{17}F_7N_2O_5S_2$
**Molar Mass**: 442.37
**Structure**:



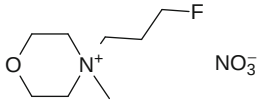
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 222.15 [280] | 615.15 [280] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.69 [280] | 298.15 |

**22004-39: *N*-(3-fluoropropyl)-*N*-methylmorpholinium nitrate**

**Abbreviation**: [MO1,$(CH_2)_3$F][$NO_3$]
**Molecular Formula**: $C_8H_{17}FN_2O_4$
**Molar Mass**: 224.23
**Structure**:

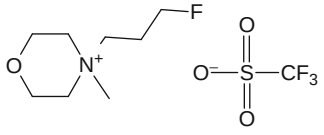


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 331.15 [280] | 562.15 [280] |

**22004-43: *N*-(3-fluoropropyl)-*N*-methylmorpholinium trifluoromethanesulfonate**

**Abbreviation**: [MO1,$(CH_2)_3$F][TfO]
**Molecular Formula**: $C_9H_{17}F_4NO_4S$
**Molar Mass**: 311.3
**Structure**:

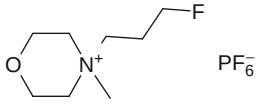


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 341.15 [280] | 566.15 [280] |

**22004-51: *N*-(3-fluoropropyl)-*N*-methylmorpholinium hexafluorophosphate**

**Abbreviation**: [MO1,$(CH_2)_3$F][$PF_6$]
**Molecular Formula**: $C_8H_{17}F_7NOP$
**Molar Mass**: 307.19
**Structure**:

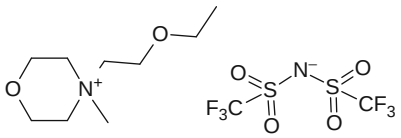


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 353.15 [280] | 469.15 [280] |

**22005-31: *N*-(ethoxyethyl)-*N*-methylmorpholinium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: [MO1,2O2][$NTf_2$]
**Molecular Formula**: $C_{11}H_{20}F_6N_2O_6S_2$
**Molar Mass**: 454.41
**Structure**:



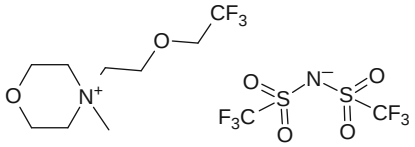
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 220.15 [280] | 662.15 [280] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.54 [280] | 298.15 |

**22006-31: *N*-((trifluoroethoxy)ethyl)-*N*-methylmorpholinium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: [MO1,2O2$F_3$][$NTf_2$]
**Molecular Formula**: $C_{11}H_{17}F_9N_2O_6S_2$
**Molar Mass**: 508.38
**Structure**:



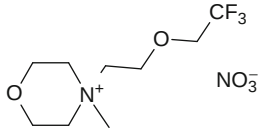
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 220.15 [280] | 685.15 [280] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.69 [280] | 298.15 |

**22006-39: *N*-((trifluoroethoxy)ethyl)-*N*-methylmorpholinium nitrate**

**Abbreviation**: [MO1,2O2$F_3$][$NO_3$]
**Molecular Formula**: $C_9H_{17}F_3N_2O_5$
**Molar Mass**: 290.24
**Structure**:

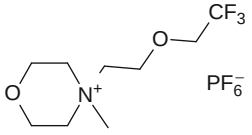


**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 550.15 [280] |

**22006-51: *N*-((trifluoroethoxy)ethyl)-*N*-methylmorpholinium hexafluorophosphate**

**Abbreviation**: [MO1,2O2$F_3$][$PF_6$]
**Molecular Formula**: $C_9H_{17}F_9NO_2P$
**Molar Mass**: 373.2
**Structure**:

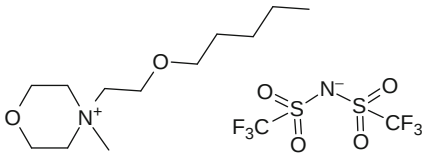


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 345.15 [280] | 541.15 [280] |

**22007-31: *N*-(pentoxyethyl)-*N*-methylmorpholinium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: [MO1,2O5][$NTf_2$]
**Molecular Formula**: $C_{14}H_{26}F_6N_2O_6S_2$
**Molar Mass**: 496.49
**Structure**:



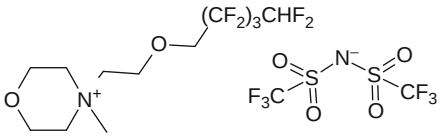
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 219.15 [280] | 683.15 [280] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.38 [280] | 298.15 | 223 [280] | 303.15 |

**22008-31: *N*-(2,2,3,3,4,4,5,5-octafluoro-1-pentoxyethyl)-*N*-methylmorpholinium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: [MO1,2O$CH_2(CF_2)_4H$][$NTf_2$]
**Molecular Formula**: $C_{14}H_{18}F_{14}N_2O_6S_2$
**Molar Mass**: 640.41
**Structure**:



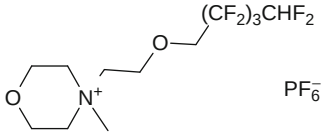
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 220.15 [280] | 673.15 [280] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.86 [280] | 298.15 | 970 [280] | 303.15 |

**22008-51: *N*-(2,2,3,3,4,4,5,5-octafluoro-1-pentoxyethyl)-*N*-methylmorpholinium hexafluorophosphate**

**Abbreviation**: [MO1,2O$CH_2(CF_2)_4H$][$PF_6$]
**Molecular Formula**: $C_{12}H_{18}F_{14}NO_2P$
**Molar Mass**: 505.23
**Structure**:

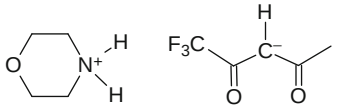


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 335.15 [280] | 533.15 [280] |

**22009-1401: Morpholinium 1,1,1-trifluoro-2,4-pentanedionate**

**Abbreviation**: [MO][$(CF_3CO)CH(COCH_3)$]
**Molecular Formula**: $C_9H_{14}F_3NO_3$
**Molar Mass**: 241.21
**Structure**:



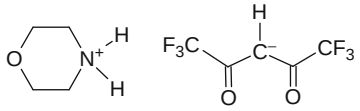
**Character**:
**Application**:

| $T_g$ (K) |
|---|
| 285.15 [211] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.41 [211] | 298.15 |

### 22009-1402: Morpholinium 1,1,1,5,5,5-hexafluoro-2,4-pentanedionate

**Abbreviation**: [MO][$(CF_3CO)_2CH$]
**Molecular Formula**: $C_9H_{11}F_6NO_3$
**Molar Mass**: 295.18
**Structure**:



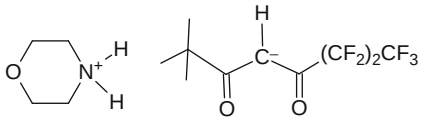
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 335.15 [211] | 211.15 [211] | 457.15 [211] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.51 [211] | 298.15 |

### 22009-1403: Morpholinium 2,2-dimethyl-6,6,7,7,8,8,8-heptafluoro-3,5-octanedionate

**Abbreviation**: [MO][$(Me_3CCO)CH(CO(CF_2)_2CF_3)$]
**Molecular Formula**: $C_{14}H_{20}F_7NO_3$
**Molar Mass**: 383.30
**Structure**:



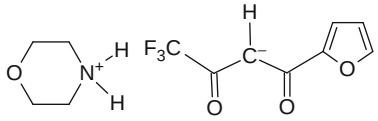
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 359.15 [211] | 235.15 [211] | 449.15 [211] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.41 [211] | 298.15 |

### 22009-1404: Morpholinium 4,4,4-trifluoro-1-(2-furyl)-1,3-butanedionate

**Abbreviation**: [MO][$(CF_3CO)CH(COfuran)$]
**Molecular Formula**: $C_{12}H_{14}F_3NO_4$
**Molar Mass**: 293.24
**Structure**:



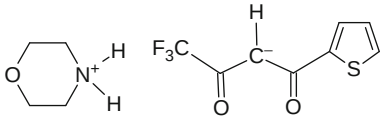
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 345.15 [211] | 225.15 [211] | 418.15 [211] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.43 [211] | 298.15 |

### 22009-1405: Morpholinium 4,4,4-trifluoro-1-(2-thenoyl)-1,3-butanedionate

**Abbreviation**: [MO][$(CF_3CO)CH(COthiophene)$]
**Molecular Formula**: $C_{12}H_{14}F_3NO_3S$
**Molar Mass**: 309.30
**Structure**:



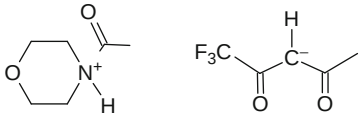
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 375.15 [211] | 357.15 [211] | 408.15 [211] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.39 [211] | 298.15 |

**22010-1401: *N*-acetylmorpholinium 1,1,1-trifluoro-2,4-pentanedionate**

**Abbreviation**: [AcetylMO][($CF_3CO$)CH($COCH_3$)]
**Molecular Formula**: $C_{11}H_{16}F_3NO_4$
**Molar Mass**: 283.24
**Structure**:



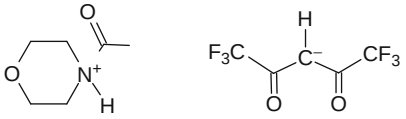
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 255.15 [211] | 413.15 [211] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 0.95 [211] | 298.15 |

**22010-1402: *N*-acetylmorpholinium 1,1,1,5,5,5-hexafluoro-2,4-pentanedionate**

**Abbreviation**: [AcetylMO][($CF_3CO)_2CH$]
**Molecular Formula**: $C_{11}H_{13}F_6NO_4$
**Molar Mass**: 337.21
**Structure**:



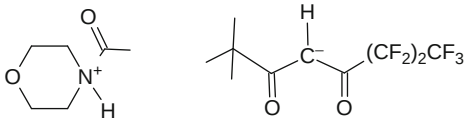
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 214.15 [211] | 416.15 [211] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.12 [211] | 298.15 |

**22010-1403: *N*-acetylmorpholinium 2,2-dimethyl-6,6,7,7,8,8,8-heptafluoro-3,5-octanedionate**

**Abbreviation**: [AcetylMO][($Me_3CCO$)CH($CO(CF_2)_2CF_3$)]
**Molecular Formula**: $C_{16}H_{22}F_7NO_4$
**Molar Mass**: 425.34
**Structure**:



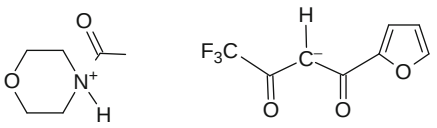
**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 425.15 [211] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 0.8 [211] | 298.15 |

**22010-1404: *N*-acetylmorpholinium 4,4,4-trifluoro-1-(2-furyl)-1,3-butanedionate**

**Abbreviation**: [AcetylMO][($CF_3CO$)CH(COfuran)]
**Molecular Formula**: $C_{14}H_{16}F_3NO_5$
**Molar Mass**: 335.27
**Structure**:



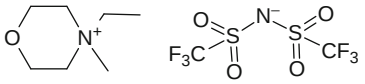
**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 397.15 [211] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.42 [211] | 298.15 |

### 22011-31: *N*-methyl-*N*-ethylmorpholinium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [MO1,2][TFSI]
**Molecular Formula**: $C_9H_{16}F_6N_2O_5S_2$
**Molar Mass**: 410.36
**Structure**:

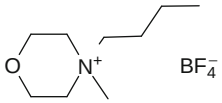


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 302.35 [281] | 683.15–743.15 [281] |

### 22012-21: *N*-methyl-*N*-butylmorpholinium tetrafluoroborate

**Abbreviation**: [MO1,4][$BF_4$]
**Molecular Formula**: $C_9H_{20}NOBF_4$
**Molar Mass**: 245.07
**Structure**:

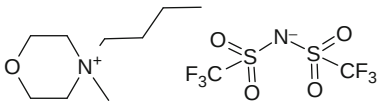


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) | $T_{s\text{-}s}$ (K) |
|---|---|---|
| 339.15 [38] | 659.15 [38] | 219.15 [38] |

### 22012-31: *N*-methyl-*N*-butylmorpholinium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [MO1,4][TFSI]
**Molecular Formula**: $C_{11}H_{20}F_6N_2O_5S_2$
**Molar Mass**: 438.41
**Structure**:



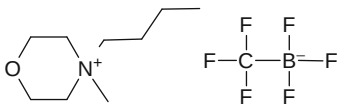
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 301.85 [281] | 213.15 [38] | 683.15–743.15 [281] |
| 308.15 [38] | | 671.15 [38] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.4405 [38] | 298.15 | 532 [38] | 298.15 | 0.04 [38] | 298.15 |

### 22012-223: *N*-methyl-*N*-butylmorpholinium trifluoromethyltrifluoroborate

**Abbreviation**: [MO1,4][$CF_3BF_3$]
**Molecular Formula**: $C_{10}H_{20}BNOF_6$
**Molar Mass**: 295.07
**Structure**:



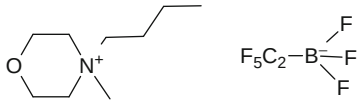
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 199.15 [38] | 454.15 [38] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.2728 [38] | 298.15 | 1035 [38] | 298.15 | 0.04 [38] | 298.15 |

### 22012-224: *N*-methyl-*N*-butylmorpholinium pentafluoroethyltrifluoroborate

**Abbreviation**: [MO1,4][$C_2F_5BF_3$]
**Molecular Formula**: $C_{11}H_{20}F_8BNO$
**Molar Mass**: 345.08
**Structure**:



**Character**:
**Application**:

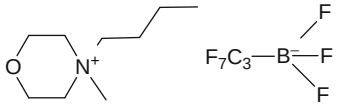
| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 200.15 [38] | 576.15 [38] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.3404 [38] | 298.15 | 466 [38] | 298.15 | 0.05 [38] | 298.15 |

| Electrochemical window (V) | Anodic limit (V) | Cathode limit (V) | $T$ (K) |
|---|---|---|---|
| 4.99 [38] | 2.37 | −2.62 | 298 |

### 22012-225: *N*-methyl-*N*-butylmorpholinium (heptafluoro-*n*-propyl)trifluoroborate

**Abbreviation**: [MO1,4][$C_3F_7BF_3$]
**Molecular Formula**: $C_{12}H_{20}F_{10}BNO$
**Molar Mass**: 395.09
**Structure**:

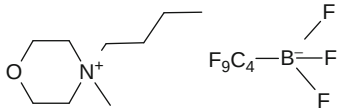


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) | $T_{s\text{-}s}$ (K) |
|---|---|---|
| 342.15 [38] | 590.15 [38] | 265.15 [38] |

### 22012-226: *N*-methyl-*N*-butylmorpholinium (nonafluoro-*n*-butyl)trifluoroborate

**Abbreviation**: [MO1,4][$C_4F_9BF_3$]
**Molecular Formula**: $C_{13}H_{20}F_{12}BNO$
**Molar Mass**: 445.1
**Structure**:

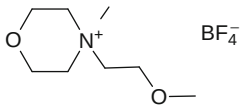


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) | $T_{s\text{-}s}$ (K) |
|---|---|---|
| 349.15 [38] | 574.15 [38] | 258.15, 265 [38] |

### 22013-21: *N*-methoxyethyl-*N*-methylmorphonium tetrafluoroborate

**Abbreviation**: [MO1,1O2][$BF_4$]
**Molecular Formula**: $C_8H_{18}NO_2BF_4$
**Molar Mass**: 247.04
**Structure**:

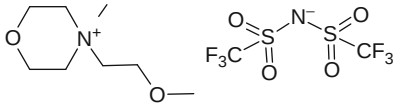


**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 358.15 [38] | 215.15 [38] | 638.15 [38] |

### 22013-31: *N*-methoxyethyl-*N*-methylmorphonium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [MO1,1O2][TFSI]
**Molecular Formula**: $C_{10}H_{18}F_6N_2O_6S_2$
**Molar Mass**: 440.38
**Structure**:



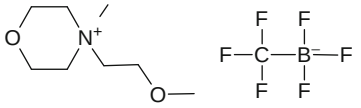
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 358.15 [38] | 207.15 [38] | 660.15 [38] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.5055 [38] | 298.15 | 310 [38] | 298.15 | 0.06 [38] | 298.15 |

### 22013-223: *N*-methoxyethyl-*N*-methylmorphonium trifluoromethyltrifluoroborate

**Abbreviation**: [MO1,1O2][$CF_3BF_3$]
**Molecular Formula**: $C_9H_{18}BNO_2F_6$
**Molar Mass**: 297.05
**Structure**:



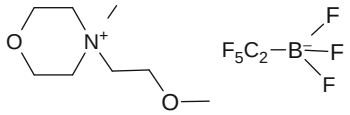
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) | $T_{s\text{-}s}$ (K) |
|---|---|---|
| 274.15 [38] | 505.15 [38] | 251.15, 268 [38] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.3477 [38] | 298.15 | 471 [38] | 298.15 | 0.07 [38] | 298.15 |

### 22013-224: *N*-methoxyethyl-*N*-methylmorphonium pentafluoroethyltrifluoroborate

**Abbreviation**: [MO1,1O2][$C_2F_5BF_3$]
**Molecular Formula**: $C_{10}H_{18}F_8BNO_2$
**Molar Mass**: 347.05
**Structure**:



**Character**:
**Application**:

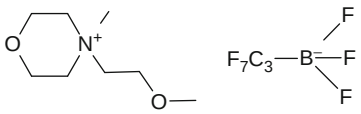
| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 195.15 [38] | 579.15 [38] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.4077 [38] | 298.15 | 260 [38] | 298.15 | 0.09 [38] | 298.15 |

| Electrochemical window (V) | Anodic limit (V) | Cathode limit (V) | $T$ (K) |
|---|---|---|---|
| 4.48 [176] | 2.34 | −2.14 | 298 |

### 22013-225: *N*-methoxyethyl-*N*-methylmorphonium (heptafluoro-*n*-propyl)trifluoroborate

**Abbreviation**: [MO1,1O2][$C_3F_7BF_3$]
**Molecular Formula**: $C_{11}H_{18}F_{10}BNO_2$
**Molar Mass**: 397.06
**Structure**:



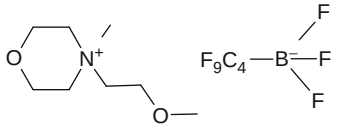
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 198.15 [38] | 575.15 [38] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.46 [38] | 298.15 | 777 [38] | 298.15 | 0.05 [38] | 298.15 |

**22013-226: *N*-methoxyethyl-*N*-methylmorphonium (nonafluoro-*n*-butyl)trifluoroborate**

**Abbreviation**: [MO1,1O2][$C_4F_9BF_3$]
**Molecular Formula**: $C_{12}H_{18}F_{12}BNO_2$
**Molar Mass**: 447.07
**Structure**:



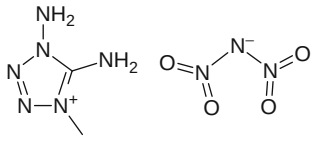
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) | $T_{s\text{-}s}$ (K) |
|---|---|---|
| 399.15 [38] | 573.15 [38] | 261.15, 272 [38] |

# 18 Tetrazolium

### 23001-311: 1,5-Diamino-4-methyl-1H-tetrazolium dinitramide

**Abbreviation**: $[(NH_2)_2MTetaz][N(NO_2)_2]$
**Molecular Formula**: $C_2H_7N_9O_4$
**Molar Mass**: 221.14
**Structure**:

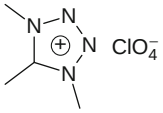


**Character**:
**Application**: Friction sensitive materials

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 358.15 [282] | 423.15 [282] |

### 23002-14: 2,4,5-Trimethyltetrazolium perchlorate

**Abbreviation**: $[MMMTetaz][ClO_4]$
**Molecular Formula**: $C_4H_9N_4ClO_4$
**Molar Mass**: 212.59
**Structure**:



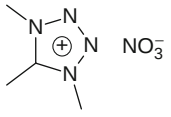
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 406.15 [181] | 588.15 [181] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.55 [181] | 298.15 |

### 23002-39: 2,4,5-Trimethyltetrazolium nitrate

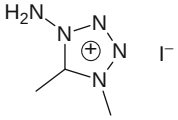
**Abbreviation**: $[MMMTetaz][NO_3]$
**Molecular Formula**: $C_4H_9N_5O_3$
**Molar Mass**: 175.15
**Structure**:



**Character**:
**Application**: [181]

### 23003-13: 4,5-Dimethyl-1-aminotetrazolium iodine

**Abbreviation**: $[1\text{-}NH_2MMTetaz]I$
**Molecular Formula**: $C_3H_8N_5I$
**Molar Mass**: 241.03
**Structure**:

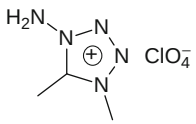


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 394.15 [195] |

### 23003-14: 4,5-Dimethyl-1-aminotetrazolium perchlorate

**Abbreviation**: [1-$NH_2$MMTetaz][$ClO_4$]
**Molecular Formula**: $C_3H_8N_5ClO_4$
**Molar Mass**: 213.58
**Structure**:



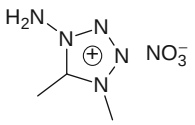
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 324.15 [181] | 455.15 [195] |
| 324.15 [195] | 455.15 [181] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.66 [181] | 298.15 |

### 23003-39: 4,5-Dimethyl-1-aminotetrazolium nitrate

**Abbreviation**: [1-$NH_2$MMTetaz][$NO_3$]
**Molecular Formula**: $C_3H_8N_6O_3$
**Molar Mass**: 176.13
**Structure**:



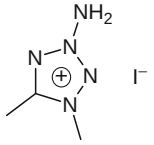
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 214.15 [195] | 443.15 [181] |
| 214.15 [181] | 466.15 [181] |
| | 443.15 [195] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.50 [181] | 298.15 |
| 1.5 [195] | 298.15 |

### 23004-13: 4,5-Dimethyl-2-aminotetrazolium iodine

**Abbreviation**: [2-$NH_2$MMTetaz]I
**Molecular Formula**: $C_3H_8N_5I$
**Molar Mass**: 241.03
**Structure**:

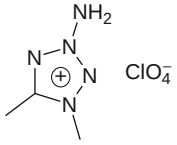


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 397.15 [195] |

### 23004-14: 4,5-Dimethyl-2-aminotetrazolium perchlorate

**Abbreviation**: [2-$NH_2$MMTetaz][$ClO_4$]
**Molecular Formula**: $C_3H_8N_5ClO_4$
**Molar Mass**: 213.58
**Structure**:



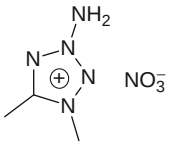
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 413.15 [195] | 511.15 [195] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.65 [195] | 298.15 |

### 23004-39: 4,5-Dimethyl-2-aminotetrazolium nitrate

**Abbreviation**: [2-$NH_2$MMTetaz][$NO_3$]
**Molecular Formula**: $C_3H_8N_6O_3$
**Molar Mass**: 176.13
**Structure**:



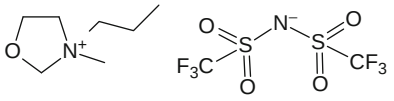

**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 367.15 [195] | 446.15 [195] |

# 19 Oxazolidinium

**24001-31: *N*-propyl-*N*-methyloxazolidinium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: [OX13][$NTf_2$]
**Molecular Formula**: $C_9H_{16}F_6N_2O_5S_2$
**Molar Mass**: 410.36
**Structure**:



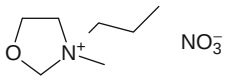
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 317.15 [280] | 620.15 [280] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.55 [280] | 298.15 | 340 [280] | 303.15 |

**24001-39: *N*-propyl-*N*-methyloxazolidinium nitrate**

**Abbreviation**: [OX13][$NO_3$]
**Molecular Formula**: $C_7H_{16}N_2O_4$
**Molar Mass**: 192.21
**Structure**:

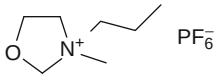


**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 213.15 [280] | 456.15 [280] |

**24001-51: *N*-propyl-*N*-methyloxazolidinium hexafluorophosphate**

**Abbreviation**: [OX13][$PF_6$]
**Molecular Formula**: $C_7H_{16}NOPF_6$
**Molar Mass**: 275.17
**Structure**:

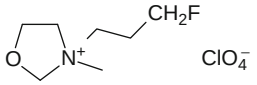


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 314.15 [280] | 512.15 [280] |

**24002-14: *N*-(3-fluoropropyl)-*N*-methyloxazolidinium perchlorate**

**Abbreviation**: [OX1,$CH_2CH_2CH_2F$][$ClO_4$]
**Molecular Formula**: $C_7H_{15}FClNO_5$
**Molar Mass**: 247.65
**Structure**:



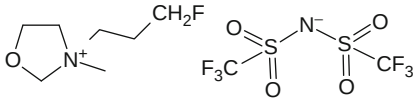
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| <195.15 [280] | 541.15 [280] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.46 [280] | 298.15 |

**24002-31: *N*-(3-fluoropropyl)-*N*-methyloxazolidinium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: [OX1,$CH_2CH_2CH_2F$][$NTf_2$]
**Molecular Formula**: $C_9H_{15}F_7N_2O_5S_2$
**Molar Mass**: 428.35
**Structure**:



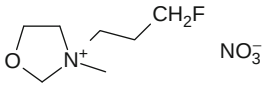
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| <195.15 [280] | 603.15 [280] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.63 [280] | 298.15 | 287 [280] | 303.15 |

**24002-39: *N*-(3-fluoropropyl)-*N*-methyloxazolidinium nitrate**

**Abbreviation**: [OX1,$CH_2CH_2CH_2F$][$NO_3$]
**Molecular Formula**: $C_7H_{15}FN_2O_4$
**Molar Mass**: 210.2
**Structure**:



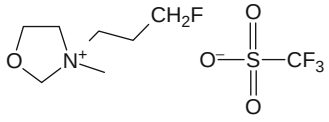
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| <195.15 [280] | 518.15 [280] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.49 [280] | 298.15 |

**24002-43: *N*-(3-fluoropropyl)-*N*-methyloxazolidinium trifluoromethanesulfonate**

**Abbreviation**: [OX1,$CH_2CH_2CH_2F$][TfO]
**Molecular Formula**: $C_8H_{15}F_4NO_4S$
**Molar Mass**: 297.27
**Structure**:

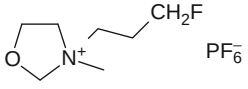


**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| <195.15 [280] | 556.15 [280] |

**24002-51: *N*-(3-fluoropropyl)-*N*-methyloxazolidinium hexafluorophosphate**

**Abbreviation**: [OX1,$CH_2CH_2CH_2F$][$PF_6$]
**Molecular Formula**: $C_7H_{15}F_7NOP$
**Molar Mass**: 293.16
**Structure**:

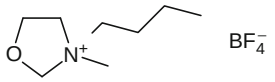


**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 217.15 [280] | 464.15 [280] |

### 24003-21: *N*-butyl-*N*-methyloxazolidinium tetrafluoroborate

**Abbreviation**: [OX14][$BF_4$]
**Molecular Formula**: $C_8H_{18}NOBF_4$
**Molar Mass**: 231.04
**Structure**:



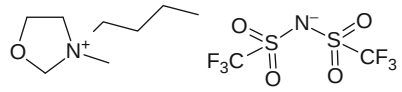
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 261.15 [38] | 198.15 [38] | 595.15 [38] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.2387 [38] | 298.15 | 731 [38] | 298.15 | 0.08 [38] | 298.15 |

### 24003-31: *N*-butyl-*N*-methyloxazolidinium bis((trifluoromethyl)sulfonyl)imide

**Abbreviation**: [OX14][TFSI]
**Molecular Formula**: $C_{10}H_{18}F_6N_2O_5S_2$
**Molar Mass**: 424.38
**Structure**:



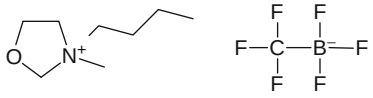
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 285.15 [38] | 197.15 [38] | 600.15 [38] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.4645 [38] | 298.15 | 145 [38] | 298.15 | 0.21 [38] | 298.15 |

### 24003-223: *N*-butyl-*N*-methyloxazolidinium trifluoromethyltrifluoroborate

**Abbreviation**: [OX14][$CF_3BF_3$]
**Molecular Formula**: $C_9H_{18}BNOF_6$
**Molar Mass**: 281.05
**Structure**:



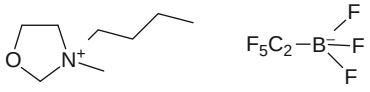
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 179.15 [38] | 511.15 [38] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.2889 [38] | 298.15 | 165 [38] | 298.15 | 0.23 [38] | 298.15 |

### 24003-224: *N*-butyl-*N*-methyloxazolidinium pentafluoroethyltrifluoroborate

**Abbreviation**: [OX14][$C_2F_5BF_3$]
**Molecular Formula**: $C_{10}H_{18}F_8BNO$
**Molar Mass**: 331.05
**Structure**:



**Character**:
**Application**:

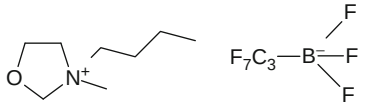
| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 269.15 [38] | 565.15 [38] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.3525 [38] | 298.15 | 108 [38] | 298.15 | 0.22 [38] | 298.15 |

| Electrochemical window (V) | Anodic limit (V) | Cathode limit (V) | $T$ (K) |
|---|---|---|---|
| 5.54 [38] | 2.26 | −3.28 | 298 |

**24003-225: *N*-butyl-*N*-methyloxazolidinium (heptafluoro-*n*-propyl)trifluoroborate**

**Abbreviation**: [OX14][$C_3F_7BF_3$]
**Molecular Formula**: $C_{11}H_{18}F_{10}BNO$
**Molar Mass**: 381.06
**Structure**:

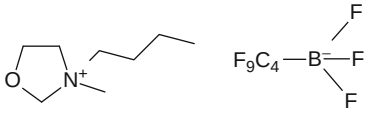


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) | $T_{s\text{-}s}$ (K) |
|---|---|---|
| 326.15 [38] | 580.15 [38] | 174.15 [38] |

**24003-226: *N*-butyl-*N*-methyloxazolidinium (nonafluoro-*n*-butyl)trifluoroborate**

**Abbreviation**: [OX14][$C_4F_9BF_3$]
**Molecular Formula**: $C_{12}H_{18}F_{12}BNO$
**Molar Mass**: 431.07
**Structure**:

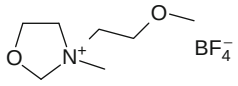


**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 327.15 [38] | 548.15 [38] |

**24004-21: *N*-methoxyethyl-*N*-methyloxazolidinium tetrafluoroborate**

**Abbreviation**: [OX1,1O2][$BF_4$]
**Molecular Formula**: $C_7H_{16}NO_2BF_4$
**Molar Mass**: 233.01
**Structure**:



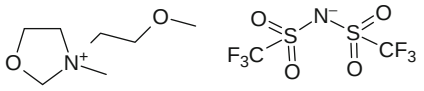
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 203.15 [38] | 570.15 [38] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.3091 [38] | 298.15 | 704 [38] | 298.15 | 0.08 [38] | 298.15 |

**24004-31: *N*-methoxyethyl-*N*-methyloxazolidinium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: [OX1,1O2][TFSI]
**Molecular Formula**: $C_9H_{16}F_6N_2O_6S_2$
**Molar Mass**: 426.36
**Structure**:



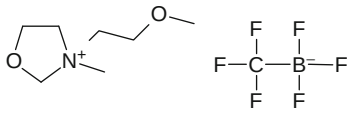
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 200.15 [38] | 601.15 [38] |

| $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|
| 117 [38] | 298.15 | 0.18 [38] | 298.15 |

### 24004-223: *N*-methoxyethyl-*N*-methyloxazolidinium trifluoromethyltrifluoroborate

**Abbreviation**: [OX1,1O2][$CF_3BF_3$]
**Molecular Formula**: $C_8H_{16}BNO_2F_6$
**Molar Mass**: 283.02
**Structure**:



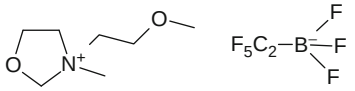
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 187.15 [38] | 499.15 [38] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.3604 [38] | 298.15 | 134 [38] | 298.15 | 0.24 [38] | 298.15 |

### 24004-224: *N*-methoxyethyl-*N*-methyloxazolidinium pentafluoroethyltrifluoroborate

**Abbreviation**: [OX1,1O2][$C_2F_5BF_3$]
**Molecular Formula**: $C_9H_{16}F_8BNO_2$
**Molar Mass**: 333.03
**Structure**:



**Character**:
**Application**:

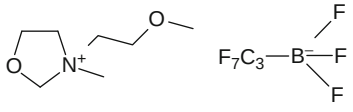
| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 274.15 [38] | 185.15 [38] | 566.15 [38] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.4194 [38] | 298.15 | 90 [38] | 298.15 | 0.25 [38] | 298.15 |

| Electrochemical window (V) | Anodic limit (V) | Cathode limit (V) | $T$ (K) |
|---|---|---|---|
| 4.65 [38] | 2.27 | −3.28 | 298 |

### 24004-225: *N*-methoxyethyl-*N*-methyloxazolidinium (heptafluoro-*n*-propyl)trifluoroborate

**Abbreviation**: [OX1,1O2][$C_3F_7BF_3$]
**Molecular Formula**: $C_{10}H_{16}F_{10}BNO_2$
**Molar Mass**: 383.03
**Structure**:



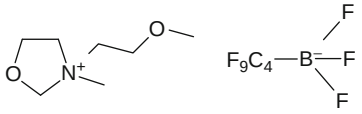
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 283.15 [38] | 189.15 [38] | 566.15 [38] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.3391 [38] | 298.15 | 117 [38] | 298.15 | 0.16 [38] | 298.15 |

### 24004-226: *N*-methoxyethyl-*N*-methyloxazolidinium (nonafluoro-*n*-butyl)trifluoroborate

**Abbreviation**: [OX1,1O2][$C_4F_9BF_3$]
**Molecular Formula**: $C_{11}H_{16}F_{12}BNO_2$
**Molar Mass**: 433.04
**Structure**:



**Character**:
**Application**:

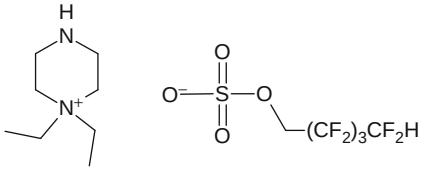
| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 291.15 [38] | 191.15 [38] | 543.15 [38] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $K$ (S/m) | $T$ (K) |
|---|---|---|---|---|---|
| 1.5125 [38] | 298.15 | 177 [38] | 298.15 | 0.1 [38] | 298.15 |

# 20 Piperazinium

**25001-414: *N*,*N*-diethylpiperazinium 2,2,3,3,4,4,5,5-octafluoropentyl sulfate**

**Abbreviation**: [Pip2,2][$C_5F_8$]
**Molecular Formula**: $C_{13}H_{22}F_8N_2SO_4$
**Molar Mass**: 454.38
**Structure**:




**Character**: Hydrophobic
**Application**: Medium for lipase-catalyzed reaction

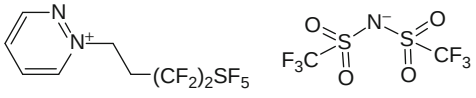
| $T_m$ (K) |
|---|
| 266.15 [62] |

| $\eta_D$ (cp) | $K$ (S/m) |
|---|---|
| 680 [62] | 0.0028 [62] |

# 21 Pyridazinium

**26001-31: 1-$SF_5(CF_2)_2(CH_2)_2$-pyridazinium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: $[SF_5(CF_2)_2(CH_2)_2Pydz][NTf_2]$
**Molecular Formula**: $C_{10}H_8F_{15}N_3O_4S_3$
**Molar Mass**: 615.36
**Structure**:



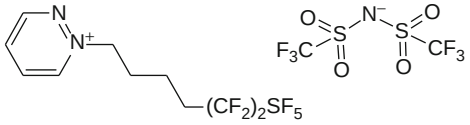
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 259.15 [156] | ≈573.15 [156] |

| $\rho$ (g/cm$^3$) |
|---|
| 1.93 [156] |

**26002-31: 1-$SF_5(CF_2)_2(CH_2)_4$-pyridazinium bis((trifluoromethyl)sulfonyl)imide**

**Abbreviation**: $[SF_5(CF_2)_2(CH_2)_4Pydz][NTf_2]$
**Molecular Formula**: $C_{12}H_{12}F_{15}N_3O_4S_3$
**Molar Mass**: 643.42
**Structure**:



**Character**:
**Application**:

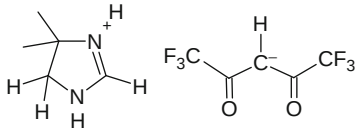
| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 231.45 [156] | ≈573.15 [156] |

| $\rho$ (g/cm$^3$) |
|---|
| 1.87 [156] |

# 22 4,4-Dimethylimidazolium

**27001-1402: 4,4-Dimethylimidazolium 1,1,1,5,5,5-hexafluoro-2,4-pentanedionate**

**Abbreviation**: [4,4-$Me_2$Im][$(CF_3CO)_2CH$]
**Molecular Formula**: $C_{10}H_{12}F_6N_2O_2$
**Molar Mass**: 306.20
**Structure**:




**Character**:
**Application**:

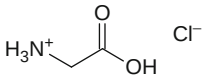
| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 222.15 [211] | 488.15 [211] |

| $\rho$ (g/cm$^3$) | T (K) |
|---|---|
| 1.11 [211] | 298.15 |

# 23 Amino acids

### 28001-11: Glycinium chloride

**Abbreviation**: [Gly′]Cl
**Molecular Formula**: $C_2H_6NO_2Cl$
**Molar Mass**: 111.53
**Structure**:



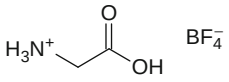

**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 459.15 [283] | 468.15 [283] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.4 ± 5% [283] | 293.15 |

### 28001-21: Glycinium tetrafluoroborate

**Abbreviation**: [Gly′][$BF_4$]
**Molecular Formula**: $C_2H_6NO_2BF_4$
**Molar Mass**: 162.88
**Structure**:



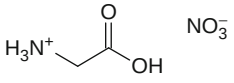

**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 389.15 [283] | 493.15 [283] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.51 ± 5% [283] | 293.15 |

### 28001-39: Glycinium nitrate

**Abbreviation**: [Gly′][$NO_3$]
**Molecular Formula**: $C_2H_6N_2O_5$
**Molar Mass**: 138.08
**Structure**:



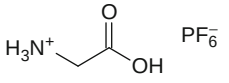

**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 384.15 [283] | 465.15 [283] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.22 ± 5% [283] | 293.15 |

### 28001-51: Glycinium hexafluorophosphate

**Abbreviation**: [Gly′][$PF_6$]
**Molecular Formula**: $C_2H_6NO_2PF_6$
**Molar Mass**: 221.04
**Structure**:



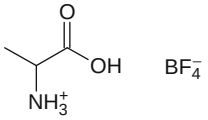

**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 374.15 [283] | 430.15 [283] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.37 ± 5% [283] | 293.15 |

### 28002-21: Alaninium tetrafluoroborate

**Abbreviation**: [Ala′][$BF_4$]
**Molecular Formula**: $C_3H_8NO_2BF_4$
**Molar Mass**: 176.91
**Structure**:



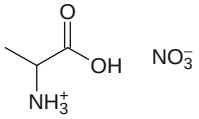
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 351.15 [283] | 514.15 [283] |

| $\rho$ (g/cm$^3$) | $T$ (K) | α | Concentration | $T$ (K) | Solvent |
|---|---|---|---|---|---|
| 1.44 ± 5% [283] | 293.15 | 11.6 [283] | 2 | 293.15 | $CH_3OH$ |

### 28002-39: Alaninium nitrate

**Abbreviation**: [Ala′][$NO_3$]
**Molecular Formula**: $C_3H_8N_2O_5$
**Molar Mass**: 152.11
**Structure**:



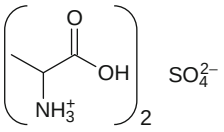
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 432.15 [283] | 441.15 [283] |

| $\rho$ (g/cm$^3$) | $T$ (K) | α | Concentration | $T$ (K) | Solvent |
|---|---|---|---|---|---|
| 1.26 ± 5% [283] | 293.15 | 15.9 [283] | 2 | 293.15 | $CH_3OH$ |

### 28002-41: di(Alaninium) sulfate

**Abbreviation**: [Ala′]$_2$[$SO_4$]
**Molecular Formula**: $C_6H_{16}N_2O_8S$
**Molar Mass**: 276.26
**Structure**:



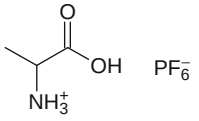
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 414.15 [283] | 466.15 [283] |

| $\rho$ (g/cm$^3$) | $T$ (K) | α | Concentration | $T$ (K) | Solvent |
|---|---|---|---|---|---|
| 1.55 ± 5% [283] | 293.15 | 9.1 [283] | 2 | 293.15 | $CH_3OH$ |

### 28002-51: Alaninium hexafluorophosphate

**Abbreviation**: [Ala′][$PF_6$]
**Molecular Formula**: $C_3H_8NO_2PF_6$
**Molar Mass**: 235.07
**Structure**:



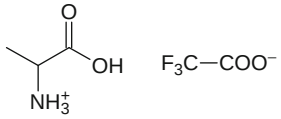
**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 449.15 [283] |

| $\rho$ (g/cm$^3$) | $T$ (K) | α | Concentration | $T$ (K) | Solvent |
|---|---|---|---|---|---|
| 1.33 ± 5% [283] | 293.15 | 8.4 [283] | 2 | 293.15 | $CH_3OH$ |

### 28002-61: Alaninium trifluoroacetate

**Abbreviation**: [Ala′][TA]
**Molecular Formula**: $C_5H_8F_3NO_4$
**Molar Mass**: 203.12
**Structure**:



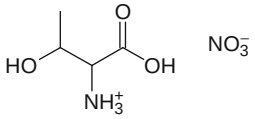

**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 355.15 [283] | 392.15 [283] |

| $\rho$ (g/cm$^3$) | $T$ (K) | α | Concentration | $T$ (K) | Solvent |
|---|---|---|---|---|---|
| 1.02 ± 5% [283] | 293.15 | 8.6 [283] | 2 | 293.15 | $CH_3OH$ |

### 28003-39: Threoninium nitrate

**Abbreviation**: [Thr′][$NO_3$]
**Molecular Formula**: $C_4H_{10}N_2O_6$
**Molar Mass**: 182.13
**Structure**:



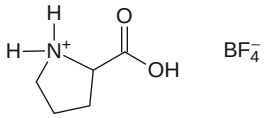

**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 420.15 [283] |

| $\rho$ (g/cm$^3$) | $T$ (K) | α | Concentration | $T$ (K) | Solvent |
|---|---|---|---|---|---|
| 1.86 ± 5% [283] | 293.15 | −10.8 [283] | 2 | 293.15 | $CH_3OH$ |

### 28004-21: Prolinium tetrafluoroborate

**Abbreviation**: [Pro′][$BF_4$]
**Molecular Formula**: $C_5H_{10}NO_2BF_4$
**Molar Mass**: 202.94
**Structure**:



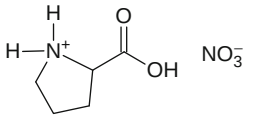

**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 349.15 [283] | 509.15 [283] |

| $\rho$ (g/cm$^3$) | $T$ (K) | α | Concentration | $T$ (K) | Solvent |
|---|---|---|---|---|---|
| 1.63 ± 5% [283] | 293.15 | −26.8 [283] | 2 | 293.15 | $CH_3OH$ |

### 28004-39: Prolinium nitrate

**Abbreviation**: [Pro′][$NO_3$]
**Molecular Formula**: $C_5H_{10}N_2O_5$
**Molar Mass**: 178.14
**Structure**:



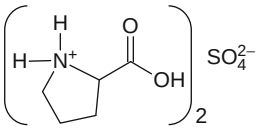

**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 411.15 [283] |

| $\rho$ (g/cm$^3$) | $T$ (K) | α | Concentration | $T$ (K) | Solvent |
|---|---|---|---|---|---|
| 1.38 ± 5% [283] | 293.15 | −29.7 [283] | 2 | 293.15 | $CH_3OH$ |

### 28004-41: di(Prolinium) sulfate

**Abbreviation**: $[Pro']_2[SO_4]$
**Molecular Formula**: $C_{10}H_{20}N_2O_8S$
**Molar Mass**: 328.34
**Structure**:



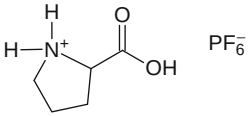
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 365.15 [283] | 479.15 [283] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\alpha$ | Concentration | $T$ (K) | Solvent |
|---|---|---|---|---|---|
| 1.58 ± 5% [283] | 293.15 | −38.7 [283] | 2 | 293.15 | $CH_3OH$ |

### 28004-51: Prolinium hexafluorophosphate

**Abbreviation**: $[Pro'][PF_6]$
**Molecular Formula**: $C_5H_{10}NO_2PF_6$
**Molar Mass**: 261.1
**Structure**:



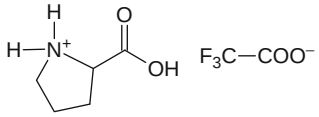
**Character**:
**Application**:

| $T_d$ (K) |
|---|
| 441.15 [283] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\alpha$ | Concentration | $T$ (K) | Solvent |
|---|---|---|---|---|---|
| 1.56 ± 5% [283] | 293.15 | −24 [283] | 2 | 293.15 | $CH_3OH$ |

### 28004-61: Prolinium trifluoroacetate

**Abbreviation**: $[Pro'][TA]$
**Molecular Formula**: $C_7H_{10}F_3NO_4$
**Molar Mass**: 229.15
**Structure**:



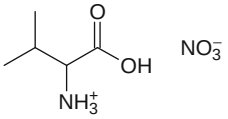
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 351.15 [283] | 465.15 [283] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\alpha$ | Concentration | $T$ (K) | Solvent |
|---|---|---|---|---|---|
| 1.48 ± 5% [283] | 293.15 | −36.1 [283] | 2 | 293.15 | $CH_3OH$ |

### 28005-39: Valinium nitrate

**Abbreviation**: $[Val'][NO_3]$
**Molecular Formula**: $C_5H_{12}N_2O_5$
**Molar Mass**: 180.16
**Structure**:



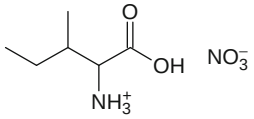
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 407.15 [283] | 442.15 [283] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\alpha$ | Concentration | $T$ (K) | Solvent |
|---|---|---|---|---|---|
| 1.06 ± 5% [283] | 293.15 | 27.2 [283] | 2 | 293.15 | $CH_3OH$ |

### 28006-39: Isoleucinium nitrate

**Abbreviation**: [Ile′][$NO_3$]
**Molecular Formula**: $C_6H_{14}N_2O_5$
**Molar Mass**: 194.19
**Structure**:



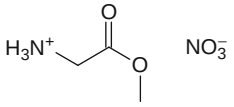

**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 378.15 [283] | 440.15 [283] |

| $\rho$ (g/cm$^3$) | $T$ (K) | α | Concentration | $T$ (K) | Solvent |
|---|---|---|---|---|---|
| 1.05 ± 5% [283] | 293.15 | 40.3 [283] | 2 | 293.15 | $CH_3OH$ |

### 28007-39: Protonated methyl 1-amino-acetate nitrate

**Abbreviation**: [$GlyC_1$][$NO_3$]
**Molecular Formula**: $C_3H_8N_2O_5$
**Molar Mass**: 152.10
**Structure**:



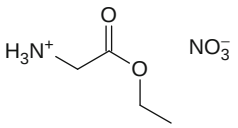

**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 317.15 [283] | 247.15 [283] | 451.15 [283] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) |
|---|---|---|---|
| 1.5 ± 5% [283] | 293.15 | 92 ± 5% [283] | 343.15 |

### 28008-39: Protonated ethyl 1-amino-acetate nitrate

**Abbreviation**: [$GlyC_2$][$NO_3$]
**Molecular Formula**: $C_4H_{10}N_2O_5$
**Molar Mass**: 166.13
**Structure**:



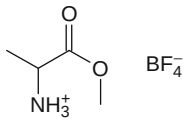

**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 322.15 [283] | 263.15 [283] | 455.15 [283] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.67 ± 5% [283] | 293.15 |

### 28009-21: Protonated methyl 1-amino-propionate tetrafluoroborate

**Abbreviation**: $[AlaC_1][BF_4]$
**Molecular Formula**: $C_4H_{10}NO_2BF_4$
**Molar Mass**: 190.93
**Structure**:



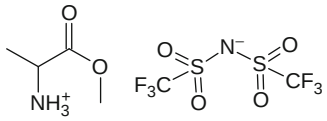
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 255.15 [283] | 503.15 [283] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $\alpha$ | Concentration | $T$ (K) | Solvent |
|---|---|---|---|---|---|---|---|
| 1.53 ± 5% [283] | 293.15 | 96 ± 5% [283] | 303.15 | 5.6 [283] | 2 | 293.15 | $CH_3OH$ |

### 28009-31: Protonated methyl 1-amino-propionate bis((trifluoromethyl)sulfony)imide

**Abbreviation**: $[AlaC_1][TFSI]$
**Molecular Formula**: $C_6H_{10}F_6N_2O_6S_2$
**Molar Mass**: 384.28
**Structure**:



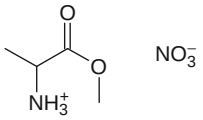
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 256.15 [283] | 423.15 [283] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\alpha$ | Concentration | $T$ (K) | Solvent |
|---|---|---|---|---|---|
| 1.55 ± 5% [283] | 293.15 | 5.8 [283] | 2 | 293.15 | $CH_3OH$ |

### 28009-39: Protonated methyl 1-amino-propionate nitrate

**Abbreviation**: $[AlaC_1][NO_3]$
**Molecular Formula**: $C_4H_{10}N_2O_5$
**Molar Mass**: 166.13
**Structure**:



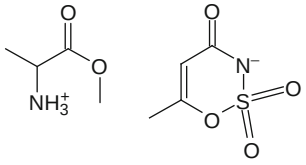
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 334.15 [283] | 239.15 [283] | 459.15 [283] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\alpha$ | Concentration | $T$ (K) | Solvent |
|---|---|---|---|---|---|
| 1.26 ± 5% [283] | 293.15 | 6.2 [283] | 2 | 293.15 | $CH_3OH$ |

### 28009-315: Protonated methyl 1-amino-propionate acesulfamate

**Abbreviation**: [AlaC$_1$][Ace]
**Molecular Formula**: $C_8H_{14}N_2O_6S$
**Molar Mass**: 266.27
**Structure**:

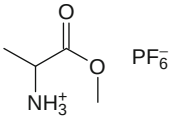


**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 250.15 [283] | 445.15 [283] |

### 28009-51: Protonated methyl 1-amino-propionate hexafluorophosphate

**Abbreviation**: [AlaC$_1$][PF$_6$]
**Molecular Formula**: $C_4H_{10}NO_2PF_6$
**Molar Mass**: 249.09
**Structure**:



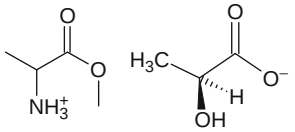
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 238.15 [283] | 482.15 [283] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\alpha$ | Concentration | $T$ (K) | Solvent |
|---|---|---|---|---|---|
| 1.36 ± 5% [283] | 293.15 | 5.8 [283] | 2 | 293.15 | $CH_3OH$ |

### 28009-68: Protonated methyl 1-amino-propionate L-lactate

**Abbreviation**: [AlaC$_1$][L-lactate]
**Molecular Formula**: $C_7H_{15}NO_5$
**Molar Mass**: 193.2
**Structure**:



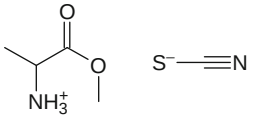
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 311.15 [283] | 249.15 [283] | 350.15 [283] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\alpha$ | Concentration | $T$ (K) | Solvent |
|---|---|---|---|---|---|
| 1.20 ± 5% [283] | 293.15 | −4.5 [283] | 2 | 293.15 | $CH_3OH$ |

**28009-1503: Protonated methyl 1-amino-propionate thiocyanate**

**Abbreviation**: $[AlaC_1][SCN]$
**Molecular Formula**: $C_5H_{10}N_2O_2S$
**Molar Mass**: 162.21
**Structure**:



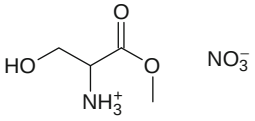
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 335.15 [283] | 241.15 [283] | 412.15 [283] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $\alpha$ | Concentration | $T$ (K) | Solvent |
|---|---|---|---|---|---|---|---|
| 1.27 ± 5% [283] | 293.15 | 103 ± 5% [283] | 353.15 | 5.2 [283] | 2 [283] | 293.15 | $CH_3OH$ |

**28010-39: Protonated methyl 1-amino-2-hydroxy-propionate nitrate**

**Abbreviation**: $[SerC_1][NO_3]$
**Molecular Formula**: $C_4H_{10}N_2O_6$
**Molar Mass**: 182.13
**Structure**:



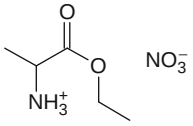
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 378.15 [283] | 243.15 [283] | 452.15 [283] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\alpha$ | Concentration | $T$ (K) | Solvent |
|---|---|---|---|---|---|
| 1.44 ± 5% [283] | 293.15 | 7.3 [283] | 2 | 293.15 | $CH_3OH$ |

**28011-39: Protonated ethyl 1-amino-propinate nitrate**

**Abbreviation**: $[AlaC_2][NO_3]$
**Molecular Formula**: $C_5H_{12}N_2O_5$
**Molar Mass**: 180.16
**Structure**:



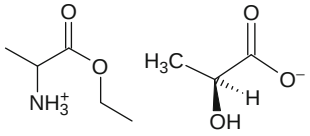
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 256.15 [283] | 460.15 [283] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | $\alpha$ | Concentration | $T$ (K) | Solvent |
|---|---|---|---|---|---|---|---|
| 1.29 ± 5% [283] | 293.15 | 2030 ± 5% [283] | 303.15 | 4.7 [283] | 2 | 293.15 | $CH_3OH$ |

### 28011-68: Protonated ethyl 1-amino-propinate L-lactate

**Abbreviation**: [AlaC$_2$][L-lactate]
**Molecular Formula**: $C_8H_{17}NO_5$
**Molar Mass**: 207.22
**Structure**:



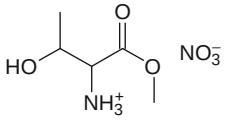
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 248.15 [283] | 244.15 [283] | 355.15 [283] |

| $\rho$ (g/cm$^3$) | $T$ (K) | α | Concentration | $T$ (K) | Solvent |
|---|---|---|---|---|---|
| 1.19 ± 5% [283] | 293.15 | −5.7 [283] | 2 | 293.15 | $CH_3OH$ |

### 28012-39: Protonated methyl 1-amino-2-hydroxy-butyrate nitrate

**Abbreviation**: [ThrC$_1$][$NO_3$]
**Molecular Formula**: $C_5H_{12}N_2O_6$
**Molar Mass**: 196.16
**Structure**:



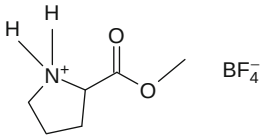
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 261.15 [283] | 429.15 [283] |

| $\rho$ (g/cm$^3$) | $T$ (K) | α | Concentration | $T$ (K) | Solvent |
|---|---|---|---|---|---|
| 1.72 ± 5% [283] | 293.15 | −9.5 [283] | 2 | 293.15 | $CH_3OH$ |

### 28013-21: Protonated methyl 2-pyrrolidine-1-acate tetrafluoroborate

**Abbreviation**: [ProC$_1$][$BF_4$]
**Molecular Formula**: $C_6H_{12}NO_2BF_4$
**Molar Mass**: 216.97
**Structure**:



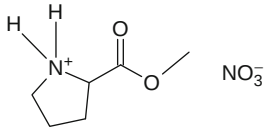
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 253.15 [283] | 507.15 [283] |

| $\rho$ (g/cm$^3$) | $T$ (K) | α | Concentration | $T$ (K) | Solvent |
|---|---|---|---|---|---|
| 1.45 ± 5% [283] | 293.15 | −20.7 [283] | 2 | 293.15 | $CH_3OH$ |

### 28013-39: Protonated methyl 2-pyrrolidine-1-acate nitrate

**Abbreviation**: $[ProC_1][NO_3]$
**Molecular Formula**: $C_6H_{12}N_2O_5$
**Molar Mass**: 192.17
**Structure**:



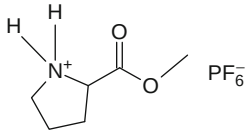
**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 257.15 [283] | 432.15 [283] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | α | Concentration | $T$ (K) | Solvent |
|---|---|---|---|---|---|---|---|
| 1.53 ± 5% [283] | 293.15 | 186 ± 5% [283] | 303.15 | −36.4 [283] | 2 | 293.15 | $CH_3OH$ |

### 28013-51: Protonated methyl 2-pyrrolidine-1-acate hexafluorophosphate

**Abbreviation**: $[ProC_1][PF_6]$
**Molecular Formula**: $C_6H_{12}NO_2PF_6$
**Molar Mass**: 275.13
**Structure**:



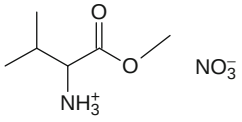
**Character**:
**Application**:

| $T_g$ (K) | $T_d$ (K) |
|---|---|
| 251.15 [283] | 494.15 [283] |

| $\rho$ (g/cm$^3$) | $T$ (K) |
|---|---|
| 1.47 ± 5% [283] | 293.15 |

### 28014-39: Protonated methyl 1-amino-isovalerate nitrate

**Abbreviation**: $[ValC_1][NO_3]$
**Molecular Formula**: $C_6H_{14}N_2O_5$
**Molar Mass**: 194.19
**Structure**:



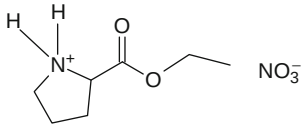
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 347.15 [283] | 240.15 [283] | 468.15 [283] |

| $\rho$ (g/cm$^3$) | $T$ (K) | α | Concentration | $T$ (K) | Solvent |
|---|---|---|---|---|---|
| 1.31 ± 5% [283] | 293.15 | 22.5 [283] | 2 | 293.15 | $CH_3OH$ |

### 28015-39: Protonated ethyl 2-pyrrolidine-1-acate nitrate

**Abbreviation**: $[ProC_2][NO_3]$
**Molecular Formula**: $C_7H_{14}N_2O_5$
**Molar Mass**: 206.2
**Structure**:



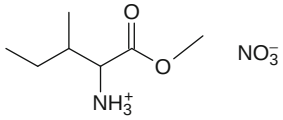

**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 256.15 [283] | 456.15 [283] |

| $\rho$ (g/cm$^3$) | $T$ (K) | α | Concentration | $T$ (K) | Solvent |
|---|---|---|---|---|---|
| 1.57 ± 5% [283] | 293.15 | −30.9 [283] | 2 | 293.15 | $CH_3OH$ |

### 28016-39: Protonated methyl 1-amino-4-methylvalerate nitrate

**Abbreviation**: $[IleC_1][NO_3]$
**Molecular Formula**: $C_7H_{16}N_2O_5$
**Molar Mass**: 208.21
**Structure**:



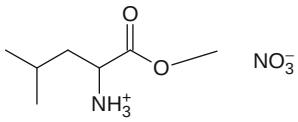

**Character**:
**Application**:

| $T_m$ (K) | $T_d$ (K) |
|---|---|
| 259.15 [283] | 445.15 [283] |

| $\rho$ (g/cm$^3$) | $T$ (K) | α | Concentration | $T$ (K) | Solvent |
|---|---|---|---|---|---|
| 1.35 ± 5% [283] | 293.15 | 32.7 [283] | 2 | 293.15 | $CH_3OH$ |

### 28017-39: Leucinium nitrate

**Abbreviation**: $[Leu][NO_3]$
**Molecular Formula**: $C_7H_{16}N_2O_5$
**Molar Mass**: 208.21
**Structure**:



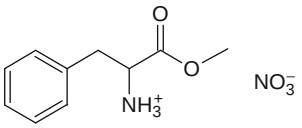

**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 348.15 [283] | 242.15 [283] | 483.15 [283] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\eta_D$ (cp) | $T$ (K) | α | Concentration | $T$ (K) | Solvent |
|---|---|---|---|---|---|---|---|
| 1.15 ± 5% [283] | 293.15 | 1550 ± 5% [283] | 353.15 | 15.4 [283] | 2 | 293.15 | $CH_3OH$ |

### 28018-39: Protonated methyl 1-amino-2-phenylpropionate nitrate

**Abbreviation**: [PheC$_1$][NO$_3$]
**Molecular Formula**: $C_{10}H_{14}N_2O_5$
**Molar Mass**: 242.23
**Structure**:



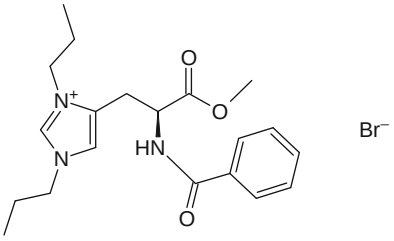
**Character**:
**Application**:

| $T_m$ (K) | $T_g$ (K) | $T_d$ (K) |
|---|---|---|
| 365.15 [283] | 241.15 [283] | 497.15 [283] |

| $\rho$ (g/cm$^3$) | $T$ (K) | $\alpha$ | Concentration | $T$ (K) | Solvent |
|---|---|---|---|---|---|
| 1.16 ± 5% [283] | 293.15 | 21.1 [283] | 2 | 293.15 | $CH_3OH$ |

### 28019-12: Methyl 1-(*N*-benzoyl amino)-2-(1,3-di(*n*-propyl) imidazolium)-propionate bromide

**Abbreviation**: [Bz-His(n-propyl)$_2$-OMe]Br
**Molecular Formula**: $C_{20}H_{28}N_3O_3Br$
**Molar Mass**: 438.36
**Structure**:

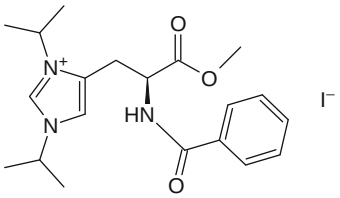


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 312.15 [284] |

### 28020-13: Methyl 1-(*N*-benzoyl amino)-2-(1,3-di(iso-propyl)imidazolium)-propionate iodine

**Abbreviation**: [Bz-His(i-propyl)$_2$-OMe]I
**Molecular Formula**: $C_{20}H_{28}N_3O_3I$
**Molar Mass**: 485.36
**Structure**:

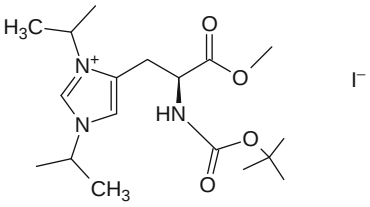


**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 328.15 [284] |

### 28021-13: Methyl 1-(*N*-tert-butoxycarbonylamino)-2-(1,3-di(iso-propyl)imidazolium-propinate iodine

**Abbreviation**: [Boc-His(i-propyl)$_2$-OMe]I
**Molecular Formula**: $C_{18}H_{32}N_3O_4I$
**Molar Mass**: 481.37
**Structure**:



**Character**:
**Application**:

| $T_m$ (K) |
|---|
| 328.15 [284] |

# References


[1] Ohno H, Yoshizawa M. Ion conductive characteristics of ionic liquids prepared by neutralization of alkylimidazoles. *Solid State Ionics*. **2002**. 154-155, 303-309.

[2] Papageorgiou N, Athanassov Y, Armand M, et al. The performance and stability of ambient temperature molten salts for solar cell applications. *J. Electrochem. Soc*. **1996**. 143, 3099-3108.

[3] Holbrey J D, Seddon K R. The phase behaviour of 1-alkyl-3-methylimidazolium tetrafluoroborates; ionic liquids and ionic liquid crystals. *J. Chem. Soc., Dalton Trans*. **1999**. 2133-2140.

[4] Gu Z, Brennecke J F. Volume expansivities and isothermal compressibilities of imidazolium and pyridinium-based ionic liquids. *J. Chem. Eng. Data*. **2002**. 47, 339-345.

[5] MacFarlane D R, Pringle J M, Johansson K M, et al. Lewis base ionic liquids. *Chem. Commun*. **2006**. 18, 1905-1917.

[6] Pernak J, Goc I, Mirska I. Anti-microbial activities of protic ionic liquids with lactate anion. *Green Chem*. **2004**. 7, 323-329.

[7] Sheldon R. Catalytic reactions in ionic liquids. *Chem. Commun*. **2001**. 2399-2407.

[8] Fannin A A, Floreani D A, King L A, et al. Properties of 1,3-dialkylimldazollum chloride-aluminum chloride ionic liquids. 2. Phase transitions, densities, electrical conductivities, and viscosities. *J. Phys. Chem. B*. **1984**. 88, 2614-2621.

[9] Katritzky A R, Jain R, Lomaka A, et al. Correlation of the melting points of potential ionic liquids (imidazolium bromides and benzimidazolium bromides) using the codessa program. *J. Chem. Inf. Comput. Sci*. **2002**. 42, 225-231.

[10] Ohlin C A, Dyson P J, Laurenczy G. Carbon monoxide solubility in ionic liquids: Determination, prediction and relevance to hydroformylation. *Chem. Commun*. **2004**. 1070-1071.

[11] Bonhote P, Dias A P, Papageorgiou N, et al. Hydrophobic, highly conductive ambient-temperature molten salts. *Inorg. Chem*. **1996**. 35, 1168-1178.

[12] Berthod A, Ruiz-Angel M, Carda-Broch S. Ionic liquids in separation techniques. *J. Chromatogr. A*. **2008**. 1184, 6-18.

[13] Peter W, Roy V H, Andreas B N. Halogen-free ionic liquids-synthesis, properties, and applications. Molten salts XIII. *Electrochemical society series*. **2002**. 19, 147-154.

[14] Zhu Q, Song Y, Zhu X F, et al. Ionic liquid-based electrolytes for capacitor applications. *J. Electroanal. Chem*. **2007**. 601, 229-236.

[15] Zhou Z B, Matsumoto H, Tatsumi K. Low-melting, low-viscous, hydrophobic ionic liquids: 1-alkyl(alkyl ether)-3-methylimidazolium perfluoroalkyltrifluoroborate. *Chem. Eur. J*. **2004**. 10, 6581-6591.

[16] Carter E B, Culver S L, Fox P A, et al. Sweet success: Ionic liquids derived from non-nutritive sweeteners. *Chem. Commun*. **2004**. 6, 630-631.

[17] Ngo H L, LeCompte K, Hargens L, et al. Thermal properties of imidazolium ionic liquids. *Thermochim. Acta*. **2000**. 357-358, 97-102.

[18] Studzinska S, Sprynskyy M, Buszewski B. Study of sorption kinetics of some ionic liquids on different soil types. *Chemosphere*. **2008**. 71, 2121-2128.

[19] Valkenburg M E V, Vaughn R L, Williams M, et al. Thermochemistry of ionic liquid heat-transfer fluids. *Thermochimica Acta*. **2005**. 425, 181-188.

[20] Sato T, Masuda G, Takagi K. Electrochemical properties of novel ionic liquids for electric double layer capacitor applications. *Electrochim. Acta*. **2004**. 49, 3603-3611.

[21] Zhou Z B, Matsumoto H, Tatsumi K. Structure and properties of new ionic liquids based on alkyl- and alkenyltrifluoroborates. *Chem. Phys. Chem*. **2005**. 6, 1324-1332.

[22] Hagiwara R, Ito Y. Room temperature ionic liquids of alkylimidazolium cations and fluoroanions. *J. Fluorine Chem*. **2000**. 105, 221–227.

[23] Suarez P A Z, Dullius J E L, Einloft S, et al. The use of new ionic liquids in two-phase catalytic hydrogenation reaction by rhodium complexes. *Polyhedron*. **1996**. 15, 1217-1219.

[24] Wilkes J S, Zaworotko M J. Air and water stable 1-ethyl-3-methylimidazolium based ionic liquids. *J. Chem. Soc., Chem. Commun*. **1992**. 965-967.

[25] Noda A, Hayamizu K, Watanabe M. Pulsed-gradient spin-echo $^{1}$H and $^{19}$F NMR ionic diffusion coefficient, viscosity, and ionic conductivity of non-chloroaluminate room-temperature ionic liquids. *J. Phys.Chem. B*. **2001**. 105, 4603-4610.

[26] McEwen A B, Ngo H L, LeCompte K, et al. Electrochemical properties of imidazolium salt electrolytes for electrochemical capacitor applications. *J. Electrochem. Soc*. **1999**. 146, 1687-1695.

[27] Earle M J, McCormac P B, Seddon K R. Regioselective alkylation in ionic liquids. *Chem. Commun*. **1998**. 2245-2246.

[28] Fuller J, Carlin R T, Osteryoung R A. The room temperature ionic liquid 1-ethyl-3-methylimidazolium tetrafluoroborate: Electrochemical couples and physical properties. *J. Electrochem. Soc*. **1997**. 144, 3881-3886.

[29] Nishida T, Tashiro Y, Yamamoto M. Physical and electrochemical properties of 1-alkyl-3-methylimidazolium tetrafluoroborate for electrolyte. *J. Fluorine Chem*. **2003**. 120, 135-141.

[30] Law G, Watson P R. Surface tension measurements of N-alkylimidazolium ionic liquids. *Langmuir*. **2001**. 17, 6138-6141.

[31] Deng M J, Chen P Y, Leong T I, et al. Dicyanamide anion based ionic liquids for electrodeposition of metals. *Electrochem. Commun*. **2008**. 10, 213-216.

[32] Seddon K R, Stark A, Torres M J. Influence of chloride, water, and organic solvents on the physical properties of ionic liquids. *Pure Appl. Chem*. **2000**. 72, 2275-2287.

[33] Nanjundiah C, McDevitt S F, Koch V R. Differential capacitance measurements in solvent-free ionic liquids at Hg and C interfaces. *J. Electrochem. Soc*. **1997**. 144, 3392-3397.

[34] Noda A, Watanabe M. Abstracts of annual meeting of the electrochemical society of Japan. **1999**. 309.

[35] Waliszewski D, Stepniak I, Piekarski H, et al. Heat capacities of ionic liquids and their heats of solution in molecular liquids. *Thermochim. Acta*. **2005**. 433, 149-152.

[36] Ignat'ev N V, Welz-Biermann U, Kucheryna A, et al. New ionic liquids with tris(perfluoroalky1)trifluorophosphate (FAP) anions. *J. Fluorine Chem*. **2005**. 126, 1150-1159.

[37] Zhou Z B, Takeda M, Ue M. New hydrophobic ionic liquids based on perfluoroalkyltrifluoroborate anions. *J. Fluorine Chem*. **2004**. 125, 471-476.

[38] Zhou Z B, Matsumoto H, Tatsumi K. Cyclic quaternary ammonium ionic liquids with perfluoroalkyltrifluoroborates: Synthesis, characterization, and properties. *Chem. Eur. J*. **2006**. 12, 2196-2212.

[39] Yu S F, Lindeman S, Tran C D. Chiral ionic liquids: Synthesis, properties, and enantiomeric recognition. *J. Org. Chem*. **2008**. 73, 2576-2591.

[40] Fredlake C P, Crosthwaite J M, Hert D G, et al. Thermophysical properties of imidazolium-based ionic liquids. *J. Chem. Eng. Data*. **2004**. 49, 954-964.

[41] Ishikawa M, Sugimoto T, Kikuta M, et al. Pure ionic liquid electrolytes compatible with a graphitized carbon negative electrode in rechargeable lithium-ion batteries. *J. Power Sources*. **2006**. 162, 658-662.

[42] Wu B, Reddy R G, Rogers R D. Novel ionic liquid thermal storge for solar thermal electric power system.Proceedings of solar forum, solar energy: the power to choose. Washington, DC. **2001**.

[43] Hajime Matsumoto, Hiroyuki Kageyama, Yoshinori Miyazaki. Physical and electrochemical properties of room temperature molten salt based on aliphatic onium cations and asymmetric amide anion. Molten salts XIII. *Electrochemical society series*. **2002**. 19, 1057-1065.

[44] Sergei V, Dzyuba R A B. Influence of structural variations in 1-alkyl (aralkyl)-3-methylimidazolium hexafluorophosphates and bis(trifluoromethylsulfonyl)imides on physical properties of the ionic liquids. *Chem. Phys. Chem*. **2002**. 3, 161-166.

[45] Matsumoto H, Yanagida M, Tanimoto K, et al. Highly conductive room temperature molten salts based on small trimethylalkylammonium cations and bis(trifluoromethylsulfonyl)imide. *Chem. Lett*. **2000**. 29, 922-923.

[46] Dzyuba S V, Bartsch R A. Expanding the polarity range of ionic liquids. *Tetrahedron Lett*. **2002**. 43, 4657-4659.

[47] Lee S H, Lee S B. The hildebrand solubility parameters, cohesive energy densities and internal energies of 1-alkyl-3-methylimidazolium-based room temperature ionic liquids. *Chem. Commun*. **2005**. 3469-3471.

[48] Kilaru P K, Condemarin P A, Scovazzo P. Correlations of low-pressure carbon dioxide and hydrocarbon solubilities in imidazolium-, phosphonium-, and ammonium-based room-temperature ionic liquids. Part 1. Using surface tension. *Ind. Eng. Chem. Res*. **2008**. 47, 900-909.

[49] Evans R G, Klymenko O V, Hardacre C, et al. Oxidation of N,N,N′, N′-tetraalkyl-para-phenylenediamines in a series of room temperature ionic liquids incorporating the bis(trifluoromethylsulfonyl)imide anion. *J. Electroanal. Chem*. **2003**. 556, 179-188.

[50] Matsumoto H, Sakaebe H, Tatsumi K, et al. Fast cycling of Li/$LiCoO_2$ cell with low-viscosity ionic liquids based on bis(fluorosulfonyl)imide $[FSI]^-$. *J. Power Sources*. **2006**. 160, 1308-1313.

[51] Barisci J N, Wallace G G, MacFarlane D R, et al. Investigation of ionic liquids as electrolytes for carbon nanotube electrodes. *Electrochem. Commun*. **2004**. 6, 22-27.

[52] Widegren J A, Saurer E M, Marsh K N, et al. Electrolytic conductivity of four imidazolium-based room-temperature ionic liquids and the effect of a water impurity. *J. Chem. Thermodynamics*. **2005**. 37, 569-575.

[53] Emel'yanenko V N, Verevkin S P, Heintz A. The gaseous enthalpy of formation of the ionic liquid 1-butyl-3-methylimidazolium dicyanamide from combustion calorimetry, vapor pressure measurements, and Ab initio calculations. *J. Am. Chem. Soc*. **2007**. 129, 3930-3937.

[54] Yukihiro Yoshida, Koji Muroi, Akihiro Otsuka, et al. 1-ethyl-3-methylimidazolium based ionic liquids containing cyano groups: Synthesis, characterization, and crystal structure. *Inorg. Chem*. **2004**. 43, 1458-1462.

[55] MacFarlane D R, Golding J, Forsyth S, et al. Low viscosity ionic liquids based on organic salts of the dicyanamide anion. *Chem. Commun*. **2001**. 1430-1431.

[56] Cha E H, Lim S A, Park J H, et al. Ionic conductivity studies of gel polyelectrolyte based on ionic liquid. *J. Power Sources*. **2008**. 178, 779-782.

[57] Pringle J M, Golding J, Baranyai K, et al. The effect of anion fluorination in ionic liquids—physical properties of a range of bis(methanesulfonyl)amide salts. *New J. Chem*. **2003**. 27, 1504-1510.

[58] Quek S K, LyapkaloHuynh I M, Huynh H V. Synthesis and properties of N,N′-dialkylimidazolium bis(nonafluorobutane-1-sulfonyl)imides: A new subfamily of ionic liquids. *Tetrahedron*. **2006**. 62, 3137-3145.

[59] Matsumoto H, Sakaebe H, Tatsumi K. Preparation of room temperature ionic liquids based on aliphatic onium cations and asymmetric amide anions and their electrochemical properties as a lithium battery electrolyte. *J. Power Sources*. **2005**. 146, 45-50.

[60] Cooper E I, O'Sullivan E J M. In Proceedings of the 8th International Symposium on Molten Salts. Gale R J, Blomgren G, Kojima H. (eds). The Electrochemical Society, Proc. Ser., Pennington, New Jersey. **1992**. 92–16, 386–396.

[61] Diedrichs A, Gmehling J. Measurement of heat capacities of ionic liquids by differential scanning calorimetry. *Fluid Phase Equilib*. **2006**. 244, 68-77.

[62] Tsukada Y, Iwamoto K, Furutani H, et al. Preparation of novel hydrophobic fluorine-substituted-alkyl sulfate ionic liquids and application as an efficient reaction medium for lipase-catalyzed reaction. *Tetrahedron Letters*. **2006**. 47, 1801-1804.

[63] Armstrong J P, Hurst C, Jones R G, et al. Vapourisation of ionic liquids. *Phys. Chem. Chem. Phys*. **2007**. 9, 982-990.

[64] Calvar N, Gonzalez B, Gomez E, et al. Vapor-liquid equilibria for the ternary system ethanol + water+1-ethyl-3-methylimidazolium ethylsulfate and the corresponding binary systems containing the ionic liquid at 101.3 kpa. *J. Chem. Eng. Data*. **2008**. 53, 820-825.

[65] Hofman T, Goldon A, Nevines A, et al. Densities, excess volumes, isobaric expansivity, and isothermal compressibility of the (1-ethyl-3-methylimidazolium ethylsulfate plus methanol) system at temperatures (283.15 to 333.15)K and pressures from (0.1 to 35) MPa. *J. Chem. Thermodyn*. **2008**. 40, 580-591.

[66] Bhujrajh P, Deenadayalu N. Liquid densities and excess molar volumes for binary systems (ionic liquids plus methanol or water) at 298.15, 303.15 and 313.15K, and at atmospheric pressure. *J. Solut. Chem*. **2007**. 36, 631-642.

[67] Woecht I, Schmidt-Naake G, Beuermann S, et al. Propagation kinetics of free-radical polymerizations in ionic liquids. *J. Polym. Sci., Part A: Polym. Chem*. **2008**. 46, 1460-1469.

[68] Ska U D, Marciniak A. Solubility of 1-alkyl-3-methylimidazolium hexafluorophosphate in hydrocarbons. *J. Chem. Eng. Data*. **2003**. 48, 451-456.

[69] Fukumoto K, Yoshizawa M, Ohno H. Room temperature ionic liquids from 20 natural amino acids. *J. Am. Chem. Soc*. **2005**. 127, 2398-2399.

[70] Song Y, Liu L, Zhu X F, et al. Physicochemical properties of ionic liquids based on imidazolium/pyrrolidinium cations and maleate/phthalate anions. *Solid State Ionics*. **2008**. 179, 516-521.

[71] Zang S L, Zhang Q G, Huang M, et al. Studies on the properties of ionic liquid EMIIncl4. *Fluid Phase Equilib*. **2005**. 230, 192-196.

[72] Hagiwara R, Hirashige T, Tsuda T, et al. Acidic 1-ethyl-3-methylimidazolium uoride: A new room temperature ionic liquid. *J. Fluorine Chem*. **1999**. 99, 1-3.

[73] Hagiwara R, Hirashige T, Tsuda T, et al. A highly conductive room temperature molten fluoride: Emif center dot 2.3hf. *J. Electrochem. Soc*. **2002**. 149, D1–D6.

[74] Matsumoto H, Matsuda T, Tsuda T, et al. The application of room temperature molten salt with low viscosity to the electrolyte for dye-sensitized solar cell. *Chem. Lett*. **2001**. 26-27.

[75] Matsumoto K, Hagiwara R, Ito Y. Room temperature molten fluorometallates: 1-ethyl-3-methylimidazolium hexafluoroniobate(V) and hexafluorotantalate(V). *J. Fluorine Chem*. **2002**. 115, 133-135.

[76] Matsumoto K, Hagiwara R, Yoshida R, et al. Syntheses, structures and properties of 1-ethyl-3-methylimidazolium salts of fluorocomplex anions. *Dalton Trans*. **2004**. 144-149.

[77] Matsumoto K, Hagiwara R. A new room temperature ionic liquid of oxyfluorometallate anion: 1-ethyl-3-methylimidazolium oxypentafluorotungstate ($EMImWOF_5$). *J. Fluorine Chem.* **2005**. 126, 1095-1100.

[78] Koryta J, Dvorak J, Kavan L. Principles of Electrochemistry. In: (second edition ed.), John Wiley & Sons, Chichester, UK. **1993**. 120-124.

[79] Suarez P A Z, Einloft S, Dullius J E L, et al. Synthesis and physical-chemical properties of ionic liquids based on 1-n-butyl-3-methylimidazolium cation. *J. Chem. Phys. Phys. Chem. Biol.* **1998**. 95, 1626-1639.

[80] Baldelli S. Influence of water on the orientation of cations at the surface of a room-temperature ionic liquid: A sum frequency generation vibrational spectroscopic study. *J. Phys. Chem. B*. **2003**. 107, 6148-6152.

[81] Liu Q, Janssen Michiel H A, Rantwijk F, et al. Room-temperature ionic liquids that dissolve carbohydrates in high concentrations. *Green Chem.* **2005**. 7, 39-42.

[82] Branco L C, Rosa J N, Moura Ramos J J, et al. Preparation and characterization of new room temperature ionic liquids. *Chem. Eur. J.* **2002**. 8, 3671-3677.

[83] Huddleston J G, Visser A E, Reichert W M, et al. Characterization and comparison of hydrophilic and hydrophobic room temperature ionic liquids incorporating the imidazolium cation. *Green Chem.* **2001**. 3, 156-164.

[84] Ann E, Visser W, Matthew R, et al. Characterization of hydrophilic and hydrophobic ionic liquids: Alternatives to volatile organic compounds for liquid-liquid separations. Ionic liquids industrial applications to green chemistry. *ACS symposium series*. **2002**. 818, 289-308.

[85] Urszula D, Nacute N, Ska E B, et al. 1-octanol/water partition coefficients of 1-alkyl-3-methylimidazolium chloride. *Chem. Eur. J.* **2003**. 9, 3033-3041.

[86] Carda-Broch S, Berthod A, Armstrong D W. Solvent properties of the 1-butyl-3-methylimidazolium hexafluorophosphate ionic liquid. *Anal. Bioanal. Chem.* **2003**. 375, 191-199.

[87] Kuang Q L, Zhang J, Wang Z G. Revealing long-range density fluctuations in dialkylimidazolium chloride ionic liquids by dynamic light scattering. *J. Phys. Chem. B*. **2007**. 111, 9858-9863.

[88] Suarez P A Z, Selbach V M, Dullius J E L, et al. Enlarged electrochemical window in dialkyl-imidazolium cation based room-temperature air and water-stable molten salts. *Electrochim. Acta*. **1997**. 42, 2533-2535.

[89] Olivier-Bourbigou H, Magna L. Ionic liquids: perspectives for organic and catalytic reactions. *J. Mol. Catal. A: Chem.* **2002**. 182-183, 419-437.

[90] Park H S, Choi Y S, Jung Y M, et al. Intermolecular interaction-induced hierarchical transformation in 1d nanohybrids: Analysis of conformational changes by 2d correlation spectroscopy. *J. Am. Chem. Soc*. **2008**. 130, 845-852.

[91] Xu W, Wang L M, Nieman R A, et al. Ionic liquids of chelated orthoborates as model ionic glassformers. *J. Phys. Chem. B*. **2003**. 107, 11749-11756.

[92] Qi M Y, Wu G Z, Li Q M, et al. Gamma-radiation effect on ionic liquid [bmim][$BF_4$]. *Radiat. Phys. Chem*. **2008**. 77, 877-883.

[93] Yi F P, Li J Z, Chen B. Study of ionic liquid as surface active agent. *Acta Chim. Sina*. **2008**. 66, 239-244.

[94] Iglesias-Otero M A, Troncoso J, Carballo E, et al. Density and refractive index for binary systems of the ionic liquid [bmim][$BF_4$] with methanol, 1,3-dichloropropane, and dimethyl carbonate. *J. Solut. Chem.* **2007**. 36, 1219-1230.

[95] Azevedo R G D, Esperancn J M S S, Najdanovic-Visak V, et al. Thermophysical and thermodynamic properties of 1-butyl-3-methylimidazolium tetrafluoroborate and 1-butyl-3-methylimidazolium hexafluorophosphate over an extended pressure range. *J. Chem. Eng. Data*. **2005**. 50, 997-1008.

[96] Paulechka Y U, Zaitsau D H, Kabo G J, et al. Vapor pressure and thermal stability of ionic liquid 1-butyl-3-methylimidazolium bis (trifluoromethylsulfonyl)amide. *Thermochimica Acta*. **2005**. 439, 158-160.

[97] Broeke J V D, Stam M, Lutz M, et al. Designing ionic liquids: 1-butyl-3-methylimidazolium cations with substituted tetraphenylborate counterions. *Eur. J. Inorg. Chem.* **2003**. 2003, 2798-2811.

[98] Naoya Nishi, Seiichi Imakura, Kakiuchi T. Wide electrochemical window at the interface between water and a hydrophobic room-temperature ionic liquid of tetrakis[3,5-bis(trifluoromethyl)phenyl] borate. *Anal. Chem.* **2006**. 78, 2726-2731.

[99] Jie Ding, Vasumathi Desikan, Xinxin Han, et al. Use of chiral ionic liquids as solvents for the enantioselective photoisomerization of dibenzobicyclo[2.2.2]octatrienes. *Org. Lett.* **2005**. 7, 335-337.

[100] Zhao D, Fei Z, Ohlin C A, et al. Dual-functionalised ionic liquids: Synthesis and characterisation of imidazolium salts with a nitrile-functionalised anion. *Chem. Commun.* **2004**. 2500-2501.

[101] Alessandro Bagno, Carig Butts, Cinzia Chiappe, et al. The effect of the anion on the physical properties of trihalide-based N,N-dialkylimidazolium ionic liquids. *Org. Biomol. Chem.* **2005**. 3, 1624-1630.

[102] Gan Q, Rooney D, Xue M, et al. An experimental study of gas transport and separation properties of ionic liquids supported on nanofiltration membranes. *J. Membr. Sci.* **2006**. 280, 948-956.

[103] Bockris J O M, Reddy A K. Modern Electrochemistry. Plenum Press, New York. **1970**. 1, 547–553.

[104] Stumpf S, Billard I, Gaillard C, et al. Time-resolved laser fluorescence spectroscopy and extended X-ray absorption spectroscopy investigations of the $N_3^-$ complexation of Eu(III), Cm(III), and Am(III) in an ionic liquid: Differences and similarities. *Inorg. Chem.* **2008**. 47, 4618-4626.

[105] Chen H, He Y, Zhu J, et al. Rheological and heat transfer behaviour of the ionic liquid, [$C_4$mim][$NTf_2$]. *Int. J. Heat Fluid Flow*. **2008**. 29, 149-155.

[106] Kim J D, Hayashi S, Mori T, et al. Fast proton conductor under anhydrous condition synthesized from 12-phosphotungstic acid and ionic liquid. *Electrochim. Acta*. **2007**. 53, 963-967.

[107] Domanska U, Bogel-Lukasik E, Bogel-Lukasik R. Solubility of 1-dodecyl-3-methylimidazolium chloride in Alcohols ($C_2$-$C_{12}$). *J. Phys. Chem. B*. **2003**. 107, 1858-1863.

[108] Azevedo R G D, Esperanca J M S S, Szydlowski J, et al. Thermophysical and thermodynamic properties of ionic liquids over an extended pressure range: [bmim][$NTf_2$] and [hmim][$NTf_2$]. *J. Chem. Thermodynamics*. **2005**. 37, 888-899.

[109] Liu H, Wang H, Guo H T, et al. Novel imidazolium-based ionic liquids with a crown-ether moiety. *Chemistry Letters*. **2005**. 34, 1184-1185.

[110] Itoh T, Han S, Matsushita Y, et al. Enhanced enantioselectivity and remarkable acceleration on the lipase-catalyzed transesterification using novel ionic liquids. *Green Chem.* **2004**. 9, 437-439.

[111] Baghdadi M, Shemirani F. Cold-induced aggregation microextraction: A novel sample preparation technique based on ionic liquids. *Analytica Chimica Acta*. **2008**. 613, 56-63.

[112] Chun S, Dzyuba S V, Bartsch R A. Influence of structural variation in room-temperature ionic liquids on the selectivity and efficiency of competitive alkali metal salt extraction by a crown ether. *Anal. Chem.* **2001**. 73, 3737-3741.

[113] Fortunato R, Afonso C A M, Reis M A M, et al. Supported liquid membranes using ionic liquids: Study of stability and transport mechanisms. *J. Membr. Sci*. **2004**. 242, 197-209.

[114] Wang H, Lu Q, Ye C, et al. Friction and wear behaviors of ionic liquid of alkylimidazolium hexafluorophosphates as lubricants for steel/steel contact. *Wear*. **2004**. 256, 44-48.

[115] Liu J F, Jiang G B, Chi Y G, et al. Use of ionic liquids for liquid-phase microextraction of polycyclic aromatic hydrocarbons. *Anal. Chem.* **2003**. 75, 5870-5876.

[116] Baker S N, Baker G A, Kane M A, et al. The cybotactic region surrounding fluorescent probes dissolved in 1-butyl-3-methylimidazolium hexafluorophosphate: Effects of temperature and added carbon dioxide. *J. Phys. Chem. B*. **2001**. 105, 9663-9668.

[117] Dong B, Xing Y H, Xu J K, et al. Electrosyntheses of free-standing and highly conducting polyselenophene films in an ionic liquid. *Electrochim. Acta*. **2008**. 53, 5745-5751.

[118] Harris K R, Woolf L A. Temperature and pressure dependence of the viscosity of the ionic liquid 1-butyl-3-methylimidazolium hexafluorophosphate. *J. Chem. Eng. Data*. **2005**. 50, 1777-1782.

[119] Chen H, Kwait D C, Gonen Z S, et al. Phase characterization and properties of completely saturated quaternary phosphonium salts. Ordered, room-temperature ionic liquids. *Chem. Mater*. **2002**. 14, 4063-4072.

[120] Strechan A A, Paulechka Y U, Blokhin A V, et al. Low-temperature heat capacity of hydrophilic ionic liquids [bmim][$CF_3COO$] and [bmim][$CH_3COO$] and a correlation scheme for estimation of heat capacity of ionic liquids. *J. Chem. Thermodyn*. **2008**. 40, 632-639.

[121] Murugesan S, Wiencek J M, Ren R X, et al. Benzoate-based room temperature ionic liquids: Thermal properties and glycosaminoglycan dissolution. *Carbohydr. Polym*. **2006**. 63, 268-271.

[122] Chen X F, Peng Y Q. Chloroferrate(III) ionic liquid: Efficient and recyclable catalyst for solvent-free synthesis of 3,4-dihydropyrimidin-2(1H)-ones. *Catalysis Letters*. **2008**. 122, 310-313.

[123] Yang J Z, Tong J, Li J B, et al. Surface tension of pure and water-containing ionic liquid $C_5MIBF_4$(1-methyl-3-pentylimidazolium tetrafluoroborate). *J. Colloid Interface Sci*. **2007**. 313, 374-377.

[124] Tong J, Hong M, Guan W, et al. Studies on the thermodynamic properties of new ionic liquids: 1-methyl-3-pentylimidazolium salts containing metal of group iii. *J. Chem. Thermodyn*. **2006**. 38, 1416-1421.

[125] Ito Y, Shimada T, Kawamura H. In Proceedings of the 8th International Symposium on Molten Salts. Gale R J, Blomgren G, Kojima H. (eds). The Electrochemical Society, Proc. Ser., Pennington, New Jersey. **1992**. 92–16, 98–133.

[126] Kuhn N, Bohnen H, Kreutzberg J, et al. 1,3,4,5-tetramethyl-2-methyleneimidazoline—an ylidic olefin. *J. Chem. Soc., Chem. Commun*. **1993**. 1136-1137.

[127] Ramos J J M, Afonso C A, MBranco L C. Glass transition relaxation and fragility in two room temperature ionic liquids. *J. Therm. Anal. Calorim*. **2003**. 71, 659-666.

[128] Crosthwaite J M, Muldoon M J, Dixon J K, et al. Phase transition and decomposition temperatures, heat capacities and viscosities of pyridinium ionic liquids. *J. Chem. Thermodynamics*. **2005**. 37, 559-568.

[129] Matsumoto H, Kageyama H, Miyazaki Y. Room temperature molten salts based on tetraalkylammonium cations and bis(trifluoromethylsulfonyl)imide. *Chem. Lett*. **2001**. 182-183.

[130] Hardacre C, Holbrey J D, Katdare S P, et al. Alternating copolymerisation of styrene and carbon monoxide in ionic liquids. *Green Chem*. **2002**. 4, 143-146.

[131] Yu B, Zhou F, Pang C J, et al. Tribological evaluation of α, ẃ-diimidazoliumalkylene hexafluorophosphate ionic liquid and benzotriazole as additive. *Tribology International*. **2008**. 41, 797-801.

[132] Anderson J L, Armstrong D W. High-stability ionic liquids. A new class of stationary phases for gas chromatography. *Anal. Chem*. **2003**. 75, 4851-4858.

[133] Letcher T M, Deenadayalu N. Ternary liquid-liquid equilibria for mixtures of 1-methyl-3-octyl-imidazolium chloride + benzene + an alkane at T = 298.2 K and 1 atm. *J. Chem. Thermodynamics*. **2003**. 35, 67-76.

[134] Koch V R, Nanjundiah C, Appetecchi G B, et al. The interfacial stability of Li with two new solvent-free ionic liquids: 1,2-dimethyl-3-propylimidazolium imide and methide. *J. Electrochem. Soc*. **1995**. 142, 116-118.

[135] Pernak J, Czepukowicz A. New ionic liquids and their antielectrostatic properties. *Ind. Eng. Chem. Res*. **2001**. 40, 2379-2383.

[136] Palomar J, Torrecilla J S, Ferro V R, et al. Development of an a priori ionic liquid design tool. 1. Integration of a novel COSMO-RS molecular descriptor on neural networks. *Ind. Eng. Chem. Res*. **2008**. 47, 4523-4532.

[137] Kulkarni P S, Branco L C, Crespo J G, et al. Comparison of physicochemical properties of new ionic liquids based on imidazolium, quaternary ammonium, and guanidinium cations. *Chemistry-A European J*. **2007**. 13, 8478-8488.

[138] Bradley A E, Hardacre C, Holbrey J D, et al. Small-angle x-ray scattering studies of liquid crystalline 1-alkyl-3-methylimidazolium salts. *Chem. Mater*. **2002**. 14, 629-635.

[139] Yang C, Sun Q, Qiao J, et al. Ionic liquid doped polymer light-emitting electrochemical cells. *J. Phys. Chem. B*. **2003**. 107, 12981-12988.

[140] Gordon C M, Holbrey J D, Kennedy A R, et al. Ionic liquid crystals: Hexafluorophosphate salts. *J. Mater. Chem*. **1998**. 8, 2627-2636.

[141] Ding Y S, Zha M, Zhang J, et al. Synthesis, characterization and properties of geminal imidazolium ionic liquids. *Colloid Surf. A-Physicochem. Eng. Asp*. **2007**. 298, 201-205.

[142] Roche J D, Gordon C M, Imrie C T, et al. Application of complementary experimental techniques to characterization of the phase behavior of [$C_{16}$mim][$PF_6$] and [$C_{14}$mim][$PF_6$ ]. *Chem. Mater*. **2003**. 15, 3089-3097.

[143] Yagupolskii Y L, Sokolenko T M, Petko K I, et al. Novel ionic liquids - imidazolium salts with a difluoromethylene fragment directly bonded to the nitrogen atom. *J. Fluorine Chem*. **2005**. 126, 669-672.

[144] Jodry J J, Mikami K. New chiral imidazolium ionic liquids: 3D-network of hydrogen bonding. *Tetrahedron Lett*. **2004**. 45, 4429-4431.

[145] Pernak J, Sobaszkiewicz K, Foksowicz-Flaczyk J. Ionic liquids with symmetrical dialkoxymethyl-substituted imidazolium cations. *Chem. Eur. J*. **2004**. 10, 3479-3485.

[146] Yeon S H, Kim K S, Choi S, et al. Physical and electrochemical properties of 1-(2-hydroxyethyl)-3-methyl imidazolium and N-(2-hydroxyethyl)-N-methyl morpholinium ionic liquids. *Electrochim. Acta*. **2005**. 50, 5399-5407.

[147] Gathergood N, Garcia M T, Scammells P J. Biodegradable ionic liquids: Part I. Concept, preliminary targets and evaluation. *Green Chem*. **2004**. 6, 166-175.

[148] Lee J S, Quan N D, Hwang J M, et al. Ionic liquids containing an ester group as potential electrolytes. *Electrochem. Commun*. **2006**. 8, 460-464.

[149] Kim K S, Demberelnyamba D, Lee H. Size-selective synthesis of gold and platinum nanoparticles using novel thiol-functionalized ionic liquids. *Langmuir*. **2004**. 20, 556-560.

[150] Omotowa B A, Shreeve J M. Triazine-based polyfluorinated triquaternary liquid salts: Synthesis, characterization, and application as solvents in Rhodium (I)-catalyzed hydroformylation of 1-octene. *Organometallics*. **2004**. 23, 783-791.

[151] Moret M E, Chaplin A B, Lawrence A K, et al. Synthesis and characterization of organometallic ionic liquids and a heterometallic carbene complex containing the chromium tricarbonyl fragment. *Organometallics*. **2005**. 24, 4039-4048.

[152] Zhao D, Fei Z, Scopelliti R, et al. Synthesis and characterization of ionic liquids incorporating the nitrile functionality. *Inorg. Chem*. **2004**. 43, 2197-2205.

[153] Gao Y, Twamley B, Shreeve J M. The first (ferrocenylmethyl)imidazolium and (ferrocenylmethyl)triazolium room temperature ionic liquids. *Inorg. Chem*. **2004**. 43, 3406-3412.

[154] Mu Z, Zhou F, Zhang S, et al. Preparation and characterization of new phosphonyl-substituted imidazolium ionic liquids. *Helv. Chim. Acta*. **2004**. 87, 2549-2555.

[155] Tosoni M, Laschat S, Baro A. Synthesis of novel chiral liquids and their phase behavior in mixtures with smectic and nematic liquid crystals. *Helv. Chim. Acta*. **2004**. 87, 2472-2479.

[156] Singh R P, Winter R W, Gard G L, et al. Quaternary salts containing the pentafluorosulfanyl ($SF_5$) group. *Inorg. Chem*. **2003**. 42, 6142-6146.

[157] Ogihara W, Washiro S, Nakajima H, et al. Effect of cation structure on the electrochemical and thermal properties of ion conductive polymers obtained from polymerizable ionic liquids. *Electrochim. Acta*. **2006**. 51, 2614-2619.

[158] Zhang D, Chen J, Liang Y, et al. Facile synthesis of novel ionic liquids containing dithiocarbamate. *Synth. Commun*. **2005**. 35, 521-526.

[159] Du Z, Li Z, Deng Y. Synthesis and characterization of sulfonyl-functionalized ionic liquids. *Synth. Commun*. **2005**. 35, 1343-1349.

[160] Holbrey J D, Turner M B, Reichert W M, et al. New ionic liquids containing an appended hydroxyl functionality from the atom-efficient, one-pot reaction of 1-methylimidazole and acid with propylene oxide. *Green Chem*. **2003**. 5, 731-736.

[161] Ali Ouadi, Benolt Gadenne, Peter Hesemann, et al. Task-specific ionic liquids bearing 2-hydroxybenzylamine units: Synthesis and americium-extraction studies. *Chem. Eur. J.* **2006**. 12, 3074-3081.

[162] Fox P A, Griffin S T, Reichert W M, et al. Exploiting isolobal relationships to create new ionic liquids: Novel room-temperature ionic liquids based upon (N-alkylimidazole)(amine)$BH_2^+$ "boronium" ions. *Chem. Commun.* **2005**. 3679-3681.

[163] Zhang Hao, Jin Wu, Zhang Jun, et al. 1-allyl-3-methylimidazolium chloride room temperature ionic liquid: A new and powerful nonderivatizing solvent for cellulose. *Macromolecules.* **2005**. 38, 8272-8277.

[164] Fei Z, Zhao D, Scopelliti R, et al. Organometallic complexes derived from alkyne-functionalized imidazolium salts. *Organometallics.* **2004**. 23, 1622-1628.

[165] Wang Z M, Wang Q, Zhang Y, et al. Synthesis of new chiral ionic liquids from natural acids and their applications in enantioselective michael addition. *Tetrahedron Lett*. **2005**. 46, 4657-4660.

[166] Ye C, Shreeve J M. Syntheses of very dense halogenated liquids. *J. Org. Chem.* **2004**. 69, 6511-6513.

[167] Cole A C, Jensen J L, Ntai I, et al. Novel brønsted acidic ionic liquids and their use as dual solvent-catalysts. *J. Am. Chem. Soc*. **2002**. 124, 5962-5963.

[168] Shan H X, Li Z J. Novel ionic liquid as solvent for preconcentration of trace lead in dialysis fluids and its determination by graphite furnace atomic absorption spectrometry. *Spectroscopy and Spectral Analysis.* **2008**. 28, 214-217.

[169] Schrekker H S, Stracke M P, Schrekker C M L, et al. Ether-functionalized imidazolium hexafluorophosphate ionic liquids for improved water miscibilities. *Ind. Eng. Chem. Res.* **2007**. 46, 7389-7392.

[170] Yu B, Liu Z L, Zhou F, et al. A novel lubricant additive based on carbon nanotubes for ionic liquids. *Mater. Lett*. **2008**. 62, 2967-2969.

[171] Cheng D H, Chen X W, Shu Y, et al. Selective extraction/isolation of hemoglobin with ionic liquid 1-butyl-3-trimethylsilylimidazolium hexafluorophosphate (Btmsim$PF_6$). *Talanta.* **2008**. 75, 1270-1278.

[172] Zhang W X, Li Y, Lin C X, et al. Electrochemical polymerization of imidazolum-ionic liquids bearing a pyrrole moiety. *J. Polym. Sci., Part A: Polym. Chem.* **2008**. 46, 4151-4161.

[173] Pei W, Si X Y, Ji D X, et al. 3-[2-(anilinocarbonyl)ethyl]-1-methyl-1H-imidazolium hexafluoridophosphate. *Acta Crystallogr., Sect. E: Struct. Rep. Online*. **2008**. 64, O721–U1467.

[174] Larsen A S, Holbrey J D, Tham F S, et al. Designing ionic liquids: Imidazolium melts with inert carborane anions. *J. Am. Chem. Soc*. **2000**. 122, 7264-7272.

[175] Fox D M, Awad W H, Gilman J W, et al. Flammability, thermal stability, and phase change characteristics of several trialkylimidazolium salts. *Green Chem.* **2003**. 5, 724-727.

[176] Philipp Kölle, Dronskowski R. Synthesis, crystal structures and electrical conductivities of the ionic liquid compounds butyldimethylimidazolium tetrafluoroborate, hexafluorophosphate and hexafluoroantimonate. *Eur. J. Inorg. Chem.* **2004**. 2313-2320.

[177] Andriyko Y, Nauer G E. Electrochemistry of TiCl4 in 1-butyl-2,3-dimethyl imidazolium azide. *Electrochim. Acta*. **2007**. 53, 957-962.

[178] Tseng M C, Liang Y M, Chu Y H. Synthesis of fused tetrahydro-beta-carbolinequinoxalinones in 1-n-butyl-2,3-dimethylimidazolium bis(trifluoromethylsulfonyl)imide (([bdmim][$Tf_2N$])) and 1-n-butyl-2,3-dimethylimidazolium perfluorobutylsulfonate ([bdmim][$PFBuSO_3$]) ionic liquids. *Tetrahedron Letters*. **2005**. 46, 6131-6136.

[179] Singh B, Sekhon S S. Polymer electrolytes based on room temperature ionic liquid: 2,3-dimethyl-1-octylimidazolium triflate. *J. Phys. Chem. B*. **2005**. 109, 16539-16543.

[180] Golding J, MacFarlane D R, Forsyth M. Imidazolium room temperature molten salt systems. Molten salt chemistry and technology 5. Proceedings of the 5th international symposium on molten salt chemistry and technology. Dresden, Germany. **1997**. Wendt H. **1998**. 5-6, 589.

[181] Xue H, Gao Y, Twamley B, et al. New energetic salts based on nitrogen-containing heterocycles. *Chem. Mater*. **2005**. 17, 191-198.

[182] Kan H C, Tseng M C, Chu Y H. Bicyclic imidazolium-based ionic liquids: Synthesis and characterization. *Tetrahedron*. **2007**. 63, 1644-1653.

[183] Cheng J Y, Chu Y H. 1-butyl-2,3-trimethyleneimidazolium bis(trifluoromethylsulfonyl)imide ([b-3C-im][$NTf_2$]): a new, stable ionic liquid. *Tetrahedron Letters*. **2006**. 47, 1575-1579.

[184] Bao W L, Wang Z M, Li Y. Synthesis of chiral ionic liquids from natural amino acids. *J. Org. Chem.* **2003**. 68, 591-593.

[185] Xiao J C, Twamley B, Shreeve J M. An ionic liquid-coordinated palladium complex: A highly efficient and recyclable catalyst for the heck reaction. *Org. Lett*. **2004**. 6, 3845-3847.

[186] Xiao J C, Shreeve J M. Synthesis of 2,2′-biimidazolium-based ionic liquids: Use as a new reaction medium and ligand for palladium-catalyzed suzuki cross-coupling reactions. *J. Org. Chem.* **2005**. 70, 3072-3078.

[187] Jin C M, Twamley B, Shreeve J M. Low-melting dialkyl- and bis(polyfluoroalkyl)-substituted 1,1′-methylenebis(imidazolium) and 1,1′-methylenebis(1,2,4-triazolium) bis(trifluoromethanesulfonyl) amides: Ionic liquids leading to bis(n-heterocyclic carbene) complexes of palladium. *Organometallics*. **2005**. 24, 3020-3023.

[188] Zeng Z, Phillips B S, Xiao J C, et al. Polyfluoroalkyl, polyethylene glycol, 1,4-bismethylenebenzene or 1,4-bismethylene-2,3,5,6-tetrafluorobenzene bridged functionalized dicationic ionic liquids: Synthesis and properties as high temperature lubricants. *Chemistry of Materials.* **2008**. 20, 2719-2726.

[189] Gui H Z, Deng Y Q, Hu Z D, et al. A novel task-specific ionic liquid for beckmann rearrangement: A simple and effective way for product separation. *Tetrahedron Lett.* **2004**. 45, 2681-2683.

[190] Forsyth S A, MacFarlane D R. 1-alkyl-3-methylbenzotriazolium salts: Ionic solvents and electrolytes. *J. Mater. Chem.* **2003**. 13, 2451-2456.

[191] Xue H, Shreeve J M. Energetic ionic liquids from azido derivatives of 1, 2, 4-triazole. *Adv. Mater*. **2005**. 17, 2142-2146.

[192] Schneider S, Hawkins T, Rosander M, et al. Liquid azide salts. *Inorg. Chem.* **2008**. 47, 3617-3624.

[193] Mirzaei Y R, Twamley B, Shreeve J M. Syntheses of 1-alkyl-1,2,4-triazoles and the formation of quaternary 1-alkyl-4-polyfluoroalkyl-1,2,4-riazolium salts leading to ionic liquids. *J. Org. Chem.* **2002**. 67, 9340-9345.

[194] Mirzaei Y R, Xue H, Shreeve J M. Low melting N-4-functionalized-1-alkyl or polyfluoroalkyl-1,2,4-triazolium salts. *Inorg. Chem.* **2004**. 43, 361-367.

[195] Hong Xue, Sean W, Arritt, Brendan Twamley, et al. Energetic salts from N-aminoazoles. *Inorg. Chem.* **2004**. 43, 7972-7977.

[196] Hong Xue, Ye Gao, Brendan Twamley, et al. Energetic azolium azolate salts. *Inorg. Chem.* **2005**. 44, 5068-5072.

[197] Zhang S M, Hou Y W, Huang W G, et al. Preparation and characterization of novel ionic liquid based on benzotriazolium cation. *Electrochim. Acta*. **2005**. 50, 4097-4013.

[198] Xue H, Twamley B, Shreeve J M. The first 1-alkyl-3-perfluoroalkyl-4,5-dimethyl-1,2,4-triazolium salts. *J. Org. Chem.* **2004**. 69, 1397-1400.

[199] Drake G, Kaplan G, Hall L, et al. A new family of energetic ionic liquids 1-amino-3-alkyl-1,2,3-triazolium nitrates. *J. Chem. Crystallogr*. **2007**. 37, 15-23.

[200] MacFarlane D R, Meakin P, Sun J, et al. Pyrrolidinium imides: A new family of molten salts and conductive plastic crystal phases. *J. Phys. Chem. B*. **1999**. 103, 4164-4170.

[201] McFarlane D R, Sun J, Golding J, et al. High conductivity molten salts based on the imide ion. *Electrochim. Acta*. **2000**. 45, 1271-1278.

[202] Golding J, Forsyth S, MacFarlane D R, et al. Methanesulfonate and p-toluenesulfonate salts of the N-methyl-N-alkylpyrrolidinium and quaternary ammonium cations: Novel low cost ionic liquids. *Green Chem.* **2002**. 4, 223-229.

[203] Forsyth S A, Fraser K J, Howlett P C, et al. N-methyl-N-alkylpyrrolidinium nonafluoro-1-butanesulfonate salts: Ionic liquid properties and plastic crystal behaviour. *Green Chem*. **2006**. 8, 256-261.

[204] Sun J, MacFarlane D R, Forsyth M. A new family of ionic liquids based on the 1-alkyl-2-methyl pyrrolinium cation. *Electrochim. Acta*. **2003**. 48, 1707-1711.

[205] Salminen J, Papaiconomou N, Kumara R A, et al. Physicochemical properties and toxicities of hydrophobic piperidinium and pyrrolidinium ionic liquids. *Fluid Phase Equilib*. **2007**. 261, 421-426.

[206] Yim T, Lee H Y, Kim H J, et al. Synthesis and properties of pyrrolidinium and piperidinium bis(trifluoromethanesulfonyl)imide ionic liquids with allyl substituents. *Bull. Korean Chem. Soc*. **2007**. 28, 1567-1572.

[207] Balducci A, Dugas R, Taberna P L, et al. High temperature carbon-carbon supercapacitor using ionic liquid as electrolyte. *J. Power Sources*. **2007**. 165, 922-927.

[208] Yoshizawa-Fujita M, Johansson K, Newman P, et al. Novel Lewis-base ionic liquids replacing typical anions. *Tetrahedron Lett*. **2006**. 47, 2755-2758.

[209] Kyoko F, MacFarlane D R, Forsyth M. Protein solubilising and stabilising ionic liquids. *Chem. Commun*. **2005**. 4804-4806.

[210] Sakaebe H, Matsumoto H. N-methyl-N-propylpiperidinium bis(trifluoromethanesulfonyl)imide (PP13-TFSI) - novel electrolyte base for Li battery. *Electrochem. Commun*. **2003**. 5, 594-598.

[211] Gupta O D, Twamley B, Shreeve J M. Perfluoro alkyl 1,3-diketonates of cyclic and acyclic secondary amines. *J. Fluorine Chem*. **2006**. 127, 263-269.

[212] Yuan L X, Feng J K, Ai X P, et al. Improved dischargeability and reversibility of sulfur cathode in a novel ionic liquid electrolyte. *Electrochem. Commun*. **2006**. 8, 610-614.

[213] Heintz A, Klasen D, Lehmann J K. Excess molar volumes and viscosities of binary mixtures of methanol and the ionic liquid 4-methyl-N-butylpyridinium tetrafluoroborate at 25, 40, and 50 °C. *J. Solution Chem*. **2002**. 31, 467-476.

[214] Zhao D B, Fei Z F, Geldbach T J, et al. Nitrile-functionalized pyridinium ionic liquids: Synthesis, characterization, and their application in carbon-carbon coupling reactions. *J. Am. Chem. Soc*. **2004**. 126, 15876-15882.

[215] Yu G, Zhou F, Liu W, et al. Preparation of functional ionic liquids and tribological investigation of their ultra-thin films. *Wear*. **2006**. 260, 1076-1080.

[216] Singh R P, Shreeve J M. Bridged tetraquaternary salts from N,N′-polyfluoroalkyl-4,4′-bipyridine. *Inorg. Chem*. **2003**. 42, 7416-7421.

[217] Juliusz Pernak, Jarostaw Rogoza, Mirska I. Synthesis and antimicrobial activities of new pyridinium and benzimidazolium chlorides. *Eur. J. Med. Chem*. **2001**. 36, 313-320.

[218] Demberelnyamba D, Yoon S J, Lee H. New epoxide molten salts: Key intermediates for designing novel ionic liquids. *Chem. Lett*. **2004**. 33, 560-561.

[219] Xing H, Wang T, Zhou Z, et al. Novel brønsted-acidic ionic liquids for esterifications. *Ind. Eng. Chem. Res*. **2005**. 44, 4147-4150.

[220] Xiao J C, Ye C, Shreeve J M. Bipyridinium ionic liquid-promoted cross-coupling reactions between perfluoroalkyl or pentafluorophenyl halides and aryl iodides. *Org. Lett*. **2005**. 7, 1963-1965.

[221] Hu Z H, Huang X H, Annapureddy H V R, et al. Molecular dynamics study of the temperature-dependent optical kerr effect spectra and intermolecular dynamics of room temperature ionic liquid 1-methoxyethylpyridinium dicyanoamide. *J. Phys. Chem. B*. **2008**. 112, 7837-7849.

[222] Visser A E, Holbrey J D, Rogers R D. Hydrophobic ionic liquids incorporating n-alkylisoquinolinium cations and their utilization in liquid-liquid separations. *Chem. Commun*. **2001**. 2484-2485.

[223] Visser A E, Rogers R D. Actinide chemistry in novel solvent media: room temperature ionic liquids. Molten salts XIII. *The Electrochemical Societ*. **2002**. 516-529.

[224] Levillain J, Dubant G, Abrunhosa I, et al. Synthesis and properties of thiazoline based ionic liquids derived from the chiral pool. *Chem. Commun*. Philadelphia **2003**. 2914-2915.

[225] Matsumoto H, Matsuda T, Miyazaki Y. Room temperature molten salts based on trialkylsulfonium cations and bis(trifluoromethylsulfonyl)imide. *Chem. Lett*. **2000**. 1430-1431.

[226] Gerhard D, Alpaslan S C, Gores H J, et al. Trialkylsulfonium dicyanamides - a new family of ionic liquids with very low viscosities. *Chem. Commun*. **2005**. 40, 5080-5082.

[227] Peng C X, Yang L, Zhang Z X, et al. Investigation of the anodic behavior of Al current collector in room temperature ionic liquid electrolytes. *Electrochim. Acta*. **2008**. 53, 4764-4772.

[228] Bhatt A I, May I, Volkovich V A, et al. Group 15 quaternary alkyl bistriflimides: Ionic liquids with potential application in electropositive metal deposition and as supporting electrolytes. *J. Chem. Soc., Dalton Trans*. **2002**. 4532-4534.

[229] Sun J, Forsyth M, MacFarlane D R. Room-temperature molten salts based on the quaternary ammonium ion. *J. Phys. Chem. B*. **1998**. 102, 8858-8864.

[230] Cooper E I, Angell C A. Ambient temperature plastic crystal fast ion conductors (plicfics). *Solid State Ionics*. **1986**. 18-19, 570-576.

[231] Matsumoto H, Yanagida M, Tanimoto K, et al. Molten salts XII. *Electrochem. Soc. Pennington*. nj. **2000**. 186.

[232] Zhou Z B, Masumoto H, Tatsumi K. Low-melting, low-viscous, hydrophobic ionic liquids: Aliphatic quaternary ammonium salts with perfluoroalkyltrifluoroborates. *Chem. Eur. J*. **2005**. 11, 752-766.

[233] Abbott A P, Capper G, Davies D L, et al. Preparation of novel, moisture-stable, Lewis-acidic ionic liquids containing quaternary ammonium salts with functional side chains. *Chem. Commun*. **2001**. 1, 2010-2011.

[234] David M E, Jone F B, Edward J M. Predicting melting points of quaternary ammonium ionic liquids. *Green Chem*. **2003**. 5, 323-328.

[235] Suryakiran N, Prabhakar P, Rajesh K, et al. Synthesis of beta-ketosulfones using ionic liquid [TPA] [Pro] as an efficient and reusable reaction medium. *J. Mol. Catal. A: Chem*. **2007**. 270, 201-204.

[236] Tsunashima K, Sugiya M. Physical and electrochemical properties of low-viscosity phosphonium ionic liquids as potential electrolytes. *Electrochem. Commun*. **2007**. 9, 2353-2358.

[237] Naoya Nishi, Kawakami T, Shigematsu F, et al. Fluorine-free and hydrophobic room-temperature ionic liquids, tetraalkylammonium bis (2-ethylhexyl)sulfosuccinates, and their ionic liquid–water two-phase properties. *Green Chem*. **2006**. 4, 349-355.

[238] Pernak J, Feder-Kubis J. Synthesis and properties of chiral ammonium-based ionic liquids. *Chem. Eur. J*. **2005**. 11, 4441-4449.

[239] Zhou Z B, Matsumoto H, Tatsumi K. A new class of hydrophobic ionic liquids: Trialkyl(2-methoxyethyl)ammonium perfluoroethyltrifluoroborate. *Chem. Lett*. **2004**. 33, 886-887.

[240] Mikkola J P, Virtanen P, Sjoholm R. Aliquat 336—a versatile and affordable cation source for an entirely new family of hydrophobic ionic liquids. *Green Chem*. **2006**. 8, 250-255.

[241] Kogelnig D, Stojanovic A, Galanski M, et al. Greener synthesis of new ammonium ionic liquids and their potential as extracting agents. *Tetrahedron Lett*. **2008**. 49, 2782-2785.

[242] Gupta O D, Twamley B, Shreeve J A. Acyclic tertiary diamines and 1,4,7,10-tetraazacyclododecane with fluorine-containing beta-diketones: Leading to low melting ionic adducts. *J. Fluorine Chem*. **2005**. 126, 1222-1229.

[243] Gupta O D, Twamley B, Shreeve J M. Low melting and slightly viscous ionic liquids via protonation of trialkylamines by perfluoroalkyl beta-diketones. *Tetrahedron Lett*. **2004**. 45, 1733-1736.

[244] Masahiro Yoshizawa-Fujita, MacFarlane D R, Howlett P C, et al. A new Lewis-base ionic liquid comprising a mono-charged diamine structure: A highly stable electrolyte for lithium electrochemistry. *Electrochem. Commun*. **2006**. 8, 445-449.

[245] Greaves T L, Weerawardena A, Fong C, et al. Protic ionic liquids: Solvents with tunable phase behavior and physicochemical properties. *J. Phys. Chem. B*. **2006**. 110, 22479-22487.

[246] Greaves T L, Weerawardena A, Fong C, et al. Many protic ionic liquids mediate hydrocarbon-solvent interactions and promote amphiphile self-assembly. *Langmuir*. **2007**. 23, 402-404.

[247] Egashira M, Okada S, Yamaki J, et al. The preparation of quaternary ammonium-based ionic liquid containing a cyano group and its properties in a lithium battery electrolyte. *J. Power Sources*. **2004**. 138, 240-244.

[248] Bicak N. A new ionic liquid: 2-hydroxy ethylammonium formate. *J. Mol. Liq*. **2005**. 116, 15-18.

[249] Cota I, Gonzalez-Olmos R, Iglesias M, et al. New short aliphatic chain ionic liquids: Synthesis, physical properties, and catalytic activity in aldol condensations. *J. Phys. Chem. B*. **2007**. 111, 12468-12477.

[250] Busi S, Lahtinen M, Mansikkamaki H, et al. Synthesis, characterization and thermal properties of small $R_1R_2'N^+X^-$-type quaternary ammonium halides. *J. Solid State Chem.* **2005**. 178, 1722-1737.

[251] Guo S, Du Z, Zhang S, et al. Clean beckmann rearrangement of cyclohexanone oxime in caprolactambased brønsted acidic ionic liquids. *Green Chem.* **2006**. 8, 296-300.

[252] Du Z Y, Li Z P, Guo S, et al. Investigation of physicochemical properties of lactam-based bronsted acidic ionic liquids. *J. Phys. Chem. B*. **2005**. 109, 19542-19546.

[253] Nockemann P, Thijs B, Driesen K, et al. Choline saccharinate and choline acesulfamate: Ionic liquids with low toxicities. *J. Phys. Chem. B*. **2007**. 111, 5254-5263.

[254] Hu S Q, Jiang T, Zhang Z F, et al. Functional ionic liquid from biorenewable materials: Synthesis and application as a catalyst in direct aldol reactions. *Tetrahedron Lett*. **2007**. 48, 5613-5617.

[255] Juliusz Pernak, Marcin Smiglak, Griffin S T, et al. Long alkyl chain quaternary ammonium-based ionic liquids and potential applications. *Green Chem.* **2006**. 8, 798-806.

[256] Dong F, Jun L, Zhou X L, et al. Mannich reaction in water using acidic ionic liquid as recoverable and reusable catalyst. *Catal. Lett*. **2007**. 116, 76-80.

[257] Zhang Z, Yang L, Luo S, et al. Ionic liquids based on aliphatic tetraalkylammonium dications and tfsi anion as potential electrolytes. *J. Power Sources*. **2007**. 167, 217-222.

[258] Che Q T, Sun B Y, He R H. Preparation and characterization of new anhydrous, conducting membranes based on composites of ionic liquid trifluoroacetic propylamine and polymers of sulfonated poly (ether ether) ketone or polyvinylidenefluoride. *Electrochim. Acta*. **2008**. 53, 4428-4434.

[259] Das D, Dasgupta A, Das P K. Improved activity of horseradish peroxidase (HRP) in 'specifically designed' ionic liquid. *Tetrahedron Letters*. **2007**. 48, 5635-5639.

[260] Hong G, Jacquemin J, Deetlefs M, et al. Solubility of carbon dioxide and ethane in three ionic liquids based on the bis{(trifluoromethyl)sulfonyl}imide anion. *Fluid Phase Equilibria*. **2007**. 257, 27-34.

[261] Dong F, Jun L, Xinli Z, et al. One-pot green procedure for biginelli reaction catalyzed by novel task-specific room-temperature ionic liquids. *J. Mol. Catal. A-Chem.* **2007**. 274, 208-211.

[262] Zhancy Z X, Zhou H, Yang L, et al. Asymmetrical dicationic ionic liquids based on both imidazolium and aliphatic ammonium as potential electrolyte additives applied to lithium secondary batteries. *Electrochim. Acta*. **2008**. 53, 4833-4838.

[263] Busi S, Lahtinen M, Valkonen Y, et al. Synthesis, characterization and thermal behavior of nine new $R_2R_2'N^+A^-$ -type quaternary ammonium tetrafluoroborate or hexafluorophosphate salts prepared by metathesis from analogous halide salts. *J. Mol. Struct*. **2008**. 875, 549-559.

[264] Liu X M, Liu M, Guo X W, et al. $SO_3H$-functionalized ionic liquids for selective alkylation of m-cresol with tert-butanol. *Catal. Commun.* **2008**. 9, 1-7.

[265] Mateus N M M, Branco L C, Lourenço N M T, et al. Synthesis and properties of tetra-alkyl-dimethylguanidinium salts as a potential new generation of ionic liquids. *Green Chem.* **2003**. 5, 347-352.

[266] Ye Gao, Arritt S W, Brendan Twamley, et al. Guanidinium-based ionic liquids. *Inorg. Chem.* **2005**. 44, 1704-1712.

[267] Sauer S, Steinke N, Baro A, et al. Guanidinium chlorides with triphenylene moieties displaying columnar mesophases. *Chem. Mater.* **2008**. 20, 1909-1915.

[268] Sesto R E D, Corley C, Robertson A, et al. Tetraalkylphosphonium-based ionic liquids. *J. Organomet. Chem.* **2005**. 690, 2536-2542.

[269] Xie H B, Zhang S B, Duan H F. An ionic liquid based on a cyclic guanidinium cation is an efficient medium for the selective oxidation of benzyl alcohols. *Tetrahedron Lett*. **2004**. 45, 2013-2015.

[270] Cieniecka-Rosłonkiewicz Anna, Pernak Juliusz, Kubis-Feder Joanna, et al. Synthesis, anti-microbial activities and anti-electrostatic properties of phosphonium-based ionic liquids. *Green Chem.* **2005**. 7, 855-862.

[271] Breitbach Z S, Armstrong D W. Characterization of phosphonium ionic liquids through a linear solvation energy relationship and their use as glc stationary phases. *Anal. Bioanal. Chem.* **2008**. 390, 1605-1617.

[272] Martak J, Schlosser S, Vlckova S. Pertraction of lactic acid through supported liquid membranes containing phosphonium ionic liquid. *J. Membr. Sci*. **2008**. 318, 298-310.

[273] Yu L, Garcia D, Renb R, et al. Ionic liquid high temperature gas sensors. *Chem. Commun*. **2005**. 2277-2279.

[274] Zhang J, Zhang S, Dong K, et al. Supported absorption of $CO_2$ by tetrabutylphosphonium amino acid ionic liquids. *Chem. Eur.J*. **2006**. 12, 4021-4026.

[275] Pernak J, Stefaniak F, Weglewski J. Phosphonium acesulfamate based ionic liquids. *Eur. J. Org. Chem.* **2005**. 650-652.

[276] Mukherjee P, Crank J A, Sharma P S, et al. Dynamic solvation in phosphonium ionic liquids: Comparison of bulk and micellar systems and considerations for the construction of the solvation correlation function, C(t). *J. Phys. Chem. B*. **2008**. 112, 3390-3396.

[277] Abe Y, Kude K, Hayase S, et al. Design of phosphonium ionic liquids for lipase-catalyzed transesterification. *J. Mol. Catal. B: Enzym.* **2008**. 51, 81-85.

[278] Lall S I, Mancheno D, Castro S, et al. Polycations. Part X. LIPs, a new category of room temperature ionic liquid based on polyammonium salts. *Chem. Commun.* **2000**. 2413-2414.

[279] Liyi Dai, Shuyuan Yu, Yongkui Shan, et al. Novel room temperature inorganic ionic liquids. *Eur. J. Inorg. Chem.* **2004**, 237-241.

[280] Kim J, Singh R P, Shreeve J M. Low melting inorganic salts of alkyl-, fluoroalkyl-, alkyl ether-, and fluoroalkyl ether-substituted oxazolidine and morpholine. *Inorg. Chem.* **2004**. 43, 2960-2966.

[281] Kim Ki-Sub, Choi Sukjeong, Demberelnyamba D, et al. Ionic liquids based on n-alkyl-n-methylmorpholinium salts as potential electrolytes. *Chem.Commun*. **2004**. 828-829.

[282] Klapotke T M, Mayer P, Schulz A, et al. 1,5-diamino-4-methyltetrazolium dinitramide. *J. Am. Chem. Soc*. **2005**. 127, 2032-2033.

[283] Tao G H, He L, Sun N, et al. New generation ionic liquids: Cations derived from amino acids. *Chem. Commun*. **2005**. 3562-3564.

[284] Hannig F, Kehr G, Fröhlich R, et al. Formation of chiral ionic liquids and imidazol-2-ylidene metal complexes from the proteinogenic aminoacid l-histidine. *J. Organomet. Chem.* **2005**. 690, 5959-5972.

# List of Symbols

| | |
|---|---|
| $T_c$ | crystallization temperature |
| $T_d$ | decomposition temperature |
| $T_f$ | freezing point |
| $T_g$ | glass transition temperature |
| $T_m$ | melting point |
| $T_{s\text{-}s}$ | solid–solid transition temperature |
| $\rho$ | density |
| $\eta_D$ | dynamic viscosity |
| $\eta_K$ | kinematic viscosity |
| $K$ | conductivity |
| $n$ | refractive index |
| $\sigma$ | surface tension |
| Log $P$ | Log $P$ |
| VP | vapor pressure |
| $C_p$ | isobaric heat capacity |
| $1000\alpha$ | isobaric expansibility |
| $H_c$ | crystallization enthalpy |
| $K_s$ | isentropic compressibility |
| $u_s$ | sound speed in ionic liquid |
| $A$ | optical activity |
| MIC | toxicity (minimum inhibitory concentration) |
| MBC | toxicity (minimum bactericidal or fungicidal concentration) |