

2.1.9 Saturated Monoesters, C<sub>16</sub> - C<sub>18</sub>

Butyl dodecanoate [106-18-3] C<sub>16</sub>H<sub>32</sub>O<sub>2</sub> MW = 256.43 290

Table 1. Fit with estimated *B* coefficient for 12 accepted points. Deviation σ<sub>w</sub> = 0.756.

Coefficient	$\rho = A + BT$
<i>A</i>	1077.31
<i>B</i>	-0.740

Table 2. Experimental values with uncertainties and deviation from calculated values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
273.15	874.7 ± 0.6	-0.48	1933-ruh/rei	313.15	844.6 ± 0.6	-0.98	1948-vog-9
298.15	855.5 ± 0.6	-1.18	1933-ruh/rei	313.95	845.8 ± 0.6	0.81	1948-vog-9
286.55	865.1 ± 0.6	-0.17	1948-vog-9	333.15	831.6 ± 0.8	0.82	1948-vog-9
291.65	861.3 ± 0.6	-0.19	1948-vog-9	334.25	830.8 ± 0.8	0.83	1948-vog-9
293.15	860.3 ± 0.6	-0.08	1948-vog-9	359.25	812.7 ± 0.8	1.23	1948-vog-9
295.75	858.4 ± 0.6	-0.06	1948-vog-9	360.25	812.0 ± 0.8	1.27	1948-vog-9

Table 3. Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
270.00	877.5 ± 1.2	298.15	856.7 ± 1.0	340.00	825.7 ± 1.2
280.00	870.1 ± 1.1	310.00	847.9 ± 1.0	350.00	818.3 ± 1.3
290.00	862.7 ± 1.0	320.00	840.5 ± 1.0	360.00	810.9 ± 1.4
293.15	860.4 ± 1.0	330.00	833.1 ± 1.1	370.00	803.5 ± 1.6

3,3-Dimethyl-1-(1,1-dimethylethyl)butyl 3,3-dimethylbutanoate [500002-50-6] C<sub>16</sub>H<sub>32</sub>O<sub>2</sub> MW =256.43 291

Table 1. Experimental values with uncertainties.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
293.15	855.3 ± 1.0	1938-whi/hey
293.15	854.9 ± 1.0	1938-whi/hey

Dodecyl butanoate [3724-61-6] C<sub>16</sub>H<sub>32</sub>O<sub>2</sub> MW = 256.43 292

Table 1. Fit with estimated *B* coefficient for 2 accepted points. Deviation σ<sub>w</sub> = 0.025.

Coefficient	$\rho = A + BT$
<i>A</i>	1085.75
<i>B</i>	-0.770

cont.

Dodecyl butanoate (cont.)

Table 2. Experimental values with uncertainties and deviation from calculated values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
273.15	875.4 ± 0.5	-0.03	1933-ruh/rei
298.15	856.2 ± 0.5	0.02	1933-ruh/rei

Table 3. Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
270.00	877.9 ± 0.8
280.00	870.2 ± 0.5
290.00	862.5 ± 0.5
293.15	860.0 ± 0.5
298.15	856.2 ± 0.7

Ethyl tetradecanoate

[124-06-1]

C<sub>16</sub>H<sub>32</sub>O<sub>2</sub>

MW = 256.43

293

Table 1. Fit with estimated *B* coefficient for 10 accepted points. Deviation  $\sigma_w = 0.290$ .

Coefficient	$\rho = A + BT$
<i>A</i>	1084.00
<i>B</i>	-0.760

Table 2. Experimental values with uncertainties and deviation from calculated values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
293.15	858.9 ± 2.0	-2.31	1931-sob/kah <sup>1)</sup>	348.15	819.7 ± 2.0	0.29	1952-gro/feu <sup>1)</sup>
298.15	857.3 ± 1.0	-0.11	1933-ruh/rei	308.10	849.6 ± 1.0	-0.25	1955-shi/bon
308.15	849.7 ± 1.0	-0.11	1933-ruh/rei	323.10	838.3 ± 1.0	-0.15	1955-shi/bon
293.15	860.9 ± 1.0	-0.31	1942-pet/che	338.10	827.0 ± 1.0	-0.05	1955-shi/bon
293.15	861.6 ± 1.0	0.39	1950-mum/phi	353.10	815.6 ± 1.0	-0.05	1955-shi/bon
298.15	858.1 ± 1.0	0.69	1950-mum/phi	368.10	804.2 ± 1.0	-0.05	1955-shi/bon

<sup>1)</sup> Not included in calculation of linear coefficients.

Table 3. Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	863.6 ± 1.0	320.00	840.8 ± 0.8	350.00	818.0 ± 1.0
293.15	861.2 ± 0.9	330.00	833.2 ± 0.8	360.00	810.4 ± 1.2
298.15	857.4 ± 0.9	340.00	825.6 ± 0.9	370.00	802.8 ± 1.3
310.00	848.4 ± 0.8				

Heptyl nonanoate

[71605-85-1]

C<sub>16</sub>H<sub>32</sub>O<sub>2</sub>

MW = 256.43

294

**Table 1.** Fit with estimated *B* coefficient for 2 accepted points. Deviation  $\sigma_w = 0.025$ .

Coefficient	$\rho = A + BT$
<i>A</i>	1084.85
<i>B</i>	-0.770

**Table 2.** Experimental values with uncertainties and deviation from calculated values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
273.15	874.5 ± 0.5	-0.03	1933-ruh/rei
298.15	855.3 ± 0.5	0.02	1933-ruh/rei

**Table 3.** Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
270.00	877.0 ± 0.8
280.00	869.3 ± 0.5
290.00	861.6 ± 0.5
293.15	859.1 ± 0.5
298.15	855.3 ± 0.7

Hexyl decanoate

[10448-26-7]

C<sub>16</sub>H<sub>32</sub>O<sub>2</sub>

MW = 256.43

295

**Table 1.** Fit with estimated *B* coefficient for 2 accepted points. Deviation  $\sigma_w = 0.075$ .

Coefficient	$\rho = A + BT$
<i>A</i>	1084.70
<i>B</i>	-0.770

**Table 2.** Experimental values with uncertainties and deviation from calculated values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
273.15	874.3 ± 0.5	-0.07	1933-ruh/rei
298.15	855.2 ± 0.5	0.08	1933-ruh/rei

**Table 3.** Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
270.00	876.8 ± 0.8
280.00	869.1 ± 0.5
290.00	861.4 ± 0.5
293.15	859.0 ± 0.5
298.15	855.1 ± 0.7

Methyl pentadecanoate

[7132-64-1]

C<sub>16</sub>H<sub>32</sub>O<sub>2</sub>

MW = 256.43

296

**Table 1.** Fit with estimated *B* coefficient for 6 accepted points. Deviation  $\sigma_w = 0.641$ .

Coefficient	$\rho = A + BT$
<i>A</i>	1088.97
<i>B</i>	-0.760

**Table 2.** Experimental values with uncertainties and deviation from calculated values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
298.15	861.8 ± 1.0	-0.57	1933-ruh/rei	293.15	868.1 ± 1.0	1.93	1964-gou/vlu
308.15	854.1 ± 1.0	-0.67	1933-ruh/rei	313.15	851.1 ± 1.0	0.13	1964-gou/vlu
293.15	866.2 ± 1.0	0.03	1964-adr/dek	298.15	862.2 ± 0.4	-0.13	1990-ort

**Table 3.** Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	868.6 ± 1.1
293.15	866.2 ± 1.1
298.15	862.4 ± 1.0
310.00	853.4 ± 1.1
320.00	845.8 ± 1.3

1-Methyldecyl pentanoate

[55193-11-8]

C<sub>16</sub>H<sub>32</sub>O<sub>2</sub>

MW = 256.43

297

**Table 1.** Fit with estimated *B* coefficient for 4 accepted points. Deviation  $\sigma_w = 0.520$ .

Coefficient	$\rho = A + BT$
<i>A</i>	1083.06
<i>B</i>	-0.780

**Table 2.** Experimental values with uncertainties and deviation from calculated values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
289.15	857.7 ± 1.0	0.18	1914-pic/ken-1
326.15	829.3 ± 1.0	0.64	1914-pic/ken-1
364.15	799.0 ± 1.0	-0.02	1914-pic/ken-1
398.15	771.7 ± 1.0	-0.80	1914-pic/ken-1

cont.

**Table 3.** Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
280.00	864.7 ± 1.7	320.00	833.5 ± 1.1	370.00	794.5 ± 1.2
290.00	856.9 ± 1.5	330.00	825.7 ± 1.1	380.00	786.7 ± 1.3
293.15	854.4 ± 1.5	340.00	817.9 ± 1.0	390.00	778.9 ± 1.4
298.15	850.5 ± 1.4	350.00	810.1 ± 1.0	400.00	771.1 ± 1.5
310.00	841.3 ± 1.2	360.00	802.3 ± 1.1		

**1-Methylheptyl octanoate** [55193-33-4] C<sub>16</sub>H<sub>32</sub>O<sub>2</sub> MW = 256.43 298

**Table 1.** Fit with estimated *B* coefficient for 4 accepted points. Deviation σ<sub>w</sub> = 0.408.

Coefficient	$\rho = A + BT$
<i>A</i>	1081.59
<i>B</i>	-0.780

**Table 2.** Experimental values with uncertainties and deviation from calculated values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
285.15	858.7 ± 1.0	-0.47	1914-pic/ken-1
319.15	833.3 ± 1.0	0.65	1914-pic/ken-1
358.15	802.2 ± 1.0	-0.03	1914-pic/ken-1
399.15	770.1 ± 1.0	-0.15	1914-pic/ken-1

**Table 3.** Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
280.00	863.2 ± 1.6	320.00	832.0 ± 1.1	370.00	793.0 ± 1.1
290.00	855.4 ± 1.4	330.00	824.2 ± 1.0	380.00	785.2 ± 1.3
293.15	852.9 ± 1.4	340.00	816.4 ± 1.0	390.00	777.4 ± 1.4
298.15	849.0 ± 1.3	350.00	808.6 ± 1.0	400.00	769.6 ± 1.5
310.00	839.8 ± 1.2	360.00	800.8 ± 1.1		

**1-Methylhexyl nonanoate** [55193-81-2] C<sub>16</sub>H<sub>32</sub>O<sub>2</sub> MW = 256.43 299

**Table 1.** Fit with estimated *B* coefficient for 4 accepted points. Deviation σ<sub>w</sub> = 0.538.

Coefficient	$\rho = A + BT$
<i>A</i>	1086.22
<i>B</i>	-0.790

cont.

1-Methylhexyl nonanoate (cont.)

**Table 2.** Experimental values with uncertainties and deviation from calculated values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
290.65	856.0 ± 1.0	-0.60	1914-pic/ken-1
338.15	819.6 ± 1.0	0.52	1914-pic/ken-1
365.15	798.3 ± 1.0	0.55	1914-pic/ken-1
407.15	764.1 ± 1.0	-0.47	1914-pic/ken-1

**Table 3.** Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	857.1 ± 1.6	330.00	825.5 ± 1.1	380.00	786.0 ± 1.2
293.15	854.6 ± 1.5	340.00	817.6 ± 1.1	390.00	778.1 ± 1.3
298.15	850.7 ± 1.5	350.00	809.7 ± 1.0	400.00	770.2 ± 1.4
310.00	841.3 ± 1.3	360.00	801.8 ± 1.1	410.00	762.3 ± 1.6
320.00	833.4 ± 1.2	370.00	793.9 ± 1.1		

1-Methylpropyl dodecanoate [500003-50-9] C<sub>16</sub>H<sub>32</sub>O<sub>2</sub> MW = 256.43 300

**Table 1.** Fit with estimated *B* coefficient for 4 accepted points. Deviation σ<sub>w</sub> = 0.577.

Coefficient	$\rho = A + BT$
<i>A</i>	1081.07
<i>B</i>	-0.770

**Table 2.** Experimental values with uncertainties and deviation from calculated values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
289.15	858.0 ± 1.0	-0.42	1914-pic/ken-1
332.15	826.3 ± 1.0	0.99	1914-pic/ken-1
367.65	797.6 ± 1.0	-0.38	1914-pic/ken-1
418.15	758.9 ± 1.0	-0.19	1914-pic/ken-1

**Table 3.** Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
280.00	865.5 ± 1.8	330.00	827.0 ± 1.2	380.00	788.5 ± 1.2
290.00	857.8 ± 1.6	340.00	819.3 ± 1.1	390.00	780.8 ± 1.3
293.15	855.3 ± 1.6	350.00	811.6 ± 1.1	400.00	773.1 ± 1.4
298.15	851.5 ± 1.5	360.00	803.9 ± 1.1	410.00	765.4 ± 1.6
310.00	842.4 ± 1.4	370.00	796.2 ± 1.1	420.00	757.7 ± 1.7
320.00	834.7 ± 1.2				

Nonyl heptanoate

[98841-69-1]

C<sub>16</sub>H<sub>32</sub>O<sub>2</sub>

MW = 256.43

301

**Table 1.** Fit with estimated *B* coefficient for 2 accepted points. Deviation  $\sigma_w = 0.025$ .

Coefficient	$\rho = A + BT$
<i>A</i>	1084.80
<i>B</i>	-0.770

**Table 2.** Experimental values with uncertainties and deviation from calculated values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
273.15	874.5 ± 0.5	0.03	1933-ruh/rei
298.15	855.2 ± 0.5	-0.02	1933-ruh/rei

**Table 3.** Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
270.00	876.9 ± 0.8	290.00	861.5 ± 0.5	298.15	855.2 ± 0.7
280.00	869.2 ± 0.5	293.15	859.1 ± 0.5		

Octyl octanoate

[2306-88-9]

C<sub>16</sub>H<sub>32</sub>O<sub>2</sub>

MW = 256.43

302

**Table 1.** Coefficients of the polynomial expansion equation. Standard deviations (see introduction):  $\sigma_{c,w} = 9.1853 \cdot 10^{-1}$  (combined temperature ranges, weighted),  $\sigma_{c,uw} = 2.3133 \cdot 10^{-1}$  (combined temperature ranges, unweighted).

Coefficient	T = 273.15 to 527.55 K $\rho = A + BT + CT^2 + DT^3 + \dots$
<i>A</i>	1.03575 · 10 <sup>3</sup>
<i>B</i>	-5.09220 · 10 <sup>-1</sup>
<i>C</i>	-3.06291 · 10 <sup>-4</sup>

**Table 2.** Experimental values with uncertainties and deviation from calculated values.

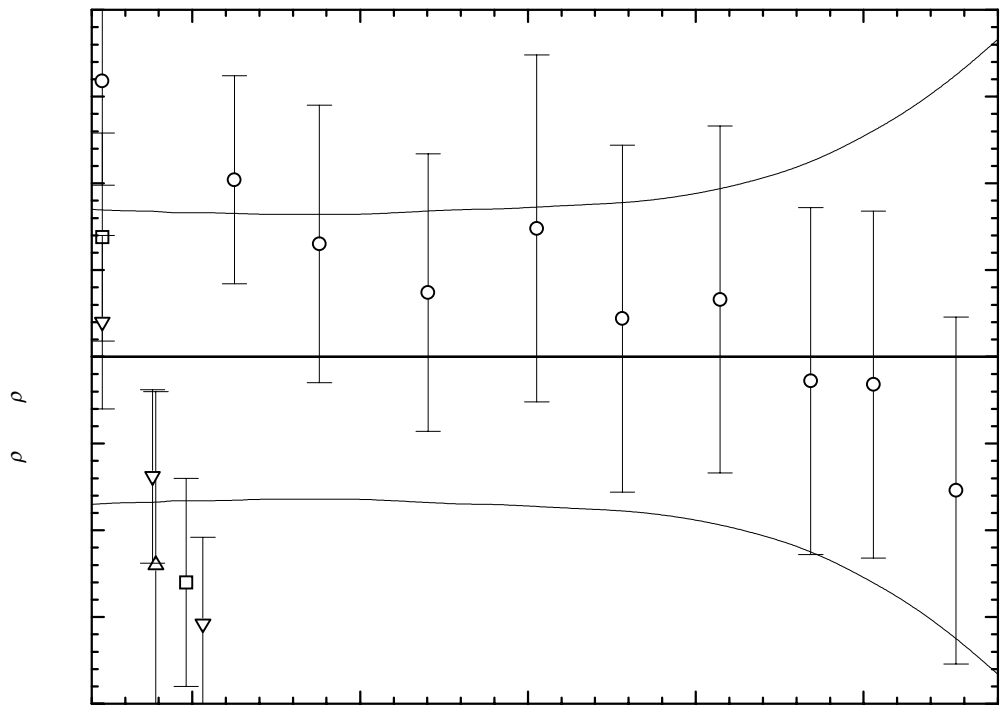
$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref. (Symbol in Fig. 1)	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref. (Symbol in Fig. 1)
289.15	861.70 ± 1.0	-1.20	1869-zin(Δ)	484.25	717.20 ± 1.00	-0.14	1886-gar(○)
273.15	875.40 ± 0.6	1.59	1886-gar(○)	502.95	702.00 ± 1.00	-0.16	1886-gar(○)
312.55	847.70 ± 0.6	1.02	1886-gar(○)	527.55	681.10 ± 1.00	-0.77	1886-gar(○)
337.85	829.40 ± 0.8	0.65	1886-gar(○)	273.15	874.50 ± 0.60	0.69	1933-ruh/rei(□)
370.25	805.60 ± 0.8	0.37	1886-gar(○)	298.15	855.40 ± 0.60	-1.30	1933-ruh/rei(□)
402.65	781.80 ± 1.0	0.74	1886-gar(○)	273.15	874.01 ± 0.50	0.20	1935-bil/gis(▽)
428.15	761.80 ± 1.0	0.22	1886-gar(○)	288.15	862.90 ± 0.50	-0.69	1935-bil/gis(▽)
457.25	739.20 ± 1.0	0.33	1886-gar(○)	303.15	851.70 ± 0.50	-1.54	1935-bil/gis(▽)

<sup>1)</sup> Not included in Fig. 1.

cont.

Octyl octanoate (cont.)

Further references: [1948-bon/alt, 1952-gro/feu, 1964-adr/dek].



**Fig. 1.** The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)

**Table 3.** Recommended values (fit to the reliable experimental values according to the equations  $\rho = A + BT + CT^2 + DT^3 + \dots$  or  $\rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$ ).

$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$
270.00	875.94 ± 0.85	350.00	820.01 ± 0.82	450.00	744.58 ± 0.94
280.00	869.16 ± 0.84	360.00	812.74 ± 0.83	460.00	736.70 ± 0.98
290.00	862.32 ± 0.84	370.00	805.41 ± 0.84	470.00	728.76 ± 1.03
293.15	860.15 ± 0.83	380.00	798.02 ± 0.85	480.00	720.76 ± 1.09
298.15	856.70 ± 0.83	390.00	790.57 ± 0.85	490.00	712.70 ± 1.17
300.00	855.42 ± 0.83	400.00	783.06 ± 0.86	500.00	704.57 ± 1.27
310.00	848.46 ± 0.83	410.00	775.49 ± 0.87	510.00	696.39 ± 1.38
320.00	841.44 ± 0.82	420.00	767.85 ± 0.88	520.00	688.14 ± 1.51
330.00	834.36 ± 0.82	430.00	760.16 ± 0.89	530.00	679.83 ± 1.66
340.00	827.21 ± 0.82	440.00	752.40 ± 0.91	540.00	671.46 ± 1.83



Pentadecyl methanoate

[66271-76-9]

C<sub>16</sub>H<sub>32</sub>O<sub>2</sub>

MW = 256.43

303

**Table 1.** Experimental value with uncertainty.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
298.15	861.8 ± 0.5	1933-ruh/rei

Pentyl undecanoate

[10484-11-4]

C<sub>16</sub>H<sub>32</sub>O<sub>2</sub>

MW = 256.43

304

**Table 1.** Fit with estimated *B* coefficient for 2 accepted points. Deviation σ<sub>w</sub> = 0.025.

Coefficient	$\rho = A + BT$
<i>A</i>	1085.55
<i>B</i>	-0.770

**Table 2.** Experimental values with uncertainties and deviation from calculated values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
273.15	875.2 ± 0.5	-0.02	1933-ruh/rei
298.15	856.0 ± 0.5	0.03	1933-ruh/rei

**Table 3.** Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
270.00	877.7 ± 0.8
280.00	870.0 ± 0.5
290.00	862.3 ± 0.5
293.15	859.8 ± 0.5
298.15	856.0 ± 0.7

2-Pentylnonyl ethanoate

[500022-52-6]

C<sub>16</sub>H<sub>32</sub>O<sub>2</sub>

MW = 256.43

305

**Table 1.** Experimental value with uncertainty.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
296.15	860.3 ± 1.0	1938-mas

Propyl tridecanoate

[88591-28-0]

C<sub>16</sub>H<sub>32</sub>O<sub>2</sub>

MW = 256.43

306

**Table 1.** Fit with estimated *B* coefficient for 3 accepted points. Deviation σ<sub>w</sub> = 0.024.

Coefficient	$\rho = A + BT$
<i>A</i>	1085.09
<i>B</i>	-0.770

cont.

Propyl tridecanoate (cont.)

Table 2. Experimental values with uncertainties and deviation from calculated values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
273.15	874.8 ± 1.0	0.03	1933-ruh/rei
298.15	855.5 ± 1.0	-0.02	1933-ruh/rei
298.15	855.5 ± 1.0	-0.02	1963-sch/mar

Table 3. Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
270.00	877.2 ± 1.2
280.00	869.5 ± 1.0
290.00	861.8 ± 0.9
293.15	859.4 ± 0.9
298.15	855.5 ± 1.0

Tetradecyl ethanoate

[638-59-5]

C<sub>16</sub>H<sub>32</sub>O<sub>2</sub>

MW = 256.43

307

Table 1. Fit with estimated *B* coefficient for 2 accepted points. Deviation σ<sub>w</sub> = 0.194.

Coefficient	$\rho = A + BT$
<i>A</i>	1084.81
<i>B</i>	-0.760

Table 2. Experimental values with uncertainties and deviation from calculated values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
298.15	858.1 ± 0.6	-0.12	1933-ruh/rei
308.15	851.0 ± 2.0	0.38	1955-shi/bon <sup>1)</sup>
368.15	806.3 ± 2.0	1.28	1955-shi/bon <sup>1)</sup>
293.15	862.3 ± 1.0	0.32	1964-bre/ulu

<sup>1)</sup> Not included in calculation of linear coefficients.

Table 3. Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	864.4 ± 0.5
293.15	862.0 ± 0.4
298.15	858.2 ± 0.4

**Tridecyl propanoate** [66271-77-0] C<sub>16</sub>H<sub>32</sub>O<sub>2</sub> MW = 256.43 308

**Table 1.** Fit with estimated *B* coefficient for 2 accepted points. Deviation  $\sigma_w = 0.025$ .

Coefficient	$\rho = A + BT$
<i>A</i>	1087.00
<i>B</i>	-0.770

**Table 2.** Experimental values with uncertainties and deviation from calculated values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
273.15	876.7 ± 0.5	0.02	1933-ruh/rei
298.15	857.4 ± 0.5	-0.03	1933-ruh/rei

**Table 3.** Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
270.00	879.1 ± 0.8
280.00	871.4 ± 0.5
290.00	863.7 ± 0.5
293.15	861.3 ± 0.5
298.15	857.4 ± 0.7

**Butyl tridecanoate** [28267-31-4] C<sub>17</sub>H<sub>34</sub>O<sub>2</sub> MW = 270.46 309

**Table 1.** Experimental value with uncertainty.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
298.15	852.6 ± 1.0	1963-sch/mar

**Heptyl decanoate** [60160-17-0] C<sub>17</sub>H<sub>34</sub>O<sub>2</sub> MW = 270.46 310

**Table 1.** Experimental value with uncertainty.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
288.15	864.4 ± 0.8	1937-rog/dvo

**2-Heptyloctyl ethanoate** [500028-48-8] C<sub>17</sub>H<sub>34</sub>O<sub>2</sub> MW = 270.46 311

**Table 1.** Experimental value with uncertainty.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
298.15	856.5 ± 1.0	1935-cox/rei

Methyl hexadecanoate

[112-39-0]

C<sub>17</sub>H<sub>34</sub>O<sub>2</sub>

MW = 270.46

312

**Table 1.** Fit with estimated *B* coefficient for 5 accepted points. Deviation  $\sigma_w = 0.208$ .

Coefficient	$\rho = A + BT$
<i>A</i>	1078.93
<i>B</i>	-0.730

**Table 2.** Experimental values with uncertainties and deviation from calculated values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
353.85	820.9 ± 2.0	0.28	1919-eyk <sup>1)</sup>	348.15	824.7 ± 1.0	-0.08	1952-gro/feu
293.15	886.2 ± 2.0	21.27	1935-dra/spi <sup>1)</sup>	313.15	850.5 ± 0.5	0.17	1964-gou/vlu
310.95	852.0 ± 1.0	0.06	1948-bon/alt	298.15	847.0 ± 2.0	-14.28	1967-rus/ber <sup>1)</sup>
333.15	835.4 ± 1.0	-0.33	1948-bon/alt	298.15	847.0 ± 2.0	-14.28	1969-rus/ber <sup>1)</sup>
372.05	807.0 ± 1.0	-0.33	1948-bon/alt				

<sup>1)</sup> Not included in calculation of linear coefficients.

**Table 3.** Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
310.00	852.6 ± 0.8	340.00	830.7 ± 0.7	370.00	808.8 ± 1.8
320.00	845.3 ± 0.6	350.00	823.4 ± 1.0	380.00	801.5 ± 2.2
330.00	838.0 ± 0.5	360.00	816.1 ± 1.4		

1-Methylbutyl dodecanoate

[55195-18-1]

C<sub>17</sub>H<sub>34</sub>O<sub>2</sub>

MW = 270.46

313

**Table 1.** Fit with estimated *B* coefficient for 4 accepted points. Deviation  $\sigma_w = 0.656$ .

Coefficient	$\rho = A + BT$
<i>A</i>	1078.29
<i>B</i>	-0.750

**Table 2.** Experimental values with uncertainties and deviation from calculated values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
289.15	861.5 ± 1.0	0.08	1914-pic/ken-1
326.15	834.6 ± 1.0	0.93	1914-pic/ken-1
360.15	808.1 ± 1.0	-0.07	1914-pic/ken-1
397.15	779.5 ± 1.0	-0.92	1914-pic/ken-1

cont.

**Table 3.** Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
280.00	868.3 ± 1.7	320.00	838.3 ± 1.2	370.00	800.8 ± 1.2
290.00	860.8 ± 1.5	330.00	830.8 ± 1.1	380.00	793.3 ± 1.3
293.15	858.4 ± 1.5	340.00	823.3 ± 1.1	390.00	785.8 ± 1.5
298.15	854.7 ± 1.4	350.00	815.8 ± 1.1	400.00	778.3 ± 1.6
310.00	845.8 ± 1.3	360.00	808.3 ± 1.2		

1-Methyldecyl hexanoate

[55193-18-5]

C<sub>17</sub>H<sub>34</sub>O<sub>2</sub>

MW = 270.46

314

**Table 1.** Fit with estimated *B* coefficient for 4 accepted points. Deviation σ<sub>w</sub> = 1.158.

Coefficient	$\rho = A + BT$
<i>A</i>	1078.05
<i>B</i>	-0.760

**Table 2.** Experimental values with uncertainties and deviation from calculated values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
289.15	857.9 ± 1.0	-0.40	1914-pic/ken-1
324.15	833.5 ± 1.0	1.81	1914-pic/ken-1
364.15	799.9 ± 1.0	-1.40	1914-pic/ken-1
397.15	776.2 ± 1.0	-0.01	1914-pic/ken-1

**Table 3.** Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
280.00	865.2 ± 1.9	320.00	834.8 ± 1.5	370.00	796.8 ± 1.6
290.00	857.6 ± 1.8	330.00	827.2 ± 1.5	380.00	789.2 ± 1.6
293.15	855.3 ± 1.8	340.00	819.6 ± 1.5	390.00	781.6 ± 1.7
298.15	851.5 ± 1.7	350.00	812.0 ± 1.5	400.00	774.0 ± 1.8
310.00	842.4 ± 1.6	360.00	804.4 ± 1.5		

1-Methylethyl tetradecanoate

[110-27-0]

C<sub>17</sub>H<sub>34</sub>O<sub>2</sub>

MW = 270.46

315

**Table 1.** Fit with estimated *B* coefficient for 3 accepted points. Deviation σ<sub>w</sub> = 0.072.

Coefficient	$\rho = A + BT$
<i>A</i>	1073.15
<i>B</i>	-0.750

cont.

1-Methylethyl tetradecanoate (cont.)

**Table 2.** Experimental values with uncertainties and deviation from calculated values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
293.15	853.2 ± 1.0	-0.09	1948-bon/alt
333.15	823.3 ± 1.0	0.01	1948-bon/alt
372.05	794.2 ± 1.0	0.08	1948-bon/alt

**Table 3.** Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	855.7 ± 1.2	320.00	833.2 ± 0.9	360.00	803.2 ± 1.0
293.15	853.3 ± 1.2	330.00	825.7 ± 0.9	370.00	795.7 ± 1.2
298.15	849.5 ± 1.1	340.00	818.2 ± 0.9	380.00	788.2 ± 1.3
310.00	840.7 ± 1.0	350.00	810.7 ± 1.0		

1-Methylheptyl nonanoate

[500003-51-0]

C<sub>17</sub>H<sub>34</sub>O<sub>2</sub>

MW = 270.46

316

**Table 1.** Fit with estimated *B* coefficient for 4 accepted points. Deviation  $\sigma_w = 0.968$ .

Coefficient	$\rho = A + BT$
<i>A</i>	1081.55
<i>B</i>	-0.767

**Table 2.** Experimental values with uncertainties and deviation from calculated values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
295.15	854.2 ± 1.0	-0.97	1914-pic/ken-1
324.15	834.0 ± 1.0	1.08	1914-pic/ken-1
361.15	805.4 ± 1.0	0.85	1914-pic/ken-1
410.15	766.0 ± 1.0	-0.96	1914-pic/ken-1

**Table 3.** Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	859.1 ± 1.8	330.00	828.4 ± 1.4	380.00	790.1 ± 1.5
293.15	856.7 ± 1.7	340.00	820.8 ± 1.3	390.00	782.4 ± 1.6
298.15	852.9 ± 1.6	350.00	813.1 ± 1.3	400.00	774.7 ± 1.7
310.00	843.8 ± 1.5	360.00	805.4 ± 1.3	410.00	767.1 ± 1.8
320.00	836.1 ± 1.4	370.00	797.8 ± 1.4	420.00	759.4 ± 2.0

1-Methylpentyl undecanoate

[55193-96-6]

C<sub>17</sub>H<sub>34</sub>O<sub>2</sub>

MW = 270.46

317

**Table 1.** Fit with estimated *B* coefficient for 3 accepted points. Deviation  $\sigma_w = 0.929$ .

Coefficient	$\rho = A + BT$
<i>A</i>	1072.96
<i>B</i>	-0.740

**Table 2.** Experimental values with uncertainties and deviation from calculated values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
289.15	858.3 ± 1.0	-0.69	1914-pic/ken-1
324.15	834.4 ± 1.0	1.31	1914-pic/ken-1
358.15	807.3 ± 1.0	-0.63	1914-pic/ken-1
398.15	773.8 ± 2.0	-4.53	1914-pic/ken-1 <sup>1)</sup>

<sup>1)</sup> Not included in calculation of linear coefficients.

**Table 3.** Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
280.00	865.8 ± 1.4	310.00	843.6 ± 1.2	340.00	821.4 ± 1.2
290.00	858.4 ± 1.3	320.00	836.2 ± 1.1	350.00	814.0 ± 1.3
293.15	856.0 ± 1.3	330.00	828.8 ± 1.2	360.00	806.6 ± 1.4
298.15	852.3 ± 1.3				

2-Pentylnonyl propanoate

[500022-53-7]

C<sub>17</sub>H<sub>34</sub>O<sub>2</sub>

MW = 270.46

318

**Table 1.** Experimental value with uncertainty.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
285.15	868.5 ± 1.0	1938-mas

Propyl tetradecanoate

[14303-70-9]

C<sub>17</sub>H<sub>34</sub>O<sub>2</sub>

MW = 270.46

319

**Table 1.** Fit with estimated *B* coefficient for 4 accepted points. Deviation  $\sigma_w = 0.280$ .

Coefficient	$\rho = A + BT$
<i>A</i>	1079.39
<i>B</i>	-0.750

cont.

Propyl tetradecanoate (cont.)

**Table 2.** Experimental values with uncertainties and deviation from calculated values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
293.15	859.2 ± 1.0	-0.33	1948-bon/alt
310.95	846.1 ± 1.0	-0.08	1948-bon/alt
333.15	829.5 ± 1.0	-0.03	1948-bon/alt
372.05	800.8 ± 1.0	0.44	1948-bon/alt

**Table 3.** Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	861.9 ± 1.2	320.00	839.4 ± 0.9	360.00	809.4 ± 1.1
293.15	859.5 ± 1.2	330.00	831.9 ± 0.9	370.00	801.9 ± 1.3
298.15	855.8 ± 1.1	340.00	824.4 ± 1.0	380.00	794.4 ± 1.4
310.00	846.9 ± 1.0	350.00	816.9 ± 1.0		

Undecyl hexanoate

[500028-04-6]

C<sub>17</sub>H<sub>34</sub>O<sub>2</sub>

MW = 270.46

320

**Table 1.** Fit with estimated *B* coefficient for 2 accepted points. Deviation σ<sub>w</sub> = 0.000.

Coefficient	$\rho = A + BT$
<i>A</i>	1071.57
<i>B</i>	-0.720

**Table 2.** Experimental values with uncertainties and deviation from calculated values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
273.15	874.9 ± 0.8	-0.00	1943-hob/par
298.15	856.9 ± 0.8	-0.00	1943-hob/par

**Table 3.** Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
270.00	877.2 ± 1.0
280.00	870.0 ± 0.8
290.00	862.8 ± 0.7
293.15	860.5 ± 0.8
298.15	856.9 ± 0.9



2-Butyldodecyl ethanoate

[500028-45-5]

C<sub>18</sub>H<sub>36</sub>O<sub>2</sub>

MW = 284.48

321

**Table 1.** Fit with estimated *B* coefficient for 9 accepted points. Deviation  $\sigma_w = 1.319$ .

Coefficient	$\rho = A + BT$
<i>A</i>	1079.71
<i>B</i>	-0.750

**Table 2.** Experimental values with uncertainties and deviation from calculated values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
273.15	875.2 ± 1.0	0.35	1933-bin/ste	333.15	830.4 ± 1.0	0.55	1933-bin/ste
283.15	868.1 ± 1.0	0.75	1933-bin/ste	353.15	815.1 ± 1.0	0.25	1933-bin/ste
293.15	856.4 ± 1.0	-3.45	1933-bin/ste	373.15	800.7 ± 1.0	0.85	1933-bin/ste
303.15	851.5 ± 1.0	-0.85	1933-bin/ste	298.15	856.7 ± 1.0	0.60	1935-cox/rei
313.15	845.8 ± 1.0	0.95	1933-bin/ste				

**Table 3.** Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
270.00	877.2 ± 1.8	310.00	847.2 ± 1.6	350.00	817.2 ± 1.8
280.00	869.7 ± 1.7	320.00	839.7 ± 1.6	360.00	809.7 ± 1.8
290.00	862.2 ± 1.7	330.00	832.2 ± 1.6	370.00	802.2 ± 2.0
293.15	859.9 ± 1.6	340.00	824.7 ± 1.7	380.00	794.7 ± 2.1
298.15	856.1 ± 1.6				

Dodecyl hexanoate

[6938-60-9]

C<sub>18</sub>H<sub>36</sub>O<sub>2</sub>

MW = 284.48

322

**Table 1.** Fit with estimated *B* coefficient for 2 accepted points. Deviation  $\sigma_w = 0.075$ .

Coefficient	$\rho = A + BT$
<i>A</i>	1073.77
<i>B</i>	-0.730

**Table 2.** Experimental values with uncertainties and deviation from calculated values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
273.15	874.3 ± 0.8	-0.08	1943-hob/par
298.15	856.2 ± 0.8	0.08	1943-hob/par

cont.

Dodecyl hexanoate (cont.)

Table 3. Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
270.00	876.7 ± 1.0
280.00	869.4 ± 0.8
290.00	862.1 ± 0.7
293.15	859.8 ± 0.8
298.15	856.1 ± 0.9

Ethyl hexadecanoate

[628-97-7]

C<sub>18</sub>H<sub>36</sub>O<sub>2</sub>

MW = 284.48

323

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction):  $\sigma_{\text{c,w}} = 4.3307 \cdot 10^{-1}$  (combined temperature ranges, weighted),  $\sigma_{\text{c,uw}} = 1.5804 \cdot 10^{-1}$  (combined temperature ranges, unweighted).

Coefficient	T = 298.15 to 513.15 K $\rho = A + BT + CT^2 + DT^3 + \dots$
A	1.06504 · 10 <sup>3</sup>
B	-6.67046 · 10 <sup>-1</sup>
C	-1.08395 · 10 <sup>-4</sup>

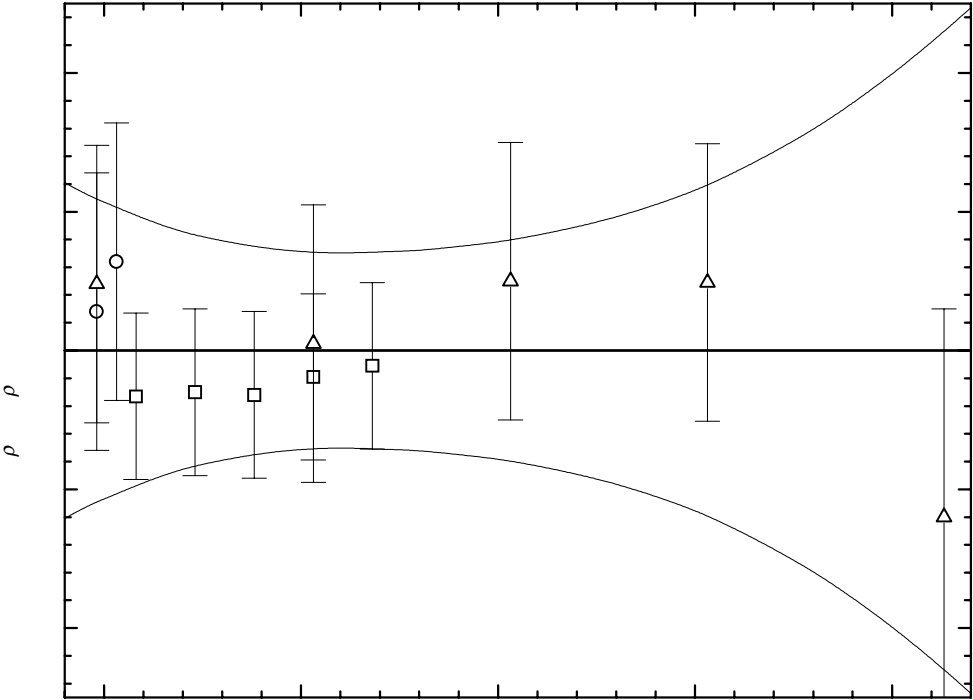
Table 2. Experimental values with uncertainties and deviation from calculated values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{cal}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref. (Symbol in Fig. 1)	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref. (Symbol in Fig. 1)
298.15	857.00 ± 1.00	0.48	1950-boe/ned(Δ)	303.15	853.50 ± 1.00	0.64	1950-mum/phi(○)
353.15	816.00 ± 1.00	0.05	1950-boe/ned(Δ)	308.10	848.90 ± 0.60	-0.33	1955-shi/bon(□)
403.15	779.00 ± 1.00	0.50	1950-boe/ned(Δ)	323.10	837.90 ± 0.60	-0.30	1955-shi/bon(□)
453.15	741.00 ± 1.00	0.49	1950-boe/ned(Δ)	338.10	826.80 ± 0.60	-0.32	1955-shi/bon(□)
513.15	693.00 ± 1.50	-1.20	1950-boe/ned(Δ)	353.10	815.80 ± 0.60	-0.19	1955-shi/bon(□)
573.15	644.00 ± 0.00	-3.11	1950-boe/ned <sup>1)</sup>	368.10	804.70 ± 0.60	-0.11	1955-shi/bon(□)
298.15	856.80 ± 1.00	0.28	1950-mum/phi(○)				

<sup>1)</sup> Not included in Fig. 1.

Further references: [1919-eyk, 1938-bak/smy, 1952-gro/feu, 1971-che/shv].

cont.



**Fig. 1.** The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)

**Table 3.** Recommended values (fit to the reliable experimental values according to the equations  $\rho = A + BT + CT^2 + DT^3 + \dots$  or  $\rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$ ).

$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	862.48 ± 1.21	360.00	810.85 ± 0.70	450.00	742.92 ± 1.15
293.15	860.18 ± 1.16	370.00	803.39 ± 0.71	460.00	735.26 ± 1.28
298.15	856.52 ± 1.09	380.00	795.91 ± 0.72	470.00	727.58 ± 1.43
300.00	855.17 ± 1.07	390.00	788.40 ± 0.75	480.00	719.88 ± 1.59
310.00	847.84 ± 0.95	400.00	780.87 ± 0.78	490.00	712.16 ± 1.78
320.00	840.48 ± 0.85	410.00	773.33 ± 0.83	500.00	704.41 ± 1.99
330.00	833.11 ± 0.79	420.00	765.76 ± 0.89	510.00	696.65 ± 2.22
340.00	825.71 ± 0.74	430.00	758.16 ± 0.96	520.00	688.86 ± 2.47
350.00	818.29 ± 0.71	440.00	750.55 ± 1.05		

Heptyl undecanoate

[90593-60-5]

C<sub>18</sub>H<sub>36</sub>O<sub>2</sub>

MW = 284.48

324

Table 1. Experimental value with uncertainty.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
288.15	862.4 ± 1.0	1937-rog/dvo

2-Heptylnonyl ethanoate

[500002-72-2]

C<sub>18</sub>H<sub>36</sub>O<sub>2</sub>

MW = 284.48

325

Table 1. Fit with estimated *B* coefficient for 8 accepted points. Deviation  $\sigma_{\text{w}}$  = 0.193.

Coefficient	$\rho = A + BT$
<i>A</i>	1080.02
<i>B</i>	-0.750

Table 2. Experimental values with uncertainties and deviation from calculated values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
273.15	875.1 ± 1.0	-0.06	1933-bin/ste	313.15	845.2 ± 1.0	0.04	1933-bin/ste
283.15	867.7 ± 1.0	0.04	1933-bin/ste	333.15	829.8 ± 1.0	-0.36	1933-bin/ste
293.15	860.2 ± 1.0	0.04	1933-bin/ste	353.15	815.3 ± 1.0	0.14	1933-bin/ste
303.15	852.5 ± 1.0	-0.16	1933-bin/ste	373.15	800.5 ± 1.0	0.34	1933-bin/ste

Table 3. Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
270.00	877.5 ± 1.3	310.00	847.5 ± 0.9	350.00	817.5 ± 1.1
280.00	870.0 ± 1.2	320.00	840.0 ± 0.9	360.00	810.0 ± 1.3
290.00	862.5 ± 1.0	330.00	832.5 ± 1.0	370.00	802.5 ± 1.4
293.15	860.2 ± 1.0	340.00	825.0 ± 1.0	380.00	795.0 ± 1.6
298.15	856.4 ± 1.0				

Hexadecyl ethanoate

[629-70-9]

C<sub>18</sub>H<sub>36</sub>O<sub>2</sub>

MW = 284.48

326

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction):  $\sigma_{\text{c,w}}$  = 7.4569 · 10<sup>-1</sup> (combined temperature ranges, weighted),  $\sigma_{\text{c,uw}}$  = 2.1187 · 10<sup>-1</sup> (combined temperature ranges, unweighted).

Coefficient	T = 293.15 to 373.15 K $\rho = A + BT + CT^2 + DT^3 + \dots$
<i>A</i>	1.07428 · 10 <sup>3</sup>
<i>B</i>	-7.28422 · 10 <sup>-1</sup>

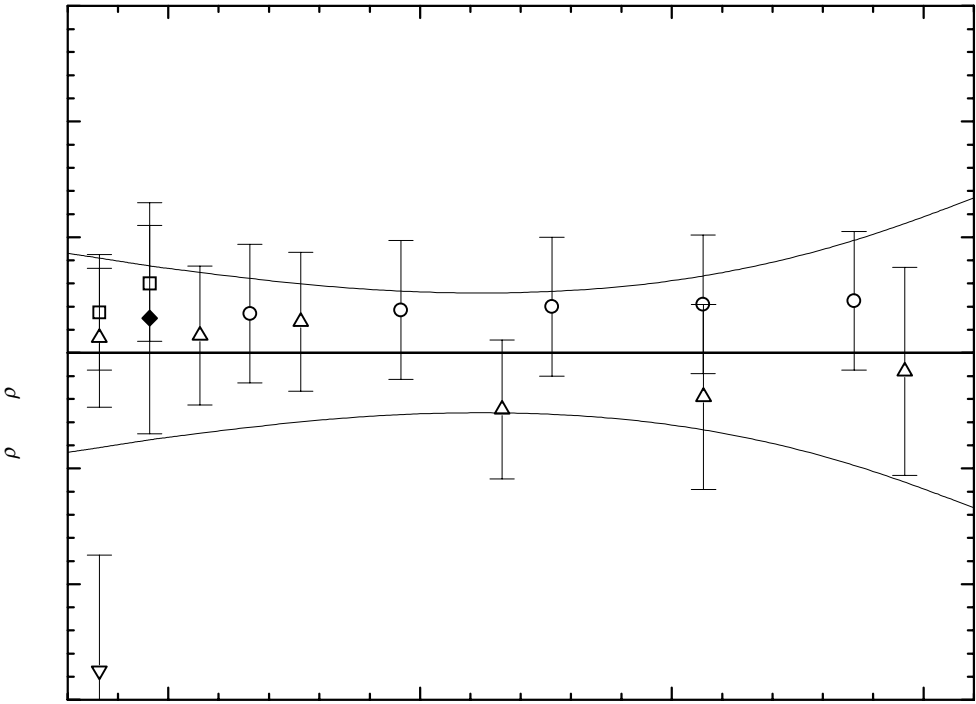
cont.

**Table 2.** Experimental values with uncertainties and deviation from calculated values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{cal}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref. (Symbol in Fig. 1)	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref. (Symbol in Fig. 1)
293.15	$860.88 \pm 0.60$	0.13	1933-bin/ste( $\Delta$ )	298.15	$857.70 \pm 0.50$	0.60	1950-mum/phi( $\square$ )
303.15	$853.61 \pm 0.60$	0.15	1933-bin/ste( $\Delta$ )	308.10	$850.20 \pm 0.60$	0.34	1955-shi/bon( $\circ$ )
313.15	$846.45 \pm 0.60$	0.27	1933-bin/ste( $\Delta$ )	323.10	$839.30 \pm 0.60$	0.37	1955-shi/bon( $\circ$ )
333.15	$831.12 \pm 0.60$	-0.49	1933-bin/ste( $\Delta$ )	338.10	$828.40 \pm 0.60$	0.40	1955-shi/bon( $\circ$ )
353.15	$816.66 \pm 0.80$	-0.38	1933-bin/ste( $\Delta$ )	353.10	$817.50 \pm 0.60$	0.42	1955-shi/bon( $\circ$ )
373.15	$802.31 \pm 0.90$	-0.16	1933-bin/ste( $\Delta$ )	368.10	$806.60 \pm 0.60$	0.45	1955-shi/bon( $\circ$ )
298.15	$857.40 \pm 1.00$	0.30	1935-cox/rei( $\blacklozenge$ )	293.15	$858.00 \pm 1.00$	-2.75	1970-ere( $\nabla$ )
293.15	$861.10 \pm 0.50$	0.35	1950-mum/phi( $\square$ )				

<sup>1)</sup> Not included in Fig. 1.

**Further references:** [1864-dol, 1884-per, 1919-eyk].



**Fig. 1.** The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the symbols are omitted for clarity of the figure.)

cont.

Hexadecyl ethanoate (cont.)

**Table 3.** Recommended values (fit to the reliable experimental values according to the equations  $\rho = A + BT + CT^2 + DT^3 + \dots$  or  $\rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$  ).

$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	863.04 ± 0.86	310.00	848.47 ± 0.62	350.00	819.34 ± 0.61
293.15	860.75 ± 0.82	320.00	841.19 ± 0.54	360.00	812.05 ± 0.77
298.15	857.10 ± 0.75	330.00	833.90 ± 0.51	370.00	804.77 ± 1.01
300.00	855.76 ± 0.73	340.00	826.62 ± 0.53	380.00	797.48 ± 1.34

**2-Hexyldecyl ethanoate** [500028-47-7] C<sub>18</sub>H<sub>36</sub>O<sub>2</sub> MW = 284.48 327

**Table 1.** Experimental value with uncertainty.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
298.15	856.0 ± 1.0	1935-cox/rei

**Methyl heptadecanoate** [1731-92-6] C<sub>18</sub>H<sub>36</sub>O<sub>2</sub> MW = 284.48 328

**Table 1.** Experimental value with uncertainty.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
313.15	849.9 ± 0.6	1964-gou/vlu

**1-Methyldecyl heptanoate** [55193-26-5] C<sub>18</sub>H<sub>36</sub>O<sub>2</sub> MW = 284.48 329

**Table 1.** Fit with estimated *B* coefficient for 4 accepted points. Deviation  $\sigma_w = 0.725$ .

Coefficient	$\rho = A + BT$
<i>A</i>	1079.80
<i>B</i>	-0.765

**Table 2.** Experimental values with uncertainties and deviation from calculated values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
289.15	857.9 ± 1.0	-0.70	1914-pic/ken-1
327.15	830.2 ± 1.0	0.67	1914-pic/ken-1
364.15	802.0 ± 1.0	0.78	1914-pic/ken-1
399.15	773.7 ± 1.0	-0.75	1914-pic/ken-1

cont.

**Table 3.** Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
280.00	865.6 ± 1.7	320.00	835.0 ± 1.3	370.00	796.7 ± 1.3
290.00	857.9 ± 1.6	330.00	827.3 ± 1.2	380.00	789.1 ± 1.3
293.15	855.5 ± 1.5	340.00	819.7 ± 1.2	390.00	781.4 ± 1.5
298.15	851.7 ± 1.5	350.00	812.0 ± 1.2	400.00	773.8 ± 1.6
310.00	842.6 ± 1.3	360.00	804.4 ± 1.2		

**1-Methylhexyl undecanoate** [55193-97-0] C<sub>18</sub>H<sub>36</sub>O<sub>2</sub> MW = 284.48 330

**Table 1.** Fit with estimated *B* coefficient for 4 accepted points. Deviation σ<sub>w</sub> = 0.855.

Coefficient	$\rho = A + BT$
<i>A</i>	1076.55
<i>B</i>	-0.760

**Table 2.** Experimental values with uncertainties and deviation from calculated values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
285.65	858.8 ± 1.0	-0.66	1914-pic/ken-1
330.65	826.6 ± 1.0	1.34	1914-pic/ken-1
363.15	800.7 ± 1.0	0.14	1914-pic/ken-1
407.15	766.3 ± 1.0	-0.82	1914-pic/ken-1

**Table 3.** Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
280.00	863.8 ± 1.8	320.00	833.4 ± 1.3	370.00	795.4 ± 1.3
290.00	856.2 ± 1.7	330.00	825.8 ± 1.3	380.00	787.8 ± 1.4
293.15	853.8 ± 1.6	340.00	818.2 ± 1.2	390.00	780.2 ± 1.5
298.15	850.0 ± 1.6	350.00	810.6 ± 1.2	400.00	772.6 ± 1.6
310.00	841.0 ± 1.4	360.00	803.0 ± 1.3	410.00	765.0 ± 1.8

**2-Methylpentadecyl ethanoate** [500028-42-2] C<sub>18</sub>H<sub>36</sub>O<sub>2</sub> MW = 284.48 331

**Table 1.** Fit with estimated *B* coefficient for 9 accepted points. Deviation σ<sub>w</sub> = 0.912.

Coefficient	$\rho = A + BT$
<i>A</i>	1073.39
<i>B</i>	-0.740

cont.

2-Methylpentadecyl ethanoate (cont.)

**Table 2.** Experimental values with uncertainties and deviation from calculated values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
273.15	871.0 ± 1.0	-0.26	1933-bin/ste	333.15	826.3 ± 1.0	-0.56	1933-bin/ste
283.15	863.5 ± 1.0	-0.36	1933-bin/ste	353.15	811.6 ± 1.0	-0.46	1933-bin/ste
293.15	856.0 ± 1.0	-0.46	1933-bin/ste	373.15	799.8 ± 1.0	2.54	1933-bin/ste
303.15	848.8 ± 1.0	-0.26	1933-bin/ste	298.15	852.7 ± 1.0	-0.06	1935-cox/rei
313.15	841.5 ± 1.0	-0.16	1933-bin/ste				

**Table 3.** Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
270.00	873.6 ± 1.5	310.00	844.0 ± 1.3	350.00	814.4 ± 1.5
280.00	866.2 ± 1.4	320.00	836.6 ± 1.3	360.00	807.0 ± 1.6
290.00	858.8 ± 1.4	330.00	829.2 ± 1.3	370.00	799.6 ± 1.7
293.15	856.5 ± 1.3	340.00	821.8 ± 1.4	380.00	792.2 ± 1.8
298.15	852.8 ± 1.3				

1-Methylpentyl dodecanoate [55194-05-3] C<sub>18</sub>H<sub>36</sub>O<sub>2</sub> MW = 284.48 332

**Table 1.** Fit with estimated *B* coefficient for 4 accepted points. Deviation σ<sub>w</sub> = 0.584.

Coefficient	$\rho = A + BT$
<i>A</i>	1074.96
<i>B</i>	-0.740

**Table 2.** Experimental values with uncertainties and deviation from calculated values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
289.15	861.1 ± 1.0	0.12	1914-pic/ken-1
328.15	832.9 ± 1.0	0.78	1914-pic/ken-1
358.15	809.9 ± 1.0	-0.02	1914-pic/ken-1
387.15	787.6 ± 1.0	-0.86	1914-pic/ken-1

**Table 3.** Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
280.00	867.8 ± 1.6	320.00	838.2 ± 1.1	360.00	808.6 ± 1.1
290.00	860.4 ± 1.5	330.00	830.8 ± 1.1	370.00	801.2 ± 1.2
293.15	858.0 ± 1.4	340.00	823.4 ± 1.1	380.00	793.8 ± 1.3
298.15	854.3 ± 1.4	350.00	816.0 ± 1.1	390.00	786.4 ± 1.5
310.00	845.6 ± 1.2				



**1-Methylpropyl tetradecanoate** [55195-13-6] C<sub>18</sub>H<sub>36</sub>O<sub>2</sub> MW = 284.48 333

**Table 1.** Fit with estimated *B* coefficient for 4 accepted points. Deviation σ<sub>w</sub> = 0.839.

Coefficient	$\rho = A + BT$
<i>A</i>	1076.04
<i>B</i>	-0.750

**Table 2.** Experimental values with uncertainties and deviation from calculated values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
289.15	859.3 ± 1.0	0.13	1914-pic/ken-1
328.15	830.8 ± 1.0	0.88	1914-pic/ken-1
368.15	800.3 ± 1.0	0.38	1914-pic/ken-1
421.15	758.8 ± 1.0	-1.38	1914-pic/ken-1

**Table 3.** Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
280.00	866.0 ± 1.9	330.00	828.5 ± 1.3	390.00	783.5 ± 1.4
290.00	858.5 ± 1.7	340.00	821.0 ± 1.2	400.00	776.0 ± 1.6
293.15	856.2 ± 1.7	350.00	813.5 ± 1.2	410.00	768.5 ± 1.7
298.15	852.4 ± 1.6	360.00	806.0 ± 1.2	420.00	761.0 ± 1.8
310.00	843.5 ± 1.5	370.00	798.5 ± 1.3	430.00	753.5 ± 2.0
320.00	836.0 ± 1.4	380.00	791.0 ± 1.4		

**Pentyl tridecanoate** [95277-11-5] C<sub>18</sub>H<sub>36</sub>O<sub>2</sub> MW = 284.48 334

**Table 1.** Experimental value with uncertainty.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
298.15	854.9 ± 1.0	1963-sch/mar

**2-Pentylnonyl 2-methylpropanoate** [500022-59-3] C<sub>18</sub>H<sub>36</sub>O<sub>2</sub> MW = 284.48 335

**Table 1.** Experimental value with uncertainty.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
295.15	847.5 ± 1.0	1938-mas

2-Pentylundecyl ethanoate

[500028-46-6]

C<sub>18</sub>H<sub>36</sub>O<sub>2</sub>

MW = 284.48

336

**Table 1.** Fit with estimated *B* coefficient for 9 accepted points. Deviation  $\sigma_w = 0.391$ .

Coefficient	$\rho = A + BT$
<i>A</i>	1079.50
<i>B</i>	-0.750

**Table 2.** Experimental values with uncertainties and deviation from calculated values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
273.15	873.9 ± 1.0	-0.74	1933-bin/ste	333.15	829.7 ± 1.0	0.06	1933-bin/ste
283.15	867.0 ± 1.0	-0.14	1933-bin/ste	353.15	815.0 ± 1.0	0.36	1933-bin/ste
293.15	859.6 ± 1.0	-0.04	1933-bin/ste	373.15	800.2 ± 1.0	0.56	1933-bin/ste
303.15	852.1 ± 1.0	-0.04	1933-bin/ste	298.15	856.3 ± 1.0	0.41	1935-cox/rei
313.15	844.2 ± 1.0	-0.44	1933-bin/ste				

**Table 3.** Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
270.00	877.0 ± 1.3	310.00	847.0 ± 1.0	350.00	817.0 ± 1.2
280.00	869.5 ± 1.2	320.00	839.5 ± 1.0	360.00	809.5 ± 1.3
290.00	862.0 ± 1.1	330.00	832.0 ± 1.0	370.00	802.0 ± 1.5
293.15	859.6 ± 1.1	340.00	824.5 ± 1.1	380.00	794.5 ± 1.6
298.15	855.9 ± 1.0				

2-Propyltridecyl ethanoate

[500028-44-4]

C<sub>18</sub>H<sub>36</sub>O<sub>2</sub>

MW = 284.48

337

**Table 1.** Fit with estimated *B* coefficient for 9 accepted points. Deviation  $\sigma_w = 0.403$ .

Coefficient	$\rho = A + BT$
<i>A</i>	1080.47
<i>B</i>	-0.750

**Table 2.** Experimental values with uncertainties and deviation from calculated values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
273.15	875.6 ± 1.0	-0.01	1933-bin/ste	333.15	830.5 ± 1.0	-0.11	1933-bin/ste
283.15	867.7 ± 1.0	-0.41	1933-bin/ste	353.15	815.9 ± 1.0	0.29	1933-bin/ste
293.15	860.2 ± 1.0	-0.41	1933-bin/ste	373.15	801.6 ± 1.0	0.99	1933-bin/ste
303.15	853.0 ± 1.0	-0.11	1933-bin/ste	298.15	856.7 ± 1.0	-0.16	1935-cox/rei
313.15	845.5 ± 1.0	-0.11	1933-bin/ste				

cont.

**Table 3.** Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
270.00	878.0 ± 1.3	310.00	848.0 ± 1.0	350.00	818.0 ± 1.2
280.00	870.5 ± 1.2	320.00	840.5 ± 1.0	360.00	810.5 ± 1.3
290.00	863.0 ± 1.1	330.00	833.0 ± 1.0	370.00	803.0 ± 1.5
293.15	860.6 ± 1.1	340.00	825.5 ± 1.1	380.00	795.5 ± 1.6
298.15	856.9 ± 1.0				

