

2.1.8 Saturated Monoesters, C₁₃ - C₁₅

Butyl nonanoate [50623-57-9] C₁₃H₂₆O₂ MW = 214.35 239

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.
273.15	872.0 ± 0.7	1943-hob/par
298.15	852.0 ± 0.7	1943-hob/par

Decyl propanoate [5454-19-3] C₁₃H₂₆O₂ MW = 214.35 240

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	863.9 ± 1.0	1927-tal
293.15	863.9 ± 1.0	1932-kom/tal

4,8-Dimethylnonyl ethanoate [500002-43-7] C₁₃H₂₆O₂ MW = 214.35 241

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.
287.15	866.0 ± 1.0	1923-von/kai

Dodecyl methanoate [28303-42-6] C₁₃H₂₆O₂ MW = 214.35 242

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	872.0 ± 1.0	1931-zaa

l-Ethyl 2-butylheptanoate [500002-58-4] C₁₃H₂₆O₂ MW = 214.35 243

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.
297.15	864.0 ± 1.0	1933-lev/mar-1

D-Ethyl 4,8-dimethylnonanoate [500002-71-1] C₁₃H₂₆O₂ MW = 214.35 244

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.
294.15	866.0 ± 1.0	1923-von/kai

Ethyl undecanoate

[627-90-7]

C₁₃H₂₆O₂

MW = 214.35

245

Table 1. Fit with estimated *B* coefficient for 2 accepted points. Deviation $\sigma_w = 0.844$.

Coefficient	$\rho = A + BT$
<i>A</i>	1094.42
<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.
273.95	879.9 ± 1.0	-0.84	1938-bak/smy
298.55	862.4 ± 1.0	0.84	1938-bak/smy

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	883.8 ± 2.0
280.00	876.0 ± 1.4
290.00	868.2 ± 1.3
293.15	865.8 ± 1.4
298.15	861.9 ± 1.7

Heptyl hexanoate

[6976-72-3]

C₁₃H₂₆O₂

MW = 214.35

246

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{c,w} = 4.6240 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 1.3139 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

Coefficient	T = 273.15 to 503.55 K $\rho = A + BT + CT^2 + DT^3 + \dots$
<i>A</i>	$1.05176 \cdot 10^3$
<i>B</i>	$-5.51551 \cdot 10^{-1}$
<i>C</i>	$-3.30250 \cdot 10^{-4}$

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)
273.15	876.80 ± 0.60	0.34	1886-gar(□)	471.95	722.60 ± 1.00	4.70	1886-gar ¹⁾
303.85	854.00 ± 0.60	0.32	1886-gar(□)	485.15	706.40 ± 1.00	-0.04	1886-gar(□)
338.35	827.40 ± 0.80	0.06	1886-gar(□)	503.55	689.60 ± 1.00	-0.69	1886-gar(□)
370.85	802.00 ± 0.80	0.20	1886-gar(□)	273.15	876.87 ± 0.50	0.41	1935-bil/gis(○)
403.95	775.30 ± 1.00	0.23	1886-gar(□)	288.15	865.05 ± 0.50	-0.36	1935-bil/gis(○)
429.25	754.40 ± 1.00	0.24	1886-gar(□)	303.15	853.27 ± 0.50	-0.94	1935-bil/gis(○)
448.25	738.40 ± 1.00	0.23	1886-gar(□)				

¹⁾ Not included in Fig. 1.

cont.

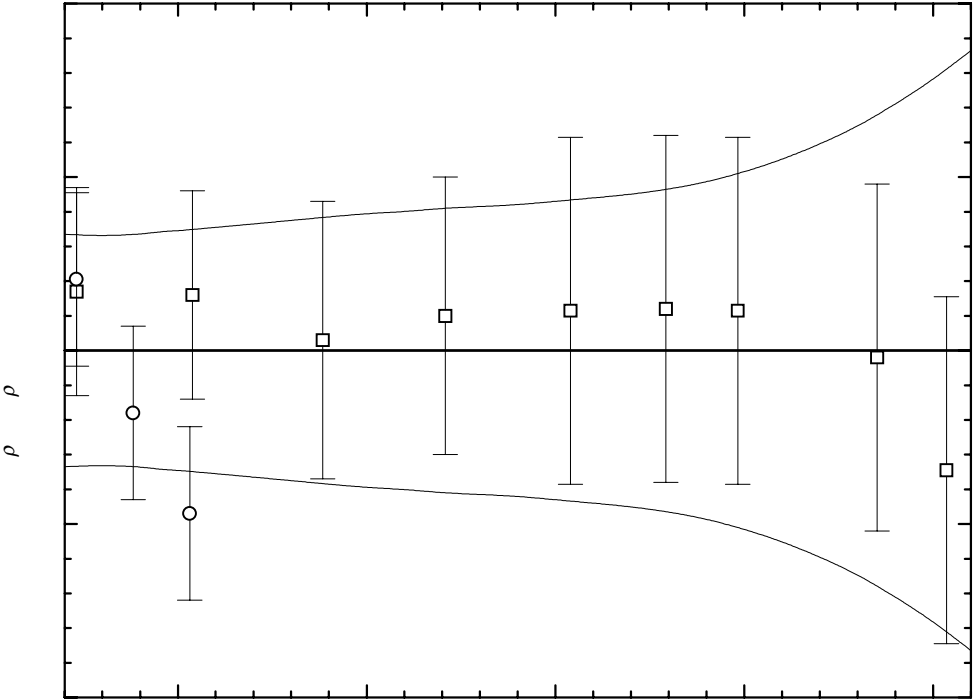


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the 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 $\rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$).

$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$
270.00	878.77 ± 0.67	340.00	826.06 ± 0.77	430.00	753.53 ± 0.93
280.00	871.43 ± 0.66	350.00	818.26 ± 0.79	440.00	745.14 ± 0.97
290.00	864.04 ± 0.67	360.00	810.40 ± 0.80	450.00	736.69 ± 1.03
293.15	861.69 ± 0.68	370.00	802.47 ± 0.82	460.00	728.17 ± 1.10
298.15	857.96 ± 0.69	380.00	794.48 ± 0.83	470.00	719.58 ± 1.19
300.00	856.57 ± 0.69	390.00	786.42 ± 0.84	480.00	710.93 ± 1.29
310.00	849.04 ± 0.71	400.00	778.30 ± 0.86	490.00	702.21 ± 1.42
320.00	841.45 ± 0.73	410.00	770.11 ± 0.88	500.00	693.42 ± 1.56
330.00	833.78 ± 0.75	420.00	761.85 ± 0.90	510.00	684.57 ± 1.73

Hexyl heptanoate

[1119-06-8]

C₁₃H₂₆O₂

MW = 214.35

247

Table 1. Fit with estimated *B* coefficient for 3 accepted points. Deviation $\sigma_w = 0.188$.

Coefficient	$\rho = A + BT$
<i>A</i>	1095.54
<i>B</i>	-0.800

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	876.8 ± 0.5	-0.24	1935-bil/gis
288.15	865.0 ± 0.5	0.02	1935-bil/gis
303.15	853.2 ± 0.5	0.22	1935-bil/gis

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	879.5 ± 0.9
280.00	871.5 ± 0.6
290.00	863.5 ± 0.5
293.15	861.0 ± 0.5
298.15	857.0 ± 0.6
310.00	847.5 ± 1.0

Methyl dodecanoate

[111-82-0]

C₁₃H₂₆O₂

MW = 214.35

248

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{c,w} = 8.3667 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 1.8750 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

Coefficient	T = 286.55 to 372.05 K $\rho = A + BT + CT^2 + DT^3 + \dots$
<i>A</i>	$1.07825 \cdot 10^3$
<i>B</i>	$-6.58407 \cdot 10^{-1}$
<i>C</i>	$-1.81095 \cdot 10^{-4}$

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)
293.15	869.50 ± 0.50	-0.17	1948-bon/alt(◆)	286.55	875.30 ± 0.60	0.59	1948-vog-9(✕)
310.95	855.30 ± 0.50	-0.70	1948-bon/alt(◆)	291.35	871.60 ± 0.60	0.55	1948-vog-9(✕)
333.15	837.60 ± 0.50	-1.20	1948-bon/alt(◆)	293.15	870.20 ± 0.60	0.53	1948-vog-9(✕)

cont.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	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)
295.45	868.40 ± 0.60	0.49	1948-vog-9(X)	313.15	853.80 ± 1.00	-0.51	1956-nev(X)
314.75	853.30 ± 0.60	0.23	1948-vog-9(X)	293.15	869.40 ± 0.50	-0.27	1964-adr/dek(V)
314.95	853.10 ± 0.80	0.18	1948-vog-9(X)	293.15	869.37 ± 0.50	-0.30	1964-gou/vlu(Δ)
335.45	838.00 ± 0.80	1.00	1948-vog-9(X)	313.15	853.32 ± 0.50	-0.99	1964-gou/vlu(Δ)
335.85	837.70 ± 0.80	1.01	1948-vog-9(X)	298.15	865.27 ± 0.30	-0.57	1990-ort(\square)
359.85	819.10 ± 0.80	1.23	1948-vog-9(X)	298.15	864.97 ± 0.35	-0.87	1995-pos/gar(O)

¹⁾ Not included in Fig. 1.

Further references: [1935-dra/spi, 1952-gro/feu, 1963-zap/sar].

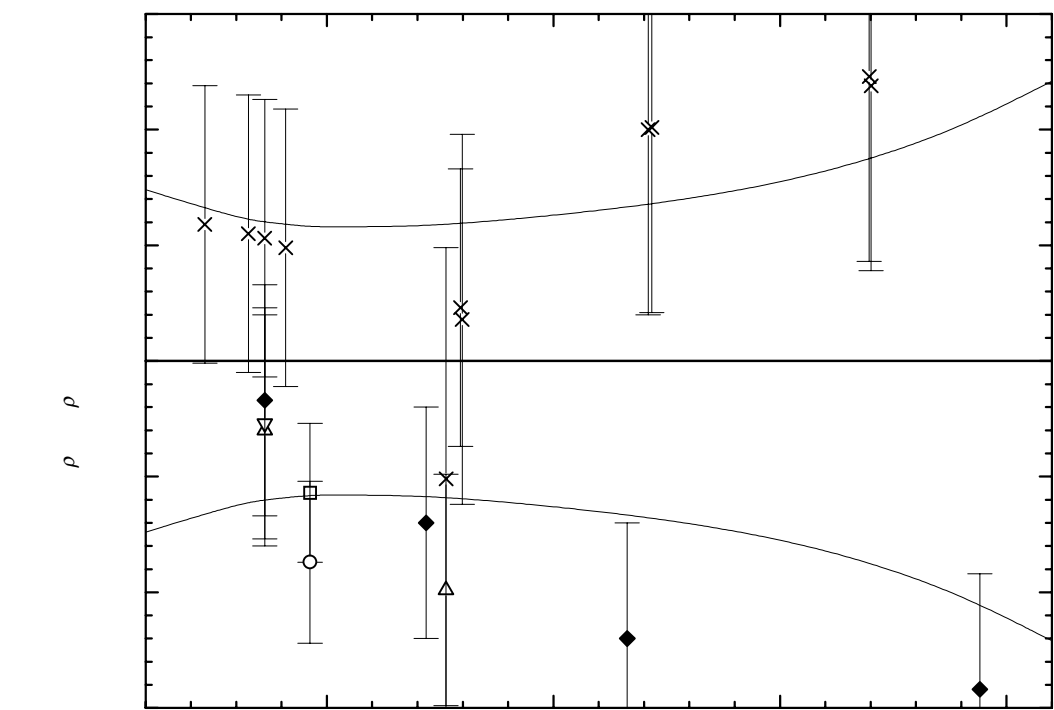


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the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

cont.

Methyl dodecanoate (cont.)

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

$\frac{T}{K}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{K}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{K}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$
280.00	879.69 ± 0.74	310.00	856.74 ± 0.58	360.00	817.75 ± 0.87
290.00	872.08 ± 0.62	320.00	849.01 ± 0.61	370.00	809.84 ± 1.01
293.15	869.67 ± 0.60	330.00	841.25 ± 0.65	380.00	801.90 ± 1.21
298.15	865.84 ± 0.58	340.00	833.45 ± 0.70		
300.00	864.42 ± 0.58	350.00	825.62 ± 0.77		

1-Methyldecyl ethanoate [500002-42-6] C₁₃H₂₆O₂ MW = 214.35 249

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation $\sigma_w = 1.294$.

Coefficient	$\rho = A + BT$
<i>A</i>	1108.12
<i>B</i>	-0.850

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

$\frac{T}{K}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
291.15	859.4 ± 1.0	-1.24	1914-pic/ken-1
314.15	842.2 ± 1.0	1.11	1914-pic/ken-1
355.15	807.7 ± 1.0	1.46	1914-pic/ken-1
395.15	770.9 ± 1.0	-1.34	1914-pic/ken-1

Table 3. Recommended values.

$\frac{T}{K}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{K}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{K}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	861.6 ± 1.9	330.00	827.6 ± 1.6	370.00	793.6 ± 1.7
293.15	858.9 ± 1.8	340.00	819.1 ± 1.6	380.00	785.1 ± 1.8
298.15	854.7 ± 1.8	350.00	810.6 ± 1.6	390.00	776.6 ± 1.9
310.00	844.6 ± 1.7	360.00	802.1 ± 1.6	400.00	768.1 ± 2.0
320.00	836.1 ± 1.6				

1-Methylethyl decanoate [2311-59-3] C₁₃H₂₆O₂ MW = 214.35 250

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation $\sigma_w = 0.156$.

Coefficient	$\rho = A + BT$
<i>A</i>	1088.56
<i>B</i>	-0.800

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	854.3 ± 1.0	0.26	1948-bon/alt
310.95	839.7 ± 1.0	-0.10	1948-bon/alt
333.15	821.9 ± 1.0	-0.14	1948-bon/alt
372.05	790.9 ± 1.0	-0.02	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	856.6 ± 1.2	320.00	832.6 ± 0.9	360.00	800.6 ± 1.1
293.15	854.0 ± 1.1	330.00	824.6 ± 0.9	370.00	792.6 ± 1.2
298.15	850.0 ± 1.1	340.00	816.6 ± 0.9	380.00	784.6 ± 1.4
310.00	840.6 ± 1.0	350.00	808.6 ± 1.0		

1-Methylheptyl pentanoate [6938-48-3] C₁₃H₂₆O₂ MW = 214.35 251

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation σ_w = 1.122.

Coefficient	$\rho = A + BT$
<i>A</i>	1094.15
<i>B</i>	-0.820

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.
289.65	856.0 ± 1.0	-0.63	1914-pic/ken-1
324.15	829.0 ± 1.0	0.66	1914-pic/ken-1
363.15	797.8 ± 1.0	1.44	1914-pic/ken-1
403.15	762.1 ± 1.0	-1.46	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	864.5 ± 1.9	320.00	831.7 ± 1.5	370.00	790.7 ± 1.5
290.00	856.3 ± 1.8	330.00	823.5 ± 1.5	380.00	782.5 ± 1.6
293.15	853.8 ± 1.8	340.00	815.3 ± 1.4	390.00	774.3 ± 1.7
298.15	849.7 ± 1.7	350.00	807.1 ± 1.4	400.00	766.1 ± 1.8
310.00	839.9 ± 1.6	360.00	798.9 ± 1.5	410.00	757.9 ± 1.9

1-Methylhexyl hexanoate

[6624-58-4]

C₁₃H₂₆O₂

MW = 214.35

252

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation $\sigma_w = 0.650$.

Coefficient	$\rho = A + BT$
<i>A</i>	1074.97
<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	857.3 ± 1.0	-0.81	1914-pic/ken-1
323.15	833.2 ± 1.0	0.59	1914-pic/ken-1
360.15	804.4 ± 1.0	-0.46	1914-pic/ken-1
405.15	771.8 ± 1.0	0.69	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	865.0 ± 1.7	320.00	835.0 ± 1.2	370.00	797.5 ± 1.2
290.00	857.5 ± 1.6	330.00	827.5 ± 1.1	380.00	790.0 ± 1.3
293.15	855.1 ± 1.5	340.00	820.0 ± 1.1	390.00	782.5 ± 1.4
298.15	851.4 ± 1.4	350.00	812.5 ± 1.1	400.00	775.0 ± 1.6
310.00	842.5 ± 1.3	360.00	805.0 ± 1.1	410.00	767.5 ± 1.7

1-Methylpentyl heptanoate

[500003-34-9]

C₁₃H₂₆O₂

MW = 214.35

253

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation $\sigma_w = 0.690$.

Coefficient	$\rho = A + BT$
<i>A</i>	1101.03
<i>B</i>	-0.830

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	0.07	1914-pic/ken-1
329.15	828.7 ± 1.0	0.87	1914-pic/ken-1
368.15	795.6 ± 1.0	0.14	1914-pic/ken-1
398.15	769.5 ± 1.0	-1.06	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	868.6 ± 1.7	320.00	835.4 ± 1.2	370.00	793.9 ± 1.2
290.00	860.3 ± 1.6	330.00	827.1 ± 1.2	380.00	785.6 ± 1.3
293.15	857.7 ± 1.5	340.00	818.8 ± 1.1	390.00	777.3 ± 1.4
298.15	853.6 ± 1.5	350.00	810.5 ± 1.1	400.00	769.0 ± 1.6
310.00	843.7 ± 1.3	360.00	802.2 ± 1.2		

1-Methylpropyl nonanoate [55195-29-4] C₁₃H₂₆O₂ MW = 214.35 254

Table 1. Fit with estimated *B* coefficient for 3 accepted points. Deviation σ_w = 0.204.

Coefficient	$\rho = A + BT$
<i>A</i>	1101.19
<i>B</i>	-0.820

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.
288.15	864.9 ± 1.0	-0.01	1914-pic/ken-1
326.15	833.5 ± 1.0	-0.25	1914-pic/ken-1
366.15	801.2 ± 1.0	0.25	1914-pic/ken-1
406.15	764.2 ± 2.0	-3.95	1914-pic/ken-1 ¹⁾

¹⁾ 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	871.6 ± 1.2	310.00	847.0 ± 0.8	350.00	814.2 ± 0.8
290.00	863.4 ± 1.0	320.00	838.8 ± 0.7	360.00	806.0 ± 1.0
293.15	860.8 ± 1.0	330.00	830.6 ± 0.7	370.00	797.8 ± 1.1
298.15	856.7 ± 0.9	340.00	822.4 ± 0.7		

Nonyl butanoate [2639-64-7] C₁₃H₂₆O₂ MW = 214.35 255

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.
288.65	859.2 ± 2.0	1952-mor

Octyl pentanoate

[5451-85-4]

C₁₃H₂₆O₂

MW = 214.35

256

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{c,w} = 9.8714 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 3.7439 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

Coefficient	T = 273.15 to 484.35 K $\rho = A + BT + CT^2 + DT^3 + \dots$
A	$1.06639 \cdot 10^3$
B	$-6.48406 \cdot 10^{-1}$
C	$-1.63224 \cdot 10^{-4}$

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

$\frac{T}{K}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref. (Symbol in Fig. 1)	$\frac{T}{K}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref. (Symbol in Fig. 1)
273.15	878.30 ± 0.60	1.20	1886-gar(□)	428.25	757.90 ± 1.00	-0.87	1886-gar(□)
337.85	829.80 ± 0.80	1.10	1886-gar(□)	457.35	733.00 ± 1.00	-2.70	1886-gar(□)
351.25	819.50 ± 0.80	1.00	1886-gar(□)	484.35	715.60 ± 1.00	1.56	1886-gar(□)
370.35	804.50 ± 0.80	0.64	1886-gar(□)	273.15	877.09 ± 0.50	-0.01	1935-bil/gis(○)
383.25	794.30 ± 1.00	0.39	1886-gar(□)	288.15	865.38 ± 0.50	-0.62	1935-bil/gis(○)
402.15	778.80 ± 1.00	-0.44	1886-gar(□)	303.15	853.58 ± 0.50	-1.25	1935-bil/gis(○)

¹⁾ Not included in Fig. 1.

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

$\frac{T}{K}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{K}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{K}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$
270.00	879.42 ± 0.68	340.00	827.06 ± 0.80	430.00	757.40 ± 1.02
280.00	872.04 ± 0.68	350.00	819.45 ± 0.81	440.00	749.49 ± 1.09
290.00	864.62 ± 0.70	360.00	811.81 ± 0.82	450.00	741.55 ± 1.18
293.15	862.28 ± 0.70	370.00	804.13 ± 0.83	460.00	733.58 ± 1.30
298.15	858.56 ± 0.71	380.00	796.43 ± 0.85	470.00	725.58 ± 1.43
300.00	857.18 ± 0.72	390.00	788.69 ± 0.86	480.00	717.55 ± 1.60
310.00	849.70 ± 0.74	400.00	780.91 ± 0.89	490.00	709.48 ± 1.78
320.00	842.19 ± 0.76	410.00	773.11 ± 0.92		
330.00	834.64 ± 0.78	420.00	765.27 ± 0.96		

cont.

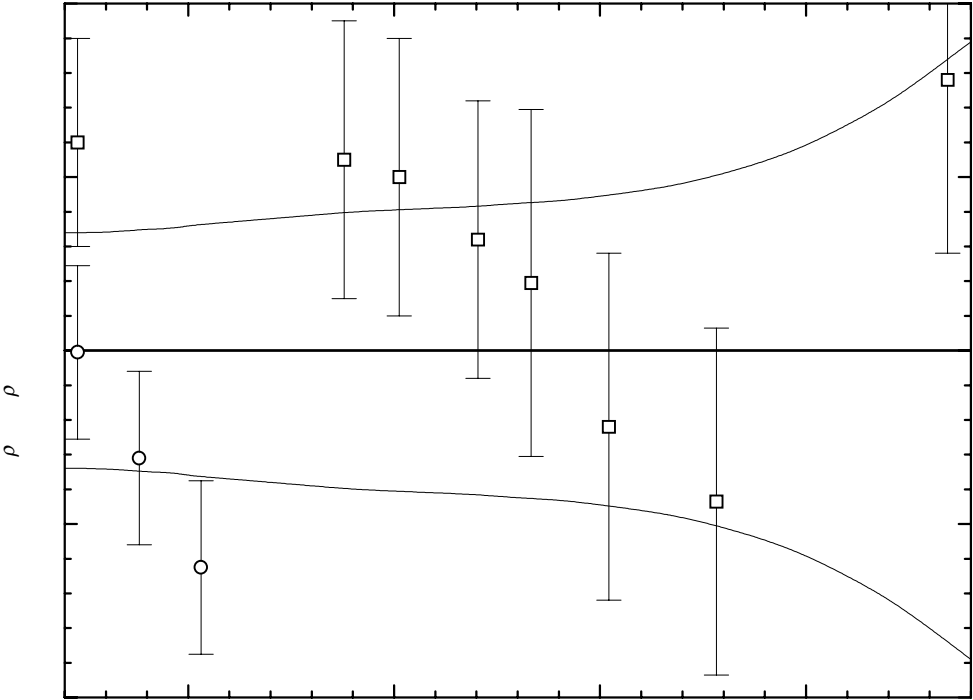


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the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

Pentyl octanoate [638-25-5] C₁₃H₂₆O₂ MW = 214.35 257

Table 1. Fit with estimated *B* coefficient for 5 accepted points. Deviation $\sigma_w = 0.340$.

Coefficient	$\rho = A + BT$
<i>A</i>	1095.64
<i>B</i>	-0.800

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

T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ kg · m ⁻³	$\rho_{\text{exp}} - \rho_{\text{calc}}$ kg · m ⁻³	Ref.
273.15	877.1 ± 0.5	0.01	1935-bil/gis
288.15	865.2 ± 0.5	0.10	1935-bil/gis
303.15	853.4 ± 0.5	0.30	1935-bil/gis
273.15	877.0 ± 0.8	-0.12	1943-hob/par
298.15	856.2 ± 0.8	-0.92	1943-hob/par

cont.

Pentyl octanoate (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	879.6 ± 1.0
280.00	871.6 ± 0.7
290.00	863.6 ± 0.7
293.15	861.1 ± 0.7
298.15	857.1 ± 0.8
310.00	847.6 ± 1.1

Propyl decanoate

[30673-60-0]

C₁₃H₂₆O₂

MW = 214.35

258

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{\text{c,w}} = 3.1678 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{\text{c,uw}} = 1.1013 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

Coefficient	$T = 289.65 \text{ to } 372.05 \text{ K}$ $\rho = A + BT + CT^2 + DT^3 + \dots$
A	$1.01718 \cdot 10^3$
B	$-3.11761 \cdot 10^{-1}$
C	$-7.39605 \cdot 10^{-4}$

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)
293.15	862.00 ± 0.60	-0.23	1948-bon/alt(○)	293.25	862.20 ± 0.60	0.05	1948-vog-9(□)
310.95	847.90 ± 0.60	-0.82	1948-bon/alt(○)	313.85	846.60 ± 0.60	0.12	1948-vog-9(□)
333.15	831.00 ± 0.60	-0.23	1948-bon/alt(○)	314.65	846.00 ± 0.60	0.14	1948-vog-9(□)
372.05	798.70 ± 0.60	-0.11	1948-bon/alt(○)	333.95	831.00 ± 0.80	0.42	1948-vog-9(□)
289.65	865.00 ± 0.60	0.18	1948-vog-9(□)	334.55	830.50 ± 0.80	0.40	1948-vog-9(□)
293.15	862.30 ± 0.60	0.07	1948-vog-9(□)	360.15	810.50 ± 0.80	1.54	1948-vog-9 ¹⁾

¹⁾ Not included in Fig. 1.

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

$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$
280.00	871.90 ± 0.92	310.00	849.46 ± 0.61	360.00	809.09 ± 0.95
290.00	864.57 ± 0.73	320.00	841.68 ± 0.63	370.00	800.57 ± 1.15
293.15	862.23 ± 0.69	330.00	833.75 ± 0.67	380.00	791.91 ± 1.42
298.15	858.48 ± 0.65	340.00	825.68 ± 0.73		
300.00	857.08 ± 0.64	350.00	817.46 ± 0.82		

cont.

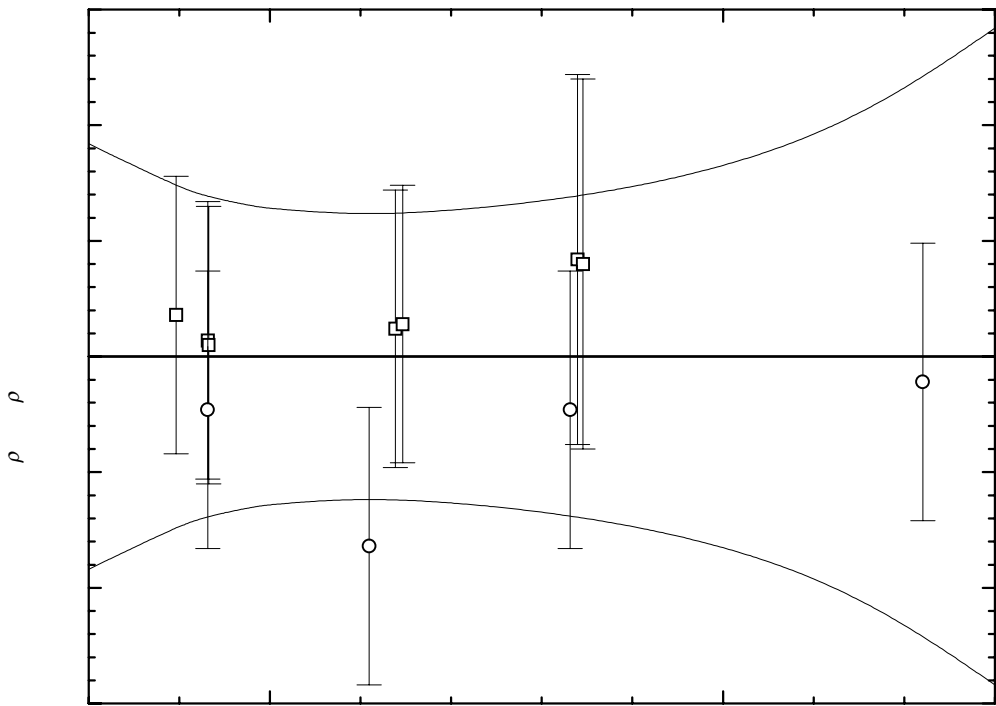


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the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

Butyl decanoate [30673-36-0] C₁₄H₂₈O₂ MW = 228.38 259

Table 1. Fit with estimated *B* coefficient for 9 accepted points. Deviation $\sigma_w = 0.719$.

Coefficient	$\rho = A + BT$
<i>A</i>	1090.82
<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.	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
292.15	862.1 ± 0.6	-0.84	1948-vog-9	334.65	830.6 ± 0.8	0.81	1948-vog-9
293.15	861.4 ± 0.6	-0.76	1948-vog-9	334.75	830.7 ± 0.8	0.98	1948-vog-9
298.35	857.5 ± 0.6	-0.61	1948-vog-9	359.75	811.2 ± 0.8	0.98	1948-vog-9
314.65	845.4 ± 0.6	0.01	1948-vog-9	360.35	810.8 ± 0.8	1.05	1948-vog-9
314.85	845.3 ± 0.6	0.06	1948-vog-9				

cont.

Butyl decanoate (cont.)

Table 3. Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	864.6 ± 1.1	320.00	841.2 ± 0.9	350.00	817.8 ± 1.2
293.15	862.2 ± 1.1	330.00	833.4 ± 1.0	360.00	810.0 ± 1.3
298.15	858.3 ± 1.0	340.00	825.6 ± 1.1	370.00	802.2 ± 1.4
310.00	849.0 ± 1.0				

Decyl butanoate

[5454-09-1]

C₁₄H₂₈O₂

MW = 228.38

260

Table 1. Experimental and recommended 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	861.7 ± 0.6	1927-tal
293.15	861.7 ± 0.6	1932-kom/tal
288.65	886.2 ± 2.0	1952-mor ¹⁾
293.15	862.5 ± 0.6	1971-che/shv
293.15	862.0 ± 0.7	Recommended

¹⁾Not included in calculation of recommended value.

Dodecyl ethanoate

[112-66-3]

C₁₄H₂₈O₂

MW = 228.38

261

Table 1. Experimental and recommended values with uncertainties.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
294.75	865.2 ± 1.0	1944-sto/rou
303.15	879.0 ± 3.0	1944-sto/rou ¹⁾
308.15	852.0 ± 3.0	1955-shi/bon ¹⁾
368.15	805.7 ± 3.0	1955-shi/bon ¹⁾
293.15	863.6 ± 1.0	1964-bre/ulu
293.15	864.4 ± 1.1	Recommended

¹⁾Not included in calculation of recommended value.

Ethyl dodecanoate

[106-33-2]

C₁₄H₂₈O₂

MW = 228.38

262

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{\text{c,w}} = 6.8707 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{\text{c,uw}} = 1.6037 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

Coefficient	T = 285.15 to 368.10 K $\rho = A + BT + CT^2 + DT^3 + \dots$
A	$1.03506 \cdot 10^3$
B	$-4.47259 \cdot 10^{-1}$
C	$-4.87260 \cdot 10^{-4}$

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. (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)
285.15	867.90 ± 0.60	-0.01	1893-eyk-1(O)	359.15	813.00 ± 0.80	1.42	1948-vog-9(◆)
286.05	867.50 ± 1.00	0.24	1895-eyk(X)	361.35	811.40 ± 0.80	1.58	1948-vog-9(◆)
407.35	772.80 ± 1.00	0.78	1895-eyk ¹⁾	293.15	862.80 ± 1.00	0.72	1950-mum/phi(X)
292.05	862.10 ± 1.00	-0.78	1919-eyk(X)	298.15	859.10 ± 1.00	0.70	1950-mum/phi(X)
352.65	816.60 ± 2.00	-0.14	1919-eyk(X)	298.15	859.40 ± 1.00	1.00	1951-str/boy(X)
293.15	861.50 ± 0.60	-0.58	1931-sob/kah(∇)	348.15	819.50 ± 1.00	-0.79	1952-gro/feu(X)
288.15	866.00 ± 1.00	0.27	1936-pal/sab(X)	308.10	850.60 ± 0.60	-0.41	1955-shi/bon(Δ)
290.25	863.80 ± 0.60	-0.40	1948-vog-9(◆)	323.10	838.90 ± 0.60	-0.79	1955-shi/bon(Δ)
293.15	861.80 ± 0.60	-0.28	1948-vog-9(◆)	338.10	827.10 ± 0.60	-1.05	1955-shi/bon(Δ)
312.95	847.70 ± 0.60	0.33	1948-vog-9(◆)	353.10	815.30 ± 0.60	-1.09	1955-shi/bon(Δ)
315.05	846.20 ± 0.60	0.41	1948-vog-9(◆)	368.10	803.50 ± 0.60	-0.91	1955-shi/bon(Δ)
333.25	832.40 ± 0.80	0.50	1948-vog-9(◆)	293.15	861.50 ± 0.50	-0.58	1970-ere(□)
335.85	830.50 ± 0.80	0.61	1948-vog-9(◆)				

¹⁾ Not included in Fig. 1.

Further references: [1854-del].

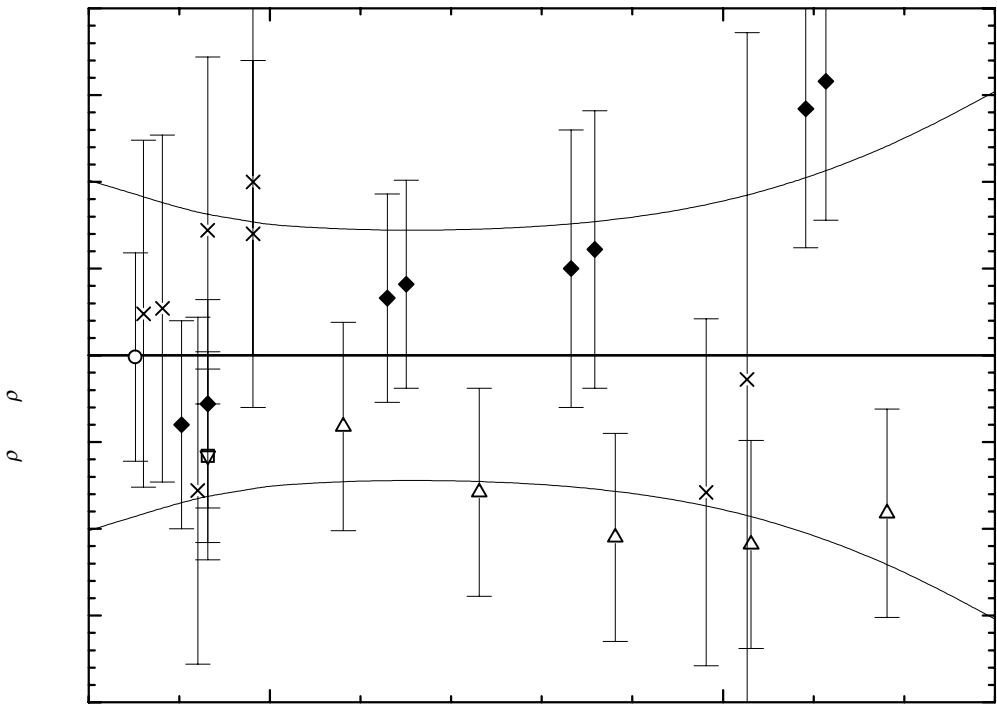


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the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

cont.

Ethyl dodecanoate (cont.)

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

$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$
280.00	871.63 ± 1.01	310.00	849.59 ± 0.72	360.00	810.90 ± 1.03
290.00	864.38 ± 0.85	320.00	842.05 ± 0.72	370.00	802.87 ± 1.24
293.15	862.08 ± 0.81	330.00	834.41 ± 0.74	380.00	794.74 ± 1.52
298.15	858.40 ± 0.77	340.00	826.67 ± 0.79		
300.00	857.03 ± 0.75	350.00	818.83 ± 0.88		

Ethyl 3-methylundecanoate

[86051-39-0]

C₁₄H₂₈O₂

MW = 228.38

263

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation $\sigma_w = 0.160$.

Coefficient	$\rho = A + BT$
<i>A</i>	1080.49
<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.
293.15	860.5 ± 1.0	-0.12	1948-pro/cas
298.15	857.1 ± 1.0	0.23	1948-pro/cas
303.15	853.2 ± 1.0	0.08	1948-pro/cas
308.15	849.2 ± 1.0	-0.17	1948-pro/cas

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	863.0 ± 1.0
293.15	860.6 ± 1.0
298.15	856.9 ± 0.9
310.00	848.0 ± 1.0

2-Ethylbutyl 2-ethylhexanoate

[500019-51-2]

C₁₄H₂₈O₂

MW = 228.38

264

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.
293.15	858.8 ± 1.0	1968-ano

Heptyl heptanoate

[624-09-9]

C₁₄H₂₈O₂

MW = 228.38

265

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{c,w} = 4.9591 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 1.9040 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

Coefficient	T = 273.15 to 484.05 K $\rho = A + BT + CT^2 + DT^3 + \dots$
A	$1.04612 \cdot 10^3$
B	$-5.37431 \cdot 10^{-1}$
C	$-3.20885 \cdot 10^{-4}$

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

$\frac{T}{K}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref. (Symbol in Fig. 1)	$\frac{T}{K}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref. (Symbol in Fig. 1)
288.15	864.43 ± 1.00	-0.18	1884-per(◆)	457.05	733.60 ± 1.00	0.15	1886-gar(Δ)
298.15	856.78 ± 1.00	-0.58	1884-per(◆)	484.05	710.50 ± 1.00	-0.29	1886-gar(Δ)
273.15	876.00 ± 0.60	0.62	1886-gar(Δ)	289.15	861.70 ± 2.00	-2.19	1919-eyk(×)
303.15	854.00 ± 0.60	0.29	1886-gar(Δ)	273.15	875.63 ± 0.50	0.25	1935-bil/gis(□)
338.55	828.10 ± 0.80	0.71	1886-gar(Δ)	288.15	864.17 ± 0.50	-0.44	1935-bil/gis(□)
370.05	803.80 ± 0.80	0.50	1886-gar(Δ)	303.15	852.74 ± 0.50	-0.97	1935-bil/gis(□)
383.05	793.20 ± 1.00	0.03	1886-gar(Δ)	288.15	865.70 ± 1.00	1.09	1937-rog/dvo(∇)
402.45	778.10 ± 1.00	0.24	1886-gar(Δ)	293.15	861.40 ± 0.50	0.41	1970-bol/orl(○)
427.75	757.90 ± 1.00	0.38	1886-gar(Δ)				

¹⁾ Not included in Fig. 1.

Further references: [1877-cro, 1877-cro-1, 1911-eis].

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

$\frac{T}{K}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{K}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{K}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$
270.00	877.62 ± 0.90	340.00	826.30 ± 0.92	430.00	755.69 ± 0.97
280.00	870.48 ± 0.90	350.00	818.71 ± 0.92	440.00	747.53 ± 1.04
290.00	863.28 ± 0.89	360.00	811.06 ± 0.91	450.00	739.30 ± 1.13
293.15	860.99 ± 0.89	370.00	803.34 ± 0.90	460.00	731.00 ± 1.26
298.15	857.36 ± 0.89	380.00	795.56 ± 0.89	470.00	722.64 ± 1.41
300.00	856.01 ± 0.89	390.00	787.71 ± 0.88	480.00	714.22 ± 1.60
310.00	848.68 ± 0.90	400.00	779.80 ± 0.89	490.00	705.73 ± 1.83
320.00	841.28 ± 0.92	410.00	771.83 ± 0.90		
330.00	833.82 ± 0.92	420.00	763.79 ± 0.92		

cont.

Heptyl heptanoate (cont.)

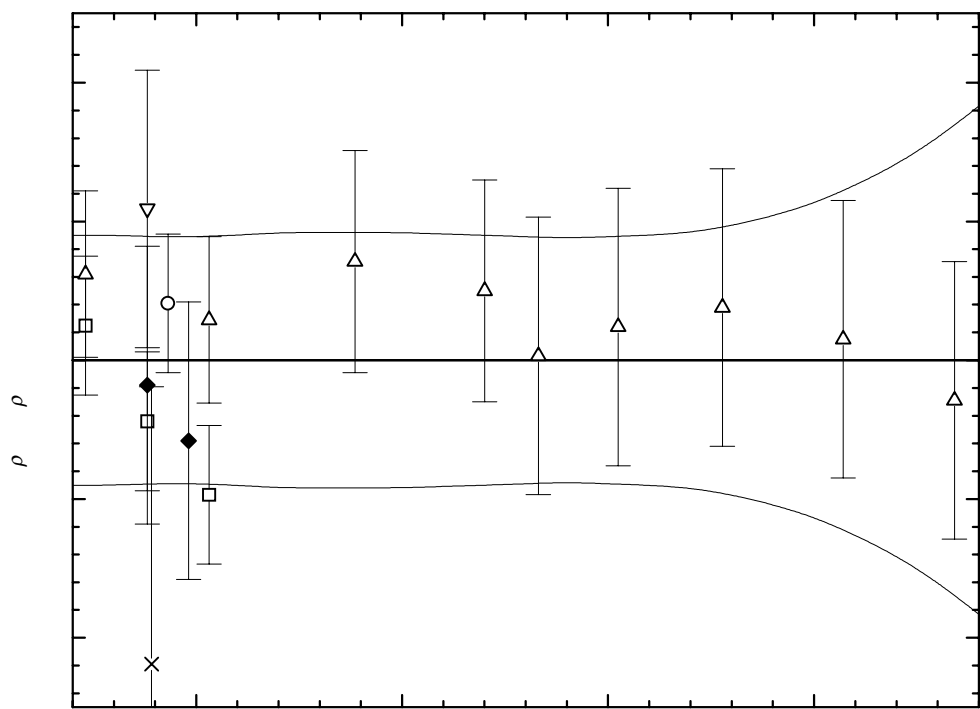


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the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

Hexyl octanoate

[1117-55-1]

C₁₄H₂₈O₂

MW = 228.38

266

Table 1. Fit with estimated *B* coefficient for 2 accepted points. Deviation $\sigma_w = 0.130$.

Coefficient	$\rho = A + BT$
<i>A</i>	1089.01
<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.
288.15	864.1 ± 0.5	-0.13	1935-bil/gis
303.15	852.7 ± 0.5	0.13	1935-bil/gis

cont.

Table 3. Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
280.00	870.6 ± 0.8
290.00	862.8 ± 0.5
293.15	860.4 ± 0.5
298.15	856.5 ± 0.5
310.00	847.2 ± 0.7

Methyl tridecanoate

[1731-88-0]

C₁₄H₂₈O₂

MW = 228.38

267

Table 1. Fit with estimated *B* coefficient for 3 accepted points. Deviation $\sigma_{\text{w}} = 0.794$.

Coefficient	$\rho = A + BT$
<i>A</i>	1126.71
<i>B</i>	-0.880

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	868.1 ± 0.5	-0.64	1964-gou/vlu
313.15	852.4 ± 0.5	1.26	1964-gou/vlu
298.15	863.9 ± 0.4	-0.40	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	871.5 ± 1.0
293.15	868.7 ± 1.0
298.15	864.3 ± 0.9
310.00	853.9 ± 1.0
320.00	845.1 ± 1.2

1-Methyldecyl propanoate

[500003-47-4]

C₁₄H₂₈O₂

MW = 228.38

268

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation $\sigma_{\text{w}} = 0.701$.

Coefficient	$\rho = A + BT$
<i>A</i>	1097.91
<i>B</i>	-0.820

cont.

1-Methyldecyl propanoate (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.
291.15	858.0 ± 1.0	-1.16	1914-pic/ken-1
329.15	828.7 ± 1.0	0.70	1914-pic/ken-1
365.15	798.8 ± 1.0	0.31	1914-pic/ken-1
397.15	772.4 ± 1.0	0.16	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	860.1 ± 1.6	330.00	827.3 ± 1.2	370.00	794.5 ± 1.2
293.15	857.5 ± 1.5	340.00	819.1 ± 1.1	380.00	786.3 ± 1.3
298.15	853.4 ± 1.5	350.00	810.9 ± 1.1	390.00	778.1 ± 1.4
310.00	843.7 ± 1.3	360.00	802.7 ± 1.2	400.00	769.9 ± 1.6
320.00	835.5 ± 1.2				

1-Methylheptyl hexanoate

[29803-24-5]

C₁₄H₂₈O₂

MW = 228.38

269

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation σ_w = 0.810.

Coefficient	$\rho = A + BT$
<i>A</i>	1091.52
<i>B</i>	-0.810

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	859.8 ± 1.0	-0.75	1914-pic/ken-1
325.15	828.8 ± 1.0	0.65	1914-pic/ken-1
355.15	804.8 ± 1.0	0.95	1914-pic/ken-1
404.15	763.3 ± 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	864.7 ± 1.7	320.00	832.3 ± 1.3	370.00	791.8 ± 1.3
290.00	856.6 ± 1.6	330.00	824.2 ± 1.2	380.00	783.7 ± 1.4
293.15	854.1 ± 1.6	340.00	816.1 ± 1.2	390.00	775.6 ± 1.5
298.15	850.0 ± 1.5	350.00	808.0 ± 1.2	400.00	767.5 ± 1.7
310.00	840.4 ± 1.4	360.00	799.9 ± 1.3	410.00	759.4 ± 1.8

2-Methylheptyl 3,3-dimethylbutanoate **[500019-53-4]** **C₁₄H₂₈O₂** **MW = 228.38** **270**

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.
293.15	848.0 ± 1.0	1957-tra/bat

1-Methylhexyl heptanoate **[55193-22-1]** **C₁₄H₂₈O₂** **MW = 228.38** **271**

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation $\sigma_{\text{w}} = 0.728$.

Coefficient	$\rho = A + BT$
<i>A</i>	1095.89
<i>B</i>	-0.822

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.
288.65	857.9 ± 1.0	-0.72	1914-pic/ken-1
329.15	826.2 ± 1.0	0.87	1914-pic/ken-1
365.15	796.3 ± 1.0	0.57	1914-pic/ken-1
411.15	757.2 ± 1.0	-0.72	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	865.7 ± 1.8	330.00	824.6 ± 1.2	380.00	783.5 ± 1.3
290.00	857.5 ± 1.6	340.00	816.4 ± 1.2	390.00	775.3 ± 1.4
293.15	854.9 ± 1.6	350.00	808.2 ± 1.2	400.00	767.1 ± 1.5
298.15	850.8 ± 1.5	360.00	800.0 ± 1.2	410.00	758.9 ± 1.7
310.00	841.1 ± 1.4	370.00	791.7 ± 1.2	420.00	750.6 ± 1.8
320.00	832.8 ± 1.3				

Octyl hexanoate **[4887-30-3]** **C₁₄H₂₈O₂** **MW = 228.38** **272**

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{\text{c,w}} = 3.6859 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{\text{c,uw}} = 1.0827 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

Coefficient	T = 273.15 to 502.95 K $\rho = A + BT + CT^2 + DT^3 + \dots$
<i>A</i>	1.05900 · 10 ³
<i>B</i>	-6.13226 · 10 ⁻¹
<i>C</i>	-2.19255 · 10 ⁻⁴

cont.

Octyl hexanoate (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. (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)
273.15	874.70 ± 0.60	-0.43	1886-gar(□)	466.25	725.70 ± 1.00	0.28	1886-gar(□)
301.25	854.00 ± 0.60	-0.36	1886-gar(□)	484.35	710.30 ± 1.00	-0.24	1886-gar(□)
338.15	826.40 ± 0.80	-0.16	1886-gar(□)	502.95	694.60 ± 1.00	-0.51	1886-gar(□)
370.25	802.00 ± 0.80	0.11	1886-gar(□)	273.15	875.80 ± 0.50	0.67	1935-bil/gis(○)
403.05	776.60 ± 1.00	0.38	1886-gar(□)	288.15	864.16 ± 0.50	0.07	1935-bil/gis(○)
428.55	756.30 ± 1.00	0.37	1886-gar(□)	303.15	852.57 ± 0.50	-0.38	1935-bil/gis(○)
457.45	732.80 ± 1.00	0.21	1886-gar(□)				

¹⁾ Not included in Fig. 1.

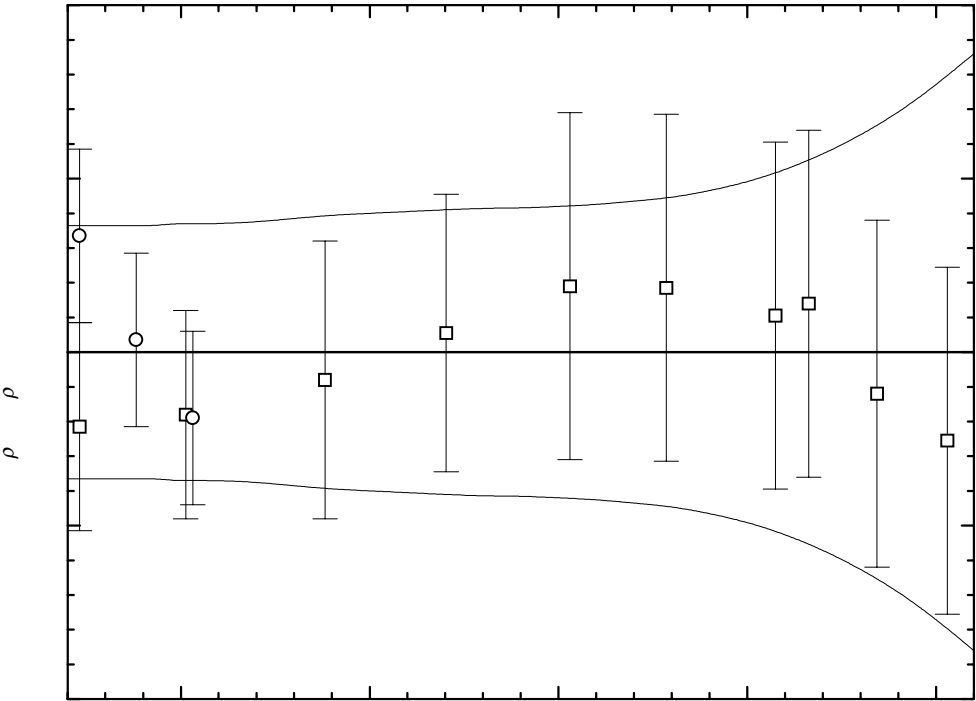


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the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

cont.

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	877.44 ± 0.73	340.00	825.15 ± 0.79	430.00	754.77 ± 0.89
280.00	870.10 ± 0.73	350.00	817.51 ± 0.80	440.00	746.73 ± 0.93
290.00	862.72 ± 0.73	360.00	809.82 ± 0.81	450.00	738.64 ± 0.98
293.15	860.39 ± 0.73	370.00	802.09 ± 0.82	460.00	730.52 ± 1.05
298.15	856.67 ± 0.74	380.00	794.31 ± 0.83	470.00	722.35 ± 1.14
300.00	855.29 ± 0.74	390.00	786.49 ± 0.83	480.00	714.13 ± 1.25
310.00	847.82 ± 0.74	400.00	778.62 ± 0.84	490.00	705.87 ± 1.38
320.00	840.31 ± 0.75	410.00	770.72 ± 0.85	500.00	697.57 ± 1.54
330.00	832.75 ± 0.77	420.00	762.76 ± 0.87	510.00	689.22 ± 1.72

Pentyl nonanoate [61531-45-1] C₁₄H₂₈O₂ MW = 228.38 273

Table 1. Fit with estimated *B* coefficient for 2 accepted points. Deviation σ_w = 0.000.

Coefficient	$\rho = A + BT$
<i>A</i>	1083.16
<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.
273.15	870.1 ± 0.7	0.00	1943-hob/par
298.15	850.6 ± 0.7	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	872.6 ± 0.9
280.00	864.8 ± 0.7
290.00	857.0 ± 0.6
293.15	854.5 ± 0.7
298.15	850.6 ± 0.8

Decyl pentanoate [5454-12-6] C₁₅H₃₀O₂ MW = 242.4 274

Table 1. Fit with estimated *B* coefficient for 2 accepted points. Deviation σ_w = 0.550.

Coefficient	$\rho = A + BT$
<i>A</i>	1130.75
<i>B</i>	-0.920

cont.

Decyl pentanoate (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	861.6 ± 1.0	0.55	1955-hob/had
298.15	855.9 ± 1.0	-0.55	1955-hob/had

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	863.9 ± 1.2
293.15	861.1 ± 1.1
298.15	856.5 ± 1.1

Ethyl 2-butylnonanoate

[500022-42-4]

C₁₅H₃₀O₂

MW = 242.4

275

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.
293.15	856.0 ± 1.0	1922-lev/tay-1

Ethyl 2-methyldodecanoate

[500022-89-9]

C₁₅H₃₀O₂

MW = 242.4

276

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	854.0 ± 1.0	1929-lev/mik

Heptyl octanoate

[4265-97-8]

C₁₅H₃₀O₂

MW = 242.4

277

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{\text{c,w}}$ = 6.6263 · 10⁻¹ (combined temperature ranges, weighted), $\sigma_{\text{c,uw}}$ = 1.8930 · 10⁻¹ (combined temperature ranges, unweighted).

Coefficient	T = 273.15 to 527.25 K $\rho = A + BT + CT^2 + DT^3 + \dots$
A	1.04036 · 10 ³
B	-5.22684 · 10 ⁻¹
C	-3.11392 · 10 ⁻⁴

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. (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)
273.15	875.30 ± 0.60	0.95	1886-gar(□)	484.15	714.20 ± 1.00	-0.11	1886-gar(□)
302.75	854.00 ± 0.60	0.43	1886-gar(□)	502.55	698.40 ± 1.50	-0.64	1886-gar(□)
337.65	828.60 ± 0.80	0.23	1886-gar(□)	527.25	677.30 ± 1.50	-0.91	1886-gar(□)
370.15	804.50 ± 0.80	0.28	1886-gar(□)	273.15	874.70 ± 0.50	0.35	1935-bil/gis(○)
402.35	780.10 ± 1.00	0.46	1886-gar(□)	288.15	863.33 ± 0.50	-0.56	1935-bil/gis(○)
428.05	760.20 ± 1.00	0.63	1886-gar(□)	303.15	852.02 ± 0.50	-1.27	1935-bil/gis(○)
457.25	736.40 ± 1.00	0.15	1886-gar(□)				

¹⁾ Not included in Fig. 1.

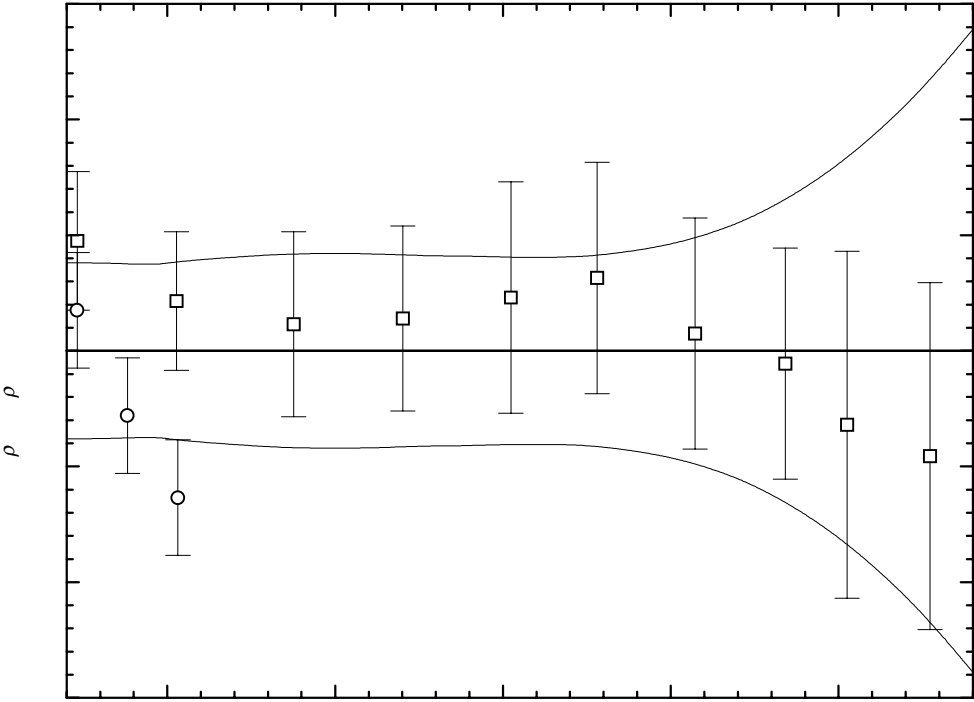


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the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

cont.

Heptyl octanoate (cont.)

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

$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$
270.00	876.53 ± 0.76	350.00	819.27 ± 0.84	450.00	742.09 ± 0.92
280.00	869.59 ± 0.76	360.00	811.83 ± 0.84	460.00	734.03 ± 1.00
290.00	862.59 ± 0.75	370.00	804.33 ± 0.83	470.00	725.91 ± 1.10
293.15	860.37 ± 0.75	380.00	796.77 ± 0.82	480.00	717.72 ± 1.24
298.15	856.84 ± 0.75	390.00	789.15 ± 0.82	490.00	709.48 ± 1.41
300.00	855.52 ± 0.76	400.00	781.46 ± 0.81	500.00	701.17 ± 1.61
310.00	848.40 ± 0.79	410.00	773.71 ± 0.81	510.00	692.79 ± 1.85
320.00	841.21 ± 0.81	420.00	765.90 ± 0.81	520.00	684.36 ± 2.12
330.00	833.96 ± 0.83	430.00	758.02 ± 0.83	530.00	675.86 ± 2.43
340.00	826.65 ± 0.84	440.00	750.09 ± 0.87	540.00	667.30 ± 2.78

Methyl tetradecanoate

[124-10-7]

C₁₅H₃₀O₂

MW = 242.4

278

Table 1. Fit with estimated *B* coefficient for 13 accepted points. Deviation $\sigma_w = 0.384$.

Coefficient	$\rho = A + BT$
<i>A</i>	1095.92
<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.	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
293.15	874.1 ± 3.0	6.84	1935-dra/spi ¹⁾	313.15	851.7 ± 0.5	0.04	1964-gou/vlu
293.15	867.1 ± 1.0	-0.16	1948-bon/alt	298.15	863.3 ± 0.4	-0.10	1990-ort
310.95	853.4 ± 1.0	0.02	1948-bon/alt	298.15	862.9 ± 0.5	-0.43	1995-pos/gar
372.05	806.8 ± 1.0	1.08	1948-bon/alt	293.15	867.1 ± 1.0	-0.16	1948-bon/alt
333.15	836.1 ± 1.0	0.04	1948-bon/alt	310.95	853.4 ± 1.0	0.02	1948-bon/alt
348.15	825.2 ± 1.0	0.84	1952-gro/feu	333.15	836.1 ± 1.0	0.04	1948-bon/alt
293.15	867.1 ± 0.5	-0.16	1964-gou/vlu	372.05	806.8 ± 1.0	1.08	1948-bon/alt

¹⁾ 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	869.7 ± 0.9	320.00	846.3 ± 0.8	360.00	815.1 ± 1.3
293.15	867.3 ± 0.9	330.00	838.5 ± 0.9	370.00	807.3 ± 1.4
298.15	863.4 ± 0.8	340.00	830.7 ± 1.0	380.00	799.5 ± 1.6
310.00	854.1 ± 0.8	350.00	822.9 ± 1.1		

1-Methyldecyl butanoate

[55193-05-0]

C₁₅H₃₀O₂

MW = 242.4

279

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation $\sigma_w = 0.406$.

Coefficient	$\rho = A + BT$
<i>A</i>	1090.82
<i>B</i>	-0.800

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.
290.15	858.5 ± 1.0	-0.20	1914-pic/ken-1
330.15	827.4 ± 1.0	0.70	1914-pic/ken-1
363.15	800.1 ± 1.0	-0.20	1914-pic/ken-1
397.15	772.8 ± 1.0	-0.30	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	858.8 ± 1.5	330.00	826.8 ± 1.0	370.00	794.8 ± 1.1
293.15	856.3 ± 1.4	340.00	818.8 ± 1.0	380.00	786.8 ± 1.2
298.15	852.3 ± 1.4	350.00	810.8 ± 1.0	390.00	778.8 ± 1.3
310.00	842.8 ± 1.2	360.00	802.8 ± 1.0	400.00	770.8 ± 1.5
320.00	834.8 ± 1.1				

1-Methyldodecyl ethanoate

[500003-49-6]

C₁₅H₃₀O₂

MW = 242.4

280

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation $\sigma_w = 0.324$.

Coefficient	$\rho = A + BT$
<i>A</i>	1092.22
<i>B</i>	-0.800

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.
291.65	858.5 ± 1.0	-0.40	1914-pic/ken-1
332.15	827.0 ± 1.0	0.50	1914-pic/ken-1
357.15	806.4 ± 1.0	-0.10	1914-pic/ken-1
400.15	772.1 ± 1.0	0.00	1914-pic/ken-1

cont.

1-Methyldodecyl ethanoate (cont.)

Table 3. Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	860.2 ± 1.5	330.00	828.2 ± 1.0	380.00	788.2 ± 1.2
293.15	857.7 ± 1.4	340.00	820.2 ± 1.0	390.00	780.2 ± 1.3
298.15	853.7 ± 1.3	350.00	812.2 ± 1.0	400.00	772.2 ± 1.5
310.00	844.2 ± 1.2	360.00	804.2 ± 1.0	410.00	764.2 ± 1.6
320.00	836.2 ± 1.1	370.00	796.2 ± 1.1		

1-Methylethyl dodecanoate [10233-13-3] C₁₅H₃₀O₂ MW = 242.4 281

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation σ_w = 0.178.

Coefficient	$\rho = A + BT$
<i>A</i>	1076.24
<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.
293.15	853.6 ± 1.0	0.15	1948-bon/alt
310.95	839.9 ± 1.0	-0.02	1948-bon/alt
333.15	823.2 ± 1.0	0.15	1948-bon/alt
372.05	793.2 ± 1.0	-0.28	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	855.8 ± 1.2	320.00	833.0 ± 0.9	360.00	802.6 ± 1.1
293.15	853.4 ± 1.1	330.00	825.4 ± 0.9	370.00	795.0 ± 1.2
298.15	849.6 ± 1.1	340.00	817.8 ± 0.9	380.00	787.4 ± 1.4
310.00	840.6 ± 1.0	350.00	810.2 ± 1.0		

1-Methylheptyl heptanoate [55193-23-2] C₁₅H₃₀O₂ MW = 242.4 282

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation σ_w = 0.785.

Coefficient	$\rho = A + BT$
<i>A</i>	1091.55
<i>B</i>	-0.809

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.
286.15	859.3 ± 1.0	-0.75	1914-pic/ken-1
320.15	833.2 ± 1.0	0.65	1914-pic/ken-1
359.15	801.9 ± 1.0	0.91	1914-pic/ken-1
402.15	765.4 ± 1.0	-0.81	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	865.0 ± 1.7	320.00	832.7 ± 1.3	370.00	792.2 ± 1.3
290.00	856.9 ± 1.6	330.00	824.6 ± 1.2	380.00	784.1 ± 1.4
293.15	854.4 ± 1.5	340.00	816.5 ± 1.2	390.00	776.0 ± 1.5
298.15	850.3 ± 1.5	350.00	808.4 ± 1.2	400.00	767.9 ± 1.7
310.00	840.8 ± 1.4	360.00	800.3 ± 1.2	410.00	759.9 ± 1.8

1-Methylhexyl octanoate [55193-32-3] C₁₅H₃₀O₂ MW = 242.4 283

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation $\sigma_w = 0.768$.

Coefficient	$\rho = A + BT$
<i>A</i>	1085.41
<i>B</i>	-0.790

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.
290.15	856.0 ± 1.0	-0.20	1914-pic/ken-1
332.15	823.7 ± 1.0	0.68	1914-pic/ken-1
362.15	800.0 ± 1.0	0.68	1914-pic/ken-1
418.15	753.9 ± 1.0	-1.18	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	856.3 ± 1.7	330.00	824.7 ± 1.2	380.00	785.2 ± 1.3
293.15	853.8 ± 1.6	340.00	816.8 ± 1.2	390.00	777.3 ± 1.4
298.15	849.9 ± 1.6	350.00	808.9 ± 1.2	400.00	769.4 ± 1.5
310.00	840.5 ± 1.4	360.00	801.0 ± 1.2	410.00	761.5 ± 1.7
320.00	832.6 ± 1.3	370.00	793.1 ± 1.2	420.00	753.6 ± 1.8

1-Methylpentyl nonanoate

[55193-80-1]

C₁₅H₃₀O₂

MW = 242.4

284

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation $\sigma_w = 1.122$.

Coefficient	$\rho = A + BT$
<i>A</i>	1093.80
<i>B</i>	-0.804

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.
294.15	856.2 ± 1.0	-1.10	1914-pic/ken-1
327.15	831.6 ± 1.0	0.83	1914-pic/ken-1
363.15	803.2 ± 1.0	1.38	1914-pic/ken-1
391.15	778.2 ± 1.0	-1.11	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	860.6 ± 1.8	330.00	828.5 ± 1.5	370.00	796.3 ± 1.5
293.15	858.1 ± 1.8	340.00	820.4 ± 1.4	380.00	788.3 ± 1.6
298.15	854.1 ± 1.7	350.00	812.4 ± 1.4	390.00	780.2 ± 1.7
310.00	844.6 ± 1.6	360.00	804.4 ± 1.5	400.00	772.2 ± 1.8
320.00	836.5 ± 1.5				

1-Methylpropyl undecanoate

[55195-22-7]

C₁₅H₃₀O₂

MW = 242.4

285

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation $\sigma_w = 0.452$.

Coefficient	$\rho = A + BT$
<i>A</i>	1087.85
<i>B</i>	-0.790

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.
289.65	858.4 ± 1.0	-0.63	1914-pic/ken-1
329.15	828.4 ± 1.0	0.58	1914-pic/ken-1
355.15	807.1 ± 1.0	-0.18	1914-pic/ken-1
403.15	769.6 ± 1.0	0.24	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	866.7 ± 1.6	320.00	835.1 ± 1.1	370.00	795.6 ± 1.1
290.00	858.8 ± 1.5	330.00	827.2 ± 1.0	380.00	787.7 ± 1.2
293.15	856.3 ± 1.4	340.00	819.3 ± 1.0	390.00	779.8 ± 1.4
298.15	852.3 ± 1.4	350.00	811.4 ± 1.0	400.00	771.9 ± 1.5
310.00	843.0 ± 1.2	360.00	803.5 ± 1.1	410.00	764.0 ± 1.7

Nonyl hexanoate [500028-03-5] C₁₅H₃₀O₂ MW = 242.4 286

Table 1. Fit with estimated *B* coefficient for 2 accepted points. Deviation σ_w = 0.125.

Coefficient	$\rho = A + BT$
<i>A</i>	1081.69
<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.
273.15	876.7 ± 0.8	-0.12	1943-hob/par
298.15	858.2 ± 0.8	0.13	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	879.2 ± 1.0
280.00	871.7 ± 0.8
290.00	864.2 ± 0.7
293.15	861.8 ± 0.8
298.15	858.1 ± 0.9

Octyl heptanoate [5132-75-2] C₁₅H₃₀O₂ MW = 242.4 287

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): σ_{c,w} = 7.4051 · 10⁻¹ (combined temperature ranges, weighted), σ_{c,uw} = 2.1631 · 10⁻¹ (combined temperature ranges, unweighted).

Coefficient	T = 273.15 to 527.25 K $\rho = A + BT + CT^2 + DT^3 + \dots$
<i>A</i>	1.04546 · 10 ³
<i>B</i>	-5.49843 · 10 ⁻¹
<i>C</i>	-2.76265 · 10 ⁻⁴

cont.

Octyl heptanoate (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. (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)
273.15	875.70 ± 1.00	1.04	1884-per(○)	457.55	736.20 ± 1.00	0.16	1886-gar(□)
273.15	875.60 ± 0.60	0.94	1886-gar(□)	484.35	714.10 ± 1.00	-0.23	1886-gar(□)
307.85	850.60 ± 0.60	0.59	1886-gar(□)	502.85	698.60 ± 1.50	-0.52	1886-gar(□)
338.05	828.50 ± 0.80	0.49	1886-gar(□)	527.25	677.70 ± 1.50	-1.06	1886-gar(□)
370.25	804.30 ± 0.80	0.29	1886-gar(□)	273.15	874.70 ± 0.50	0.04	1935-bil/gis(Δ)
402.95	779.40 ± 1.00	0.36	1886-gar(□)	288.15	863.39 ± 0.50	-0.69	1935-bil/gis(Δ)
428.55	755.30 ± 1.00	-3.79	1886-gar ¹⁾	303.15	851.98 ± 0.50	-1.41	1935-bil/gis(Δ)

¹⁾ Not included in Fig. 1.

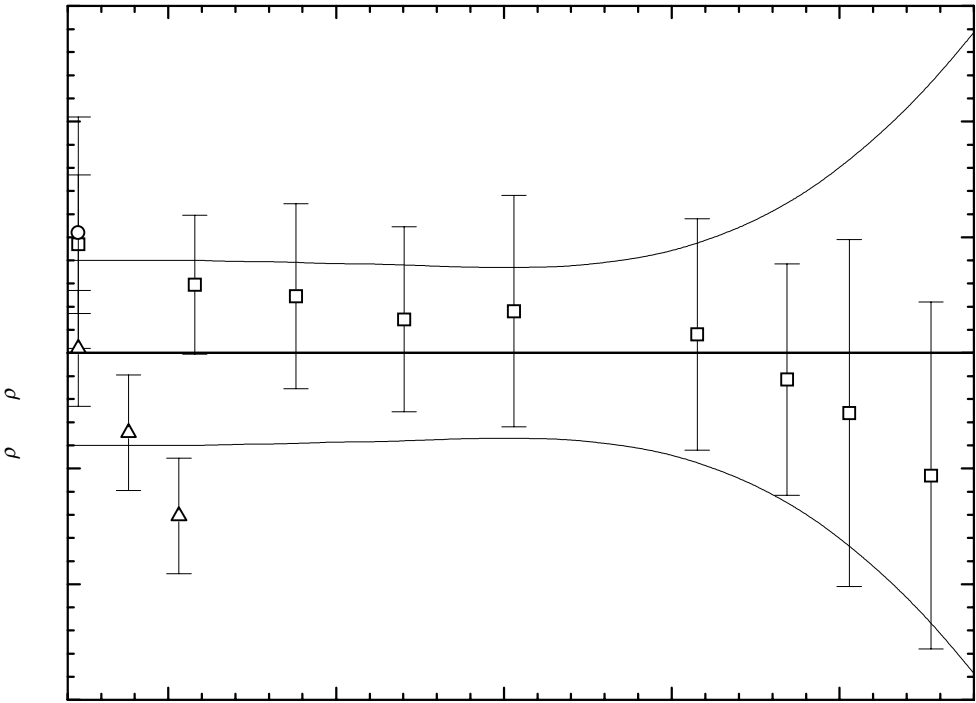


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the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

cont.

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	876.86 ± 0.80	350.00	819.17 ± 0.77	450.00	742.09 ± 0.88
280.00	869.84 ± 0.80	360.00	811.71 ± 0.77	460.00	734.07 ± 0.97
290.00	862.77 ± 0.80	370.00	804.20 ± 0.76	470.00	726.01 ± 1.08
293.15	860.53 ± 0.80	380.00	796.63 ± 0.75	480.00	717.88 ± 1.22
298.15	856.97 ± 0.80	390.00	789.00 ± 0.74	490.00	709.71 ± 1.39
300.00	855.64 ± 0.80	400.00	781.32 ± 0.74	500.00	701.47 ± 1.60
310.00	848.46 ± 0.80	410.00	773.58 ± 0.74	510.00	693.18 ± 1.84
320.00	841.22 ± 0.79	420.00	765.79 ± 0.75	520.00	684.84 ± 2.11
330.00	833.93 ± 0.79	430.00	757.95 ± 0.78	530.00	676.44 ± 2.42
340.00	826.58 ± 0.78	440.00	750.04 ± 0.82	540.00	667.99 ± 2.77

2-Pentylnonyl methanoate [500022-40-2] C₁₅H₃₀O₂ MW = 242.4 288

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.
291.15	870.5 ± 1.0	1938-mas

Propyl dodecanoate [3681-78-5] C₁₅H₃₀O₂ MW = 242.4 289

Table 1. Fit with estimated *B* coefficient for 14 accepted points. Deviation $\sigma_w = 1.089$.

Coefficient	$\rho = A + BT$
<i>A</i>	1088.98
<i>B</i>	-0.775

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	860.0 ± 1.0	-1.79	1948-bon/alt	298.15	857.7 ± 1.0	-0.22	1948-vog-9
310.95	846.5 ± 1.0	-1.50	1948-bon/alt	314.05	845.7 ± 1.0	0.11	1948-vog-9
333.15	829.7 ± 1.0	-1.09	1948-bon/alt	314.25	845.3 ± 1.0	-0.14	1948-vog-9
371.95	799.8 ± 1.0	-0.92	1948-bon/alt	334.85	830.9 ± 1.0	1.43	1948-vog-9
286.15	867.0 ± 1.0	-0.22	1948-vog-9	335.85	830.2 ± 1.0	1.50	1948-vog-9
292.45	862.2 ± 1.0	-0.13	1948-vog-9	358.85	812.4 ± 1.0	1.53	1948-vog-9
293.15	861.7 ± 1.0	-0.09	1948-vog-9	360.15	811.4 ± 1.0	1.53	1948-vog-9

cont.

Propyl dodecanoate (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	872.0 ± 1.6	310.00	848.7 ± 1.4	350.00	817.7 ± 1.5
290.00	864.2 ± 1.5	320.00	841.0 ± 1.4	360.00	810.0 ± 1.6
293.15	861.8 ± 1.5	330.00	833.2 ± 1.4	370.00	802.2 ± 1.7
298.15	857.9 ± 1.5	340.00	825.5 ± 1.5	380.00	794.5 ± 1.8