

2.4 Diesters

Dimethyl ethanedioate

[553-90-2]

C₄H₆O₄

MW = 118.09

447

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.
355.25	1119.7 ± 1.0	1893-eyk-1

Dimethyl 1,3-propanedioate

[108-59-8]

C₅H₈O₄

MW = 132.12

448

Table 1. Fit with estimated *B* coefficient for 2 accepted points. Deviation σ_w = 0.310.

Coefficient	$\rho = A + BT$
<i>A</i>	1489.58
<i>B</i>	-1.150

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.
288.25	1158.4 ± 1.0	0.31	1893-eyk-1
355.45	1080.5 ± 1.0	-0.31	1893-eyk-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	1167.6 ± 1.9	310.00	1133.1 ± 1.1	340.00	1098.6 ± 1.2
290.00	1156.1 ± 1.6	320.00	1121.6 ± 0.9	350.00	1087.1 ± 1.5
293.15	1152.5 ± 1.5	330.00	1110.1 ± 1.0	360.00	1075.6 ± 1.8
298.15	1146.7 ± 1.3				

Methylene diethanoate

[628-51-3]

C₅H₈O₄

MW = 132.12

449

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	1135.5 ± 0.7	1962-jon

Diethyl ethanedioate

[95-92-1]

C₆H₁₀O₄

MW = 146.14

450

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{c,w} = 9.4057 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 2.6144 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

Coefficient	T = 293.15 to 498.15 K $\rho = A + BT + CT^2 + DT^3 + \dots$
A	$1.28128 \cdot 10^3$
B	$-3.37356 \cdot 10^{-1}$
C	$-1.20444 \cdot 10^{-3}$

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

$\frac{T}{K}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{cal}}}{\text{kg} \cdot \text{m}^{-3}}$	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)
293.15	1079.30 ± 1.00	0.42	1880-bru-1(×)	333.15	1036.60 ± 0.60	1.39	1960-kyt/jef(□)
293.15	1079.10 ± 0.60	0.22	1893-eyk-1(O)	358.15	1004.10 ± 0.60	-1.86	1960-kyt/jef(□)
293.15	1078.98 ± 1.00	0.10	1898-kah(◆)	298.15	1072.50 ± 0.60	-1.13	1994-ste/chi-1(Δ)
293.15	1079.40 ± 0.80	0.52	1948-vog-9(∇)	323.15	1043.30 ± 0.62	-3.19	1994-ste/chi-1 ¹⁾
314.45	1055.10 ± 0.80	-1.00	1948-vog-9(∇)	373.15	986.60 ± 0.67	-1.09	1994-ste/chi-1(Δ)
334.65	1033.50 ± 0.90	0.00	1948-vog-9(∇)	423.15	923.30 ± 0.72	0.43	1994-ste/chi-1(Δ)
362.05	1003.10 ± 1.00	1.84	1948-vog-9(∇)	473.15	853.40 ± 0.77	1.38	1994-ste/chi-1(Δ)
293.15	1078.30 ± 0.60	-0.58	1960-kyt/jef(□)	498.15	813.00 ± 0.80	-1.34	1994-ste/chi-1(Δ)
313.15	1058.20 ± 0.60	0.67	1960-kyt/jef(□)	293.15	1078.90 ± 0.50	0.02	1999-hsu/che(×)

¹⁾ Not included in Fig. 1.

Further references: [1905-bol/guy, 1911-sch].

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

$\frac{T}{K}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{K}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{K}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	1082.15 ± 0.81	360.00	1003.74 ± 0.73	450.00	885.57 ± 0.78
293.15	1078.88 ± 0.81	370.00	991.57 ± 0.72	460.00	871.24 ± 0.85
298.15	1073.63 ± 0.81	380.00	979.16 ± 0.71	470.00	856.66 ± 0.94
300.00	1071.67 ± 0.80	390.00	966.52 ± 0.69	480.00	841.85 ± 1.05
310.00	1060.95 ± 0.80	400.00	953.63 ± 0.69	490.00	826.79 ± 1.19
320.00	1049.99 ± 0.78	410.00	940.50 ± 0.68	500.00	811.49 ± 1.36
330.00	1038.79 ± 0.77	420.00	927.13 ± 0.69	510.00	795.95 ± 1.56
340.00	1027.35 ± 0.76	430.00	913.52 ± 0.70		
350.00	1015.66 ± 0.75	440.00	899.66 ± 0.73		

cont.

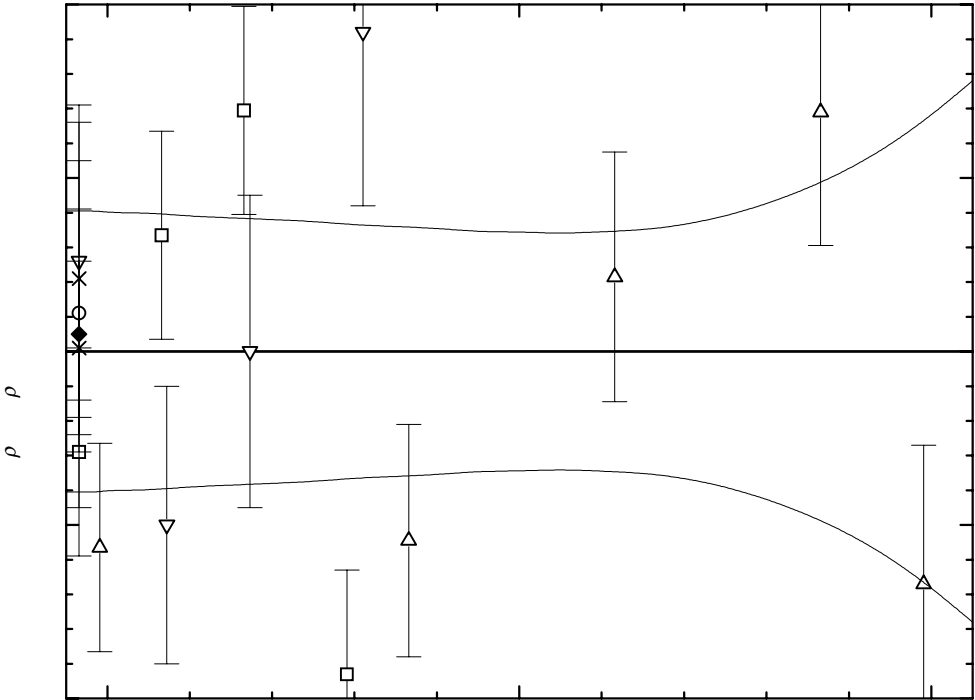


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the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

Dimethyl 1,4-butanedioate [106-65-0] C6H10O4 MW = 146.14 451

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation $\sigma_w = 0.042$.

Coefficient	$\rho = A + BT$
<i>A</i>	1447.97
<i>B</i>	-1.120

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	1125.3 ± 1.5	0.06	1926-vis
291.15	1121.9 ± 1.5	0.02	1926-vis
293.15	1119.6 ± 1.5	-0.04	1926-vis
298.15	1114.0 ± 1.5	-0.04	1926-vis

cont.

Dimethyl 1,4-butanedioate (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	1134.4 ± 1.5
290.00	1123.2 ± 1.3
293.15	1119.6 ± 1.3
298.15	1114.0 ± 1.4

Dimethyl methylpropanedioate

[609-02-9]

C₆H₁₀O₄

MW = 146.14

452

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation $\sigma_{\text{w}} = 1.296$.

Coefficient	$\rho = A + BT$
<i>A</i>	1427.56
<i>B</i>	-1.120

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	1097.7 ± 1.0	-1.53	1948-vog-9
316.35	1075.1 ± 1.0	1.86	1948-vog-9
335.05	1052.8 ± 1.0	0.50	1948-vog-9
358.95	1024.7 ± 1.0	-0.83	1948-vog-9

Table 3. Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	1102.8 ± 2.1	310.00	1080.4 ± 1.7	340.00	1046.8 ± 1.7
293.15	1099.2 ± 2.0	320.00	1069.2 ± 1.6	350.00	1035.6 ± 1.8
298.15	1093.6 ± 1.9	330.00	1058.0 ± 1.6	360.00	1024.4 ± 2.1

1,2-Ethanediy l diethanoate

[111-55-7]

C₆H₁₀O₄

MW = 146.14

453

Table 1. Fit with estimated *B* coefficient for 6 accepted points. Deviation $\sigma_{\text{w}} = 0.647$.

Coefficient	$\rho = A + BT$
<i>A</i>	1426.66
<i>B</i>	-1.100

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.
287.25	1107.8 ± 1.5	-2.87	1911-sch ¹⁾	293.15	1105.3 ± 0.8	1.10	1956-dun/bol
307.45	1088.0 ± 0.6	-0.43	1911-sch	293.15	1104.6 ± 0.6	0.40	1968-ano
327.65	1065.3 ± 0.6	-0.90	1911-sch	298.15	1099.1 ± 0.4	0.41	1978-kus
346.85	1044.2 ± 0.6	-0.90	1911-sch				

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	1107.7 ± 1.1	310.00	1085.7 ± 0.8	340.00	1052.7 ± 1.5
293.15	1104.2 ± 1.0	320.00	1074.7 ± 0.9	350.00	1041.7 ± 1.8
298.15	1098.7 ± 0.9	330.00	1063.7 ± 1.2		

Diethyl 1,3-propanedioate [105-53-3] **C₇H₁₂O₄** **MW = 160.17** **454**

Table 1. Fit with estimated *B* coefficient for 2 accepted points. Deviation σ_{w} = 0.710.

Coefficient	$\rho = A + BT$
<i>A</i>	1377.76
<i>B</i>	-1.100

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.
289.95	1058.1 ± 1.0	-0.71	1893-eyk-1
353.15	990.0 ± 1.0	0.71	1893-eyk-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	1069.8 ± 2.0	310.00	1036.8 ± 1.2	340.00	1003.8 ± 1.4
290.00	1058.8 ± 1.7	320.00	1025.8 ± 1.1	350.00	992.8 ± 1.6
293.15	1055.3 ± 1.6	330.00	1014.8 ± 1.2	360.00	981.8 ± 1.9
298.15	1049.8 ± 1.5				

Dimethyl ethylpropanedioate [26717-67-9] **C₇H₁₂O₄** **MW = 160.17** **455**

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation σ_{w} = 0.428.

Coefficient	$\rho = A + BT$
<i>A</i>	1368.48
<i>B</i>	-1.030

cont.

Dimethyl ethylpropanedioate (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	1066.9 ± 1.0	0.36	1948-vog-9
314.15	1044.2 ± 1.0	-0.71	1948-vog-9
338.35	1020.0 ± 1.0	0.02	1948-vog-9
358.35	999.7 ± 1.0	0.32	1948-vog-9

Table 3. Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	1069.8 ± 1.7	310.00	1049.2 ± 1.2	340.00	1018.3 ± 1.1
293.15	1066.5 ± 1.6	320.00	1038.9 ± 1.0	350.00	1008.0 ± 1.4
298.15	1061.4 ± 1.5	330.00	1028.6 ± 1.0	360.00	997.7 ± 1.7

Ethyl methyl butanedioate

[627-73-6]

C₇H₁₂O₄

MW = 160.17

456

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	1076.0 ± 2.0	1942-cas

1,3-Propanediyl diethanoate

[628-66-0]

C₇H₁₂O₄

MW = 160.17

457

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	1054.7 ± 0.8	1956-dun/bol

Bis(1-methylethyl) ethanedioate

[615-81-6]

C₈H₁₄O₄

MW = 174.2

458

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation $\sigma_{\text{w}} = 1.176$.

Coefficient	$\rho = A + BT$
<i>A</i>	1293.30
<i>B</i>	-1.020

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	994.7 ± 0.8	0.41	1948-vog-9
314.65	973.2 ± 0.8	0.84	1948-vog-9
334.65	949.6 ± 1.0	-2.36	1948-vog-9
362.05	924.4 ± 1.0	0.39	1948-vog-9

Table 3. Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	997.5 ± 1.9	320.00	966.9 ± 1.4	350.00	936.3 ± 1.8
293.15	994.3 ± 1.8	330.00	956.7 ± 1.5	360.00	926.1 ± 2.1
298.15	989.2 ± 1.7	340.00	946.5 ± 1.6	370.00	915.9 ± 2.4
310.00	977.1 ± 1.5				

1,4-Butanediyl diethanoate [628-67-1] C₈H₁₄O₄ MW = 174.2 459

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	1046.0 ± 1.5	1955-mos

Diethyl butanedioate [123-25-1] C₈H₁₄O₄ MW = 174.2 460

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{\text{c,w}} = 1.6609$ (combined temperature ranges, weighted), $\sigma_{\text{c,uw}} = 3.6674 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

Coefficient	T = 284.95 to 358.35 K $\rho = A + BT + CT^2 + DT^3 + \dots$
A	1.33588 · 10 ³
B	-1.00865

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)
284.95	1046.20 ± 2.00	-2.26	1893-eyk-1(◆)	293.15	1040.10 ± 0.40	-0.09	1968-ano(□)
293.15	1039.93 ± 2.00	-0.26	1914-kre/mei ¹⁾	293.15	1040.44 ± 0.20	0.25	1992-kat-1(×)
343.15	988.14 ± 2.00	-1.62	1914-kre/mei(∇)	298.15	1035.30 ± 0.60	0.15	1994-ami/pha(○)
293.15	1041.60 ± 0.60	1.41	1948-vog-9(Δ)	303.15	1029.90 ± 0.60	-0.21	1994-ami/pha(○)
314.55	1019.80 ± 0.60	1.19	1948-vog-9(Δ)	308.15	1024.60 ± 0.60	-0.46	1994-ami/pha(○)
333.95	1001.30 ± 0.80	2.26	1948-vog-9(Δ)	313.15	1018.90 ± 0.60	-1.12	1994-ami/pha(○)
358.35	975.90 ± 0.80	1.47	1948-vog-9(Δ)	318.15	1014.00 ± 0.60	-0.98	1994-ami/pha(○)

¹⁾ Not included in Fig. 1. cont.

Diethyl butanedioate (cont.)

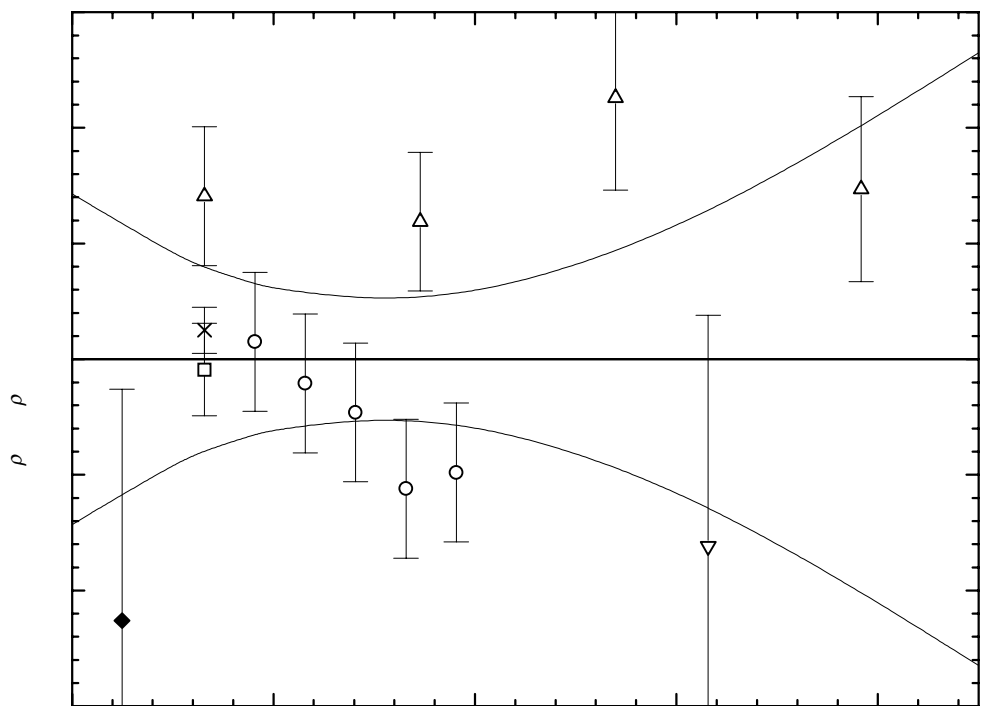


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the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

$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$
280.00	1053.46 ± 1.43	300.00	1033.28 ± 0.61	340.00	992.94 ± 1.14
290.00	1043.37 ± 0.91	310.00	1023.20 ± 0.50	350.00	982.85 ± 1.59
293.15	1040.19 ± 0.79	320.00	1013.11 ± 0.57	360.00	972.76 ± 2.10
298.15	1035.15 ± 0.65	330.00	1003.02 ± 0.80	370.00	962.68 ± 2.65

Diethyl methylpropanedioate

[609-08-5]

C₈H₁₄O₄

MW = 174.2

461

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation $\sigma_w = 0.303$.

Coefficient	$\rho = A + BT$
<i>A</i>	1315.53
<i>B</i>	-1.000

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	1022.5 ± 1.0	0.12	1948-vog-9
313.95	1002.0 ± 1.0	0.42	1948-vog-9
333.75	981.6 ± 1.0	-0.18	1948-vog-9
359.95	955.2 ± 1.0	-0.38	1948-vog-9

Table 3. Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	1025.5 ± 1.7	310.00	1005.5 ± 1.1	340.00	975.5 ± 1.1
293.15	1022.4 ± 1.6	320.00	995.5 ± 1.0	350.00	965.5 ± 1.4
298.15	1017.4 ± 1.4	330.00	985.5 ± 1.0	360.00	955.5 ± 1.7

Dimethyl 1,6-hexanedioate

[627-93-0]

C₈H₁₄O₄

MW = 174.2

462

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{\text{c,w}} = 9.1573 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{\text{c,uw}} = 2.2878 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

Coefficient	$T = 293.15 \text{ to } 362.05 \text{ K}$ $\rho = A + BT + CT^2 + DT^3 + \dots$
A	$1.33691 \cdot 10^3$
B	$-9.36913 \cdot 10^{-1}$

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	1062.60 ± 1.00	0.35	1919-kar(×)	313.15	1043.10 ± 1.00	-0.41	1965-vla/gra-1(∇)
293.15	1061.80 ± 1.00	-0.45	1942-pal/mik(×)	323.15	1033.20 ± 1.00	-0.95	1965-vla/gra-1(∇)
293.15	1062.50 ± 0.80	0.25	1948-vog-9(○)	333.15	1023.80 ± 1.00	-0.98	1965-vla/gra-1(∇)
314.65	1043.40 ± 0.80	1.29	1948-vog-9(○)	343.15	1014.10 ± 1.00	-1.31	1965-vla/gra-1(∇)
334.65	1024.40 ± 1.00	1.03	1948-vog-9(○)	293.15	1062.00 ± 1.00	-0.25	1967-fre/bus(Δ)
362.05	1000.20 ± 1.00	2.50	1948-vog-9(○)	293.15	1062.37 ± 0.50	0.12	1971-che/shv(×)
293.15	1062.40 ± 1.00	0.15	1965-vla/gra(◆)	293.15	1062.00 ± 0.70	-0.25	1981-kor/kov(□)
293.15	1062.40 ± 1.00	0.15	1965-vla/gra-1(∇)	353.15	1005.10 ± 0.70	-0.94	1981-kor/kov(□)
303.15	1052.60 ± 1.00	-0.28	1965-vla/gra-1(∇)				

¹⁾ Not included in Fig. 1.

Further references: [1957-knu/vya-2, 1963-tom/kaa, 1974-pas/piv].

cont.

Dimethyl 1,6-hexanedioate (cont.)

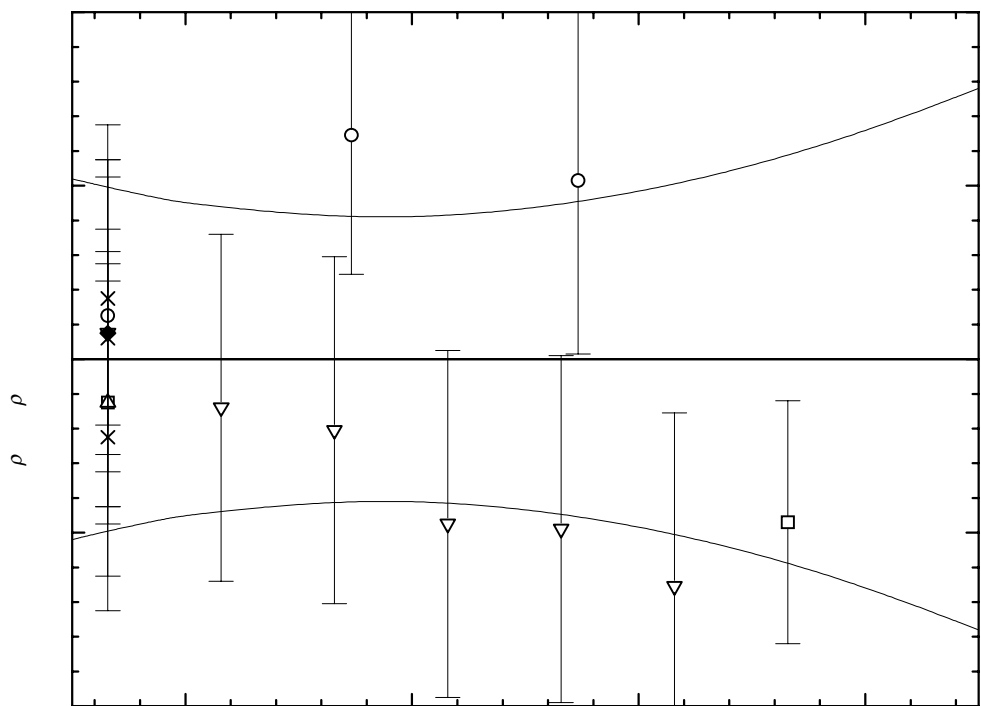


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the 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	1065.20 ± 1.04	310.00	1046.47 ± 0.83	350.00	1008.99 ± 1.11
293.15	1062.25 ± 0.99	320.00	1037.10 ± 0.81	360.00	999.62 ± 1.31
298.15	1057.57 ± 0.92	330.00	1027.73 ± 0.86	370.00	990.25 ± 1.56
300.00	1055.84 ± 0.90	340.00	1018.36 ± 0.96		

Dimethyl propylpropanedioate

[14035-96-2]

C₈H₁₄O₄

MW = 174.2

463

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation $\sigma_w = 0.356$.

Coefficient	$\rho = A + BT$
<i>A</i>	1332.10
<i>B</i>	-0.990

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	1041.8 ± 1.1	-0.08	1948-vog-9
314.45	1020.4 ± 1.1	-0.39	1948-vog-9
336.45	999.6 ± 1.2	0.59	1948-vog-9
358.95	976.7 ± 1.3	-0.04	1948-vog-9

Table 3. Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	1045.0 ± 1.7	310.00	1025.2 ± 1.2	340.00	995.5 ± 1.3
293.15	1041.9 ± 1.6	320.00	1015.3 ± 1.1	350.00	985.6 ± 1.6
298.15	1036.9 ± 1.5	330.00	1005.4 ± 1.1	360.00	975.7 ± 1.9

Dipropyl ethanedioate [615-98-5] C8H14O4 MW = 174.2 464

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{\text{c,w}} = 4.5937 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{\text{c,uw}} = 2.3326 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

Coefficient	$T = 293.15 \text{ to } 358.15 \text{ K}$ $\rho = A + BT + CT^2 + DT^3 + \dots$
A	$1.15972 \cdot 10^3$
B	$-4.28980 \cdot 10^{-2}$
C	$-1.49565 \cdot 10^{-3}$

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	1018.60 ± 0.80	-0.02	1948-vog-9(□)	293.15	1018.90 ± 0.60	0.28	1960-kyt/jef(O)
314.15	997.90 ± 0.80	-0.74	1948-vog-9(□)	313.15	1000.10 ± 0.60	0.48	1960-kyt/jef(O)
334.65	977.10 ± 1.00	-0.77	1948-vog-9(□)	333.15	980.10 ± 0.60	0.67	1960-kyt/jef(O)
362.05	951.90 ± 1.00	3.76	1948-vog-9 ¹⁾	358.15	952.60 ± 0.60	0.09	1960-kyt/jef(O)

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 $\rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$).

$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	1021.50 ± 0.99	310.00	1002.69 ± 0.74	350.00	961.49 ± 0.92
293.15	1018.62 ± 0.93	320.00	992.84 ± 0.70	360.00	950.44 ± 1.29
298.15	1013.98 ± 0.85	330.00	982.69 ± 0.69	370.00	939.10 ± 1.90
300.00	1012.24 ± 0.83	340.00	972.24 ± 0.74		

cont.

Dipropyl ethanedioate (cont.)

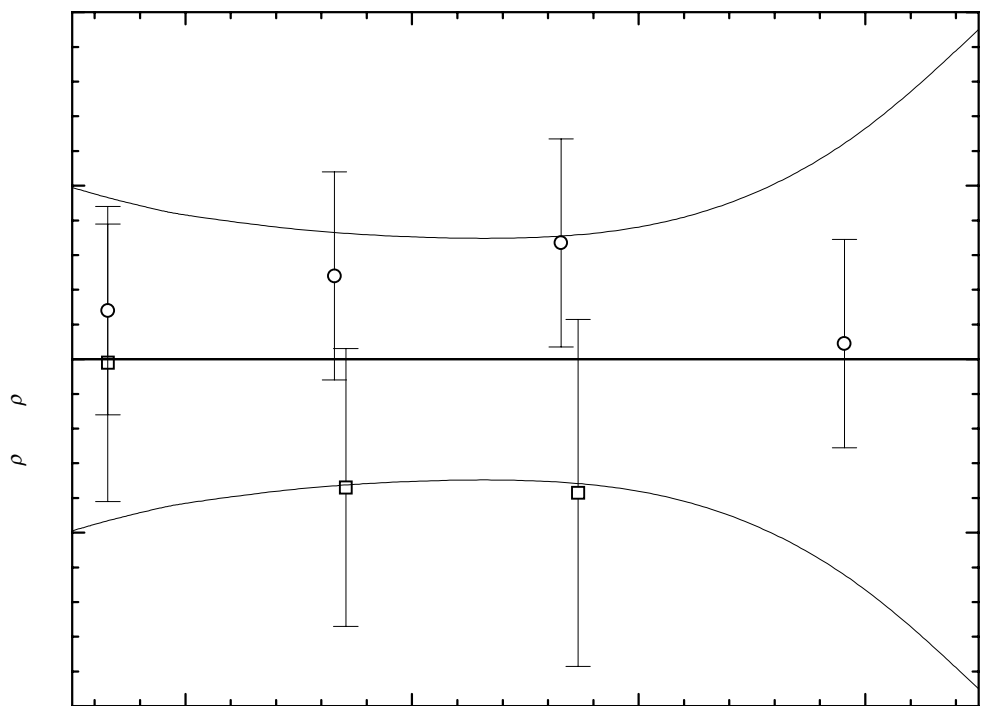


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the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

1,2-Ethanediy l dipropanoate

[123-80-8]

C₈H₁₄O₄

MW = 174.2

465

Table 1. Experimental value with uncertainty.

T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ kg · m ⁻³	Ref.
293.15	1042.0 ± 0.3	1986-nil/wad

Diethyl ethylpropanedioate

[133-13-1]

C₉H₁₆O₄

MW = 188.22

466

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation $\sigma_w = 0.953$.

Coefficient	$\rho = A + BT$
<i>A</i>	1288.42
<i>B</i>	-0.965

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	1004.7 ± 0.8	-0.83	1948-vog-9
316.35	984.5 ± 0.8	1.36	1948-vog-9
335.05	965.1 ± 1.0	0.00	1948-vog-9
358.95	941.2 ± 1.0	-0.83	1948-vog-9

Table 3. Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	1008.6 ± 1.8	310.00	989.3 ± 1.3	340.00	960.3 ± 1.5
293.15	1005.5 ± 1.7	320.00	979.6 ± 1.2	350.00	950.7 ± 1.7
298.15	1000.7 ± 1.6	330.00	970.0 ± 1.3	360.00	941.0 ± 2.0

Dimethyl heptanedioate [1732-08-7] C₉H₁₆O₄ MW = 188.22 467

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	1039.1 ± 0.4	1955-ano-13

3-Methyl-2,3-butanediyl diethanoate [500003-02-1] C₉H₁₆O₄ MW = 188.22 468

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	1012.6 ± 2.0	1951-ber-2

1,2-Pentadiyl diethanoate [500028-84-2] C₉H₁₆O₄ MW = 188.22 469

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.
301.15	1048.0 ± 2.0	1945-sch/gel

1,5-Pentadiyl diethanoate [500028-85-3] C₉H₁₆O₄ MW = 188.22 470

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.
299.15	1020.0 ± 2.0	1945-sch/gel

Bis(1-methylethyl) butanedioate

[924-88-9]

C₁₀H₁₈O₄

MW = 202.25

471

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation $\sigma_w = 0.278$.

Coefficient	$\rho = A + BT$
<i>A</i>	1263.50
<i>B</i>	-0.950

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	984.7 ± 0.8	-0.31	1948-vog-9
314.25	965.3 ± 0.8	0.34	1948-vog-9
333.65	946.7 ± 1.0	0.17	1948-vog-9
359.15	922.1 ± 1.0	-0.21	1948-vog-9

Table 3. Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	988.0 ± 1.5	310.00	969.0 ± 0.9	340.00	940.5 ± 1.2
293.15	985.0 ± 1.4	320.00	959.5 ± 0.9	350.00	931.0 ± 1.5
298.15	980.3 ± 1.2	330.00	950.0 ± 0.9	360.00	921.5 ± 1.8

Dibutyl ethanedioate

[2050-60-4]

C₁₀H₁₈O₄

MW = 202.25

472

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{c,w} = 5.9445 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 2.6979 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

Coefficient	T = 293.15 to 359.35 K $\rho = A + BT + CT^2 + DT^3 + \dots$
<i>A</i>	$1.14051 \cdot 10^3$
<i>B</i>	$-1.97490 \cdot 10^{-1}$
<i>C</i>	$-1.10577 \cdot 10^{-3}$

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	987.40 ± 0.80	-0.19	1948-vog-9(□)	293.15	987.90 ± 0.60	0.31	1960-kyt/jef(○)
314.65	968.40 ± 0.80	-0.49	1948-vog-9(□)	313.15	971.20 ± 0.60	0.97	1960-kyt/jef(○)
333.75	950.30 ± 1.00	-1.13	1948-vog-9(□)	333.15	952.40 ± 0.60	0.41	1960-kyt/jef(○)
359.35	926.20 ± 1.00	-0.55	1948-vog-9(□)	358.15	928.60 ± 0.60	0.66	1960-kyt/jef(○)

¹⁾ Not included in Fig. 1.

cont.

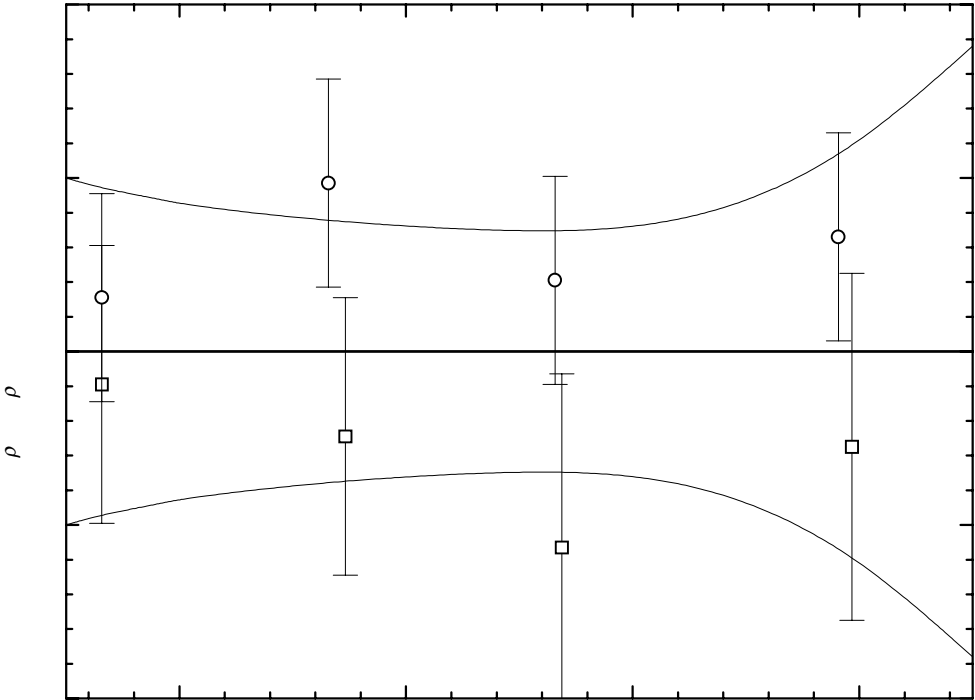


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the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

$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	990.24 ± 1.00	310.00	973.02 ± 0.77	350.00	935.93 ± 0.84
293.15	987.59 ± 0.94	320.00	964.08 ± 0.72	360.00	926.10 ± 1.18
298.15	983.33 ± 0.88	330.00	954.92 ± 0.69	370.00	916.06 ± 1.76
300.00	981.74 ± 0.85	340.00	945.54 ± 0.70		

Diethyl 1,6-hexanedioate [141-28-6] **C₁₀H₁₈O₄** **MW = 202.25** **473**

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation $\sigma_w = 0.567$.

Coefficient	$\rho = A + BT$
<i>A</i>	1275.02
<i>B</i>	-0.910

cont.

Diethyl 1,6-hexanedioate (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	1008.8 ± 0.8	0.55	1948-vog-9
314.85	988.1 ± 0.8	-0.41	1948-vog-9
334.55	969.8 ± 1.0	-0.78	1948-vog-9
360.75	947.3 ± 1.0	0.56	1948-vog-9

Table 3. Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	1011.1 ± 1.6	320.00	983.8 ± 1.0	350.00	956.5 ± 1.5
293.15	1008.3 ± 1.5	330.00	974.7 ± 1.0	360.00	947.4 ± 1.8
298.15	1003.7 ± 1.3	340.00	965.6 ± 1.2	370.00	938.3 ± 2.2
310.00	992.9 ± 1.1				

Diethyl propylpropanedioate

[2163-48-6]

C₁₀H₁₈O₄

MW = 202.25

474

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation $\sigma_w = 0.118$.

Coefficient	$\rho = A + BT$
<i>A</i>	1261.22
<i>B</i>	-0.934

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	987.3 ± 0.8	-0.12	1948-vog-9
313.75	968.2 ± 0.8	0.02	1948-vog-9
336.65	947.0 ± 1.0	0.21	1948-vog-9
358.95	925.9 ± 1.0	-0.06	1948-vog-9

Table 3. Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	990.4 ± 1.5	310.00	971.7 ± 0.9	340.00	943.7 ± 1.1
293.15	987.4 ± 1.4	320.00	962.3 ± 0.8	350.00	934.3 ± 1.4
298.15	982.7 ± 1.2	330.00	953.0 ± 0.9	360.00	925.0 ± 1.8

Dimethyl octanedioate

[1732-09-8]

C₁₀H₁₈O₄

MW = 202.25

475

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation σ_w = 0.177.

Coefficient	$\rho = A + BT$
<i>A</i>	1285.12
<i>B</i>	-0.892

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	1023.8 ± 0.8	0.17	1948-vog-9
314.05	1004.8 ± 0.8	-0.19	1948-vog-9
334.15	986.9 ± 1.0	-0.16	1948-vog-9
359.65	964.5 ± 1.0	0.19	1948-vog-9

Table 3. Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	1026.4 ± 1.5	310.00	1008.6 ± 0.9	340.00	981.8 ± 1.1
293.15	1023.6 ± 1.4	320.00	999.7 ± 0.8	350.00	972.9 ± 1.4
298.15	1019.2 ± 1.2	330.00	990.8 ± 0.9	360.00	964.0 ± 1.8

Dimethyl pentylpropanedioate

[500030-48-8]

C₁₀H₁₈O₄

MW = 202.25

476

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation σ_w = 0.138.

Coefficient	$\rho = A + BT$
<i>A</i>	1262.09
<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	1004.2 ± 0.8	0.08	1948-vog-9
314.85	984.9 ± 0.8	-0.13	1948-vog-9
335.75	966.5 ± 1.0	-0.13	1948-vog-9
360.35	945.2 ± 1.0	0.21	1948-vog-9

Table 3. Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	1006.9 ± 1.5	320.00	980.5 ± 0.8	350.00	954.1 ± 1.4
293.15	1004.1 ± 1.4	330.00	971.7 ± 0.9	360.00	945.3 ± 1.8
298.15	999.7 ± 1.2	340.00	962.9 ± 1.1	370.00	936.5 ± 2.1
310.00	989.3 ± 0.9				

Dipropyl butanedioate

[925-15-5]

C₁₀H₁₈O₄

MW = 202.25

477

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation $\sigma_w = 0.483$.

Coefficient	$\rho = A + BT$
<i>A</i>	1259.73
<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	1001.5 ± 0.9	-0.26	1948-vog-9
314.95	983.1 ± 0.9	0.53	1948-vog-9
334.55	964.7 ± 0.9	-0.63	1948-vog-9
359.85	943.5 ± 1.0	0.44	1948-vog-9

Table 3. Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	1004.5 ± 1.7	310.00	986.9 ± 1.1	340.00	960.5 ± 1.2
293.15	1001.8 ± 1.6	320.00	978.1 ± 1.0	350.00	951.7 ± 1.4
298.15	997.4 ± 1.4	330.00	969.3 ± 1.0	360.00	942.9 ± 1.7

Dipropyl methylpropanedioate

[500030-45-5]

C₁₀H₁₈O₄

MW = 202.25

478

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation $\sigma_w = 0.327$.

Coefficient	$\rho = A + BT$
<i>A</i>	1253.52
<i>B</i>	-0.910

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	986.5 ± 0.8	-0.25	1948-vog-9
314.75	967.5 ± 0.8	0.41	1948-vog-9
333.05	950.6 ± 1.0	0.16	1948-vog-9
358.25	927.1 ± 1.0	-0.41	1948-vog-9

Table 3. Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	989.6 ± 1.5	310.00	971.4 ± 1.0	340.00	944.1 ± 1.2
293.15	986.7 ± 1.4	320.00	962.3 ± 0.9	350.00	935.0 ± 1.5
298.15	982.2 ± 1.2	330.00	953.2 ± 1.0	360.00	925.9 ± 1.8

1,2-Ethanediy l dibutanoate

[105-72-6]

C₁₀H₁₈O₄

MW = 202.25

479

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

Coefficient	$\rho = A + BT$
<i>A</i>	1278.57
<i>B</i>	-0.950

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	1000.1 ± 0.3	0.03	1986-nil/wad
298.15	995.3 ± 0.3	-0.02	1986-nil/wad

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	1003.1 ± 0.3
293.15	1000.1 ± 0.3
298.15	995.3 ± 0.3

Bis(1-methylethyl) pentanedioate

[71340-46-0]

C₁₁H₂₀O₄

MW = 216.28

480

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation $\sigma_w = 0.323$.

Coefficient	$\rho = A + BT$
<i>A</i>	1235.45
<i>B</i>	-0.920

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	965.9 ± 0.8	0.15	1948-vog-9
314.65	945.5 ± 0.8	-0.47	1948-vog-9
334.65	927.7 ± 1.0	0.13	1948-vog-9
359.15	905.4 ± 1.0	0.37	1948-vog-9

Table 3. Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	968.6 ± 1.5	310.00	950.2 ± 1.0	340.00	922.6 ± 1.2
293.15	965.7 ± 1.4	320.00	941.0 ± 0.9	350.00	913.4 ± 1.5
298.15	961.1 ± 1.3	330.00	931.8 ± 0.9	360.00	904.2 ± 1.8

Diethyl heptandioate

[2050-20-6]

C₁₁H₂₀O₄

MW = 216.28

481

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	992.7 ± 0.4	1955-ano-13

Dimethyl nonanedioate

[1732-10-1]

C₁₁H₂₀O₄

MW = 216.28

482

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	1009.2 ± 0.4	1971-che/shv

Dipropyl ethylpropanedioate

[1113-91-3]

C₁₁H₂₀O₄

MW = 216.28

483

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation σ_w = 0.102.

Coefficient	$\rho = A + BT$
<i>A</i>	1238.78
<i>B</i>	-0.900

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	974.8 ± 0.8	-0.14	1948-vog-9
315.15	955.2 ± 0.8	0.06	1948-vog-9
334.45	937.9 ± 1.0	0.13	1948-vog-9
358.75	915.9 ± 1.0	-0.00	1948-vog-9

Table 3. Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	977.8 ± 1.5	310.00	959.8 ± 0.9	340.00	932.8 ± 1.1
293.15	974.9 ± 1.4	320.00	950.8 ± 0.8	350.00	923.8 ± 1.4
298.15	970.4 ± 1.2	330.00	941.8 ± 0.9	360.00	914.8 ± 1.8

Bis(3-methylbutyl) ethanedioate

[2051-00-5]

C₁₂H₂₂O₄

MW = 230.3

484

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation σ_w = 0.288.

Coefficient	$\rho = A + BT$
<i>A</i>	1204.55
<i>B</i>	-0.830

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	960.9 ± 0.8	-0.34	1948-vog-9
314.65	943.7 ± 0.8	0.31	1948-vog-9
334.65	926.6 ± 1.0	-0.19	1948-vog-9
362.05	904.3 ± 1.0	0.25	1948-vog-9

Table 3. Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	963.9 ± 1.5	320.00	939.0 ± 0.9	350.00	914.1 ± 1.4
293.15	961.2 ± 1.4	330.00	930.7 ± 0.9	360.00	905.8 ± 1.8
298.15	957.1 ± 1.3	340.00	922.4 ± 1.1	370.00	897.5 ± 2.1
310.00	947.3 ± 1.0				

Bis(2-methylpropyl) butanedioate [925-06-4] C₁₂H₂₂O₄ MW = 230.3 485

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation σ_w = 0.262.

Coefficient	$\rho = A + BT$
<i>A</i>	1216.98
<i>B</i>	-0.850

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	967.5 ± 0.8	-0.30	1948-vog-9
314.65	949.8 ± 0.8	0.27	1948-vog-9
333.55	933.7 ± 1.0	0.24	1948-vog-9
359.75	911.0 ± 1.0	-0.19	1948-vog-9

Table 3. Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	970.5 ± 1.5	310.00	953.5 ± 0.9	340.00	928.0 ± 1.1
293.15	967.8 ± 1.4	320.00	945.0 ± 0.8	350.00	919.5 ± 1.4
298.15	963.6 ± 1.2	330.00	936.5 ± 0.9	360.00	911.0 ± 1.8

Dibutyl butanedioate

[141-03-7]

$C_{12}H_{22}O_4$

MW = 230.3

486

Table 1. Fit with estimated B coefficient for 5 accepted points. Deviation $\sigma_w = 0.453$.

Coefficient	$\rho = A + BT$
A	1223.32
B	-0.840

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

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.
293.15	976.8 ± 0.8	-0.28	1948-vog-9
314.15	960.2 ± 0.8	0.76	1948-vog-9
335.15	942.7 ± 1.0	0.90	1948-vog-9
359.65	921.3 ± 1.0	0.08	1948-vog-9
293.15	976.8 ± 0.4	-0.28	1992-kat-1

Table 3. Recommended values.

T K	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	T K	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	T K	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	979.7 ± 1.1	310.00	962.9 ± 0.9	340.00	937.7 ± 1.6
293.15	977.1 ± 1.0	320.00	954.5 ± 1.0	350.00	929.3 ± 2.0
298.15	972.9 ± 0.9	330.00	946.1 ± 1.3	360.00	920.9 ± 2.3

Dibutyl methylpropanedioate

[52886-83-6]

$C_{12}H_{22}O_4$

MW = 230.3

487

Table 1. Fit with estimated B coefficient for 4 accepted points. Deviation $\sigma_w = 0.890$.

Coefficient	$\rho = A + BT$
A	1217.93
B	-0.860

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

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.
293.15	965.2 ± 0.8	-0.62	1948-vog-9
316.35	947.2 ± 0.8	1.33	1948-vog-9
335.05	929.4 ± 1.0	-0.38	1948-vog-9
358.95	908.5 ± 1.0	-0.73	1948-vog-9

Table 3. Recommended values.

T K	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	T K	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	T K	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	968.5 ± 1.7	310.00	951.3 ± 1.3	340.00	925.5 ± 1.4
293.15	965.8 ± 1.6	320.00	942.7 ± 1.2	350.00	916.9 ± 1.7
298.15	961.5 ± 1.5	330.00	934.1 ± 1.3	360.00	908.3 ± 2.0

Diethyl octanedioate

[2050-23-9]

C₁₂H₂₂O₄

MW = 230.3

488

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation $\sigma_w = 0.301$.

Coefficient	$\rho = A + BT$
<i>A</i>	1227.64
<i>B</i>	-0.840

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	981.1 ± 0.8	-0.29	1948-vog-9
314.65	963.4 ± 0.8	0.07	1948-vog-9
332.35	949.0 ± 1.0	0.54	1948-vog-9
358.75	926.1 ± 1.0	-0.19	1948-vog-9

Table 3. Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	984.0 ± 1.5	310.00	967.2 ± 1.0	340.00	942.0 ± 1.2
293.15	981.4 ± 1.4	320.00	958.8 ± 0.9	350.00	933.6 ± 1.5
298.15	977.2 ± 1.2	330.00	950.4 ± 0.9	360.00	925.2 ± 1.8

Diethyl pentylpropanedioate

[6065-59-4]

C₁₂H₂₂O₄

MW = 230.3

489

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation $\sigma_w = 0.524$.

Coefficient	$\rho = A + BT$
<i>A</i>	1221.81
<i>B</i>	-0.875

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	965.2 ± 0.8	-0.10	1948-vog-9
313.15	947.3 ± 0.8	-0.50	1948-vog-9
333.95	930.6 ± 1.0	1.00	1948-vog-9
359.95	906.8 ± 1.0	-0.05	1948-vog-9

cont.

Diethyl pentylpropanedioate (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	968.1 ± 1.5	310.00	950.6 ± 1.0	340.00	924.3 ± 1.2
293.15	965.3 ± 1.4	320.00	941.8 ± 1.0	350.00	915.6 ± 1.5
298.15	960.9 ± 1.3	330.00	933.1 ± 1.0	360.00	906.8 ± 1.9

Dipentyl ethanedioate

[20602-86-2]

C₁₂H₂₂O₄

MW = 230.3

490

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{\text{c,w}} = 9.9134 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{\text{c,uw}} = 4.3766 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

Coefficient	T = 293.15 to 362.05 K $\rho = A + BT + CT^2 + DT^3 + \dots$
A	1.19616 · 10 ³
B	-7.88503 · 10 ⁻¹

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	966.20 ± 0.80	1.19	1948-vog-9(□)	293.15	965.50 ± 0.60	0.49	1960-kyt/jef(○)
314.65	948.30 ± 0.80	0.24	1948-vog-9(□)	313.15	948.90 ± 0.60	-0.34	1960-kyt/jef(○)
334.65	930.40 ± 1.00	-1.89	1948-vog-9(□)	333.15	933.30 ± 0.60	-0.17	1960-kyt/jef(○)
362.05	909.30 ± 1.00	-1.38	1948-vog-9(□)	358.15	915.60 ± 0.60	1.84	1960-kyt/jef(○)

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 $\rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$).

$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	967.49 ± 0.93	310.00	951.72 ± 0.76	350.00	920.18 ± 0.80
293.15	965.01 ± 0.91	320.00	943.84 ± 0.66	360.00	912.30 ± 1.08
298.15	961.07 ± 0.87	330.00	935.95 ± 0.62	370.00	904.41 ± 1.51
300.00	959.61 ± 0.86	340.00	928.07 ± 0.66		

cont.

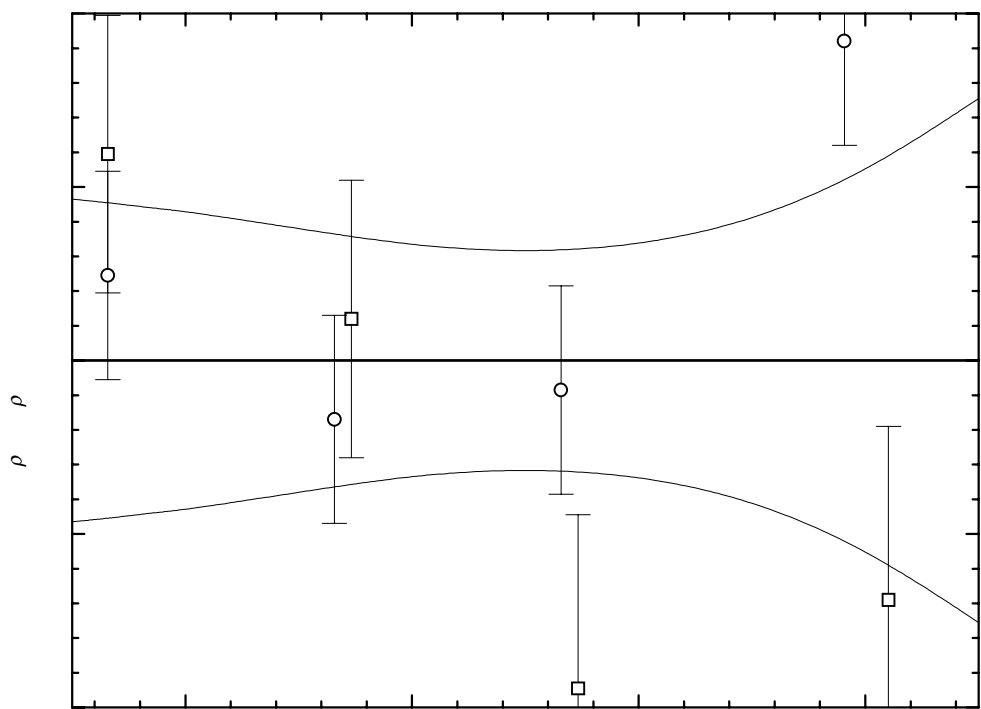


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the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

Dipropyl hexanedioate [106-19-4] $C_{12}H_{22}O_4$ MW = 230.3 491

Table 1. Fit with estimated B coefficient for 4 accepted points. Deviation $\sigma_w = 0.028$.

Coefficient	$\rho = A + BT$
A	1233.13
B	-0.860

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

T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$	$\rho_{\text{exp}} - \rho_{\text{calc}}$ $\text{kg} \cdot \text{m}^{-3}$	Ref.
293.15	981.0 ± 0.8	-0.02	1948-vog-9
314.25	962.9 ± 0.8	0.02	1948-vog-9
334.65	945.3 ± 1.0	-0.03	1948-vog-9
359.15	924.3 ± 1.0	0.04	1948-vog-9

cont.

Dipropyl hexanedioate (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	983.7 ± 1.5	310.00	966.5 ± 0.9	340.00	940.7 ± 1.1
293.15	981.0 ± 1.4	320.00	957.9 ± 0.8	350.00	932.1 ± 1.4
298.15	976.7 ± 1.2	330.00	949.3 ± 0.9	360.00	923.5 ± 1.8

Dipropyl propylpropanedioate

[500030-46-6]

C₁₂H₂₂O₄

MW = 230.3

492

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation $\sigma_{\text{w}} = 0.177$.

Coefficient	$\rho = A + BT$
<i>A</i>	1222.53
<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	964.4 ± 0.8	-0.16	1948-vog-9
314.35	946.1 ± 0.8	0.20	1948-vog-9
334.05	928.7 ± 1.0	0.14	1948-vog-9
358.55	906.8 ± 1.0	-0.20	1948-vog-9

Table 3. Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	967.3 ± 1.5	310.00	949.7 ± 0.9	340.00	923.3 ± 1.1
293.15	964.6 ± 1.4	320.00	940.9 ± 0.8	350.00	914.5 ± 1.4
298.15	960.2 ± 1.2	330.00	932.1 ± 0.9	360.00	905.7 ± 1.8

Dibutyl ethylpropanedioate

[1113-92-4]

C₁₃H₂₄O₄

MW = 244.33

493

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation $\sigma_{\text{w}} = 0.149$.

Coefficient	$\rho = A + BT$
<i>A</i>	1203.92
<i>B</i>	-0.844

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	956.6 ± 0.8	0.09	1948-vog-9
313.15	939.4 ± 0.8	-0.23	1948-vog-9
334.05	922.1 ± 1.0	0.11	1948-vog-9
359.85	900.3 ± 1.0	0.09	1948-vog-9

Table 3. Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	959.2 ± 1.5	310.00	942.3 ± 0.9	340.00	917.0 ± 1.1
293.15	956.5 ± 1.4	320.00	933.8 ± 0.8	350.00	908.5 ± 1.4
298.15	952.3 ± 1.2	330.00	925.4 ± 0.9	360.00	900.1 ± 1.8

Bis(3-methylbutyl) butanedioate [818-04-2] C₁₄H₂₆O₄ MW = 258.36 494

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation $\sigma_{\text{w}} = 0.729$.

Coefficient	$\rho = A + BT$
<i>A</i>	1187.43
<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.
293.15	957.9 ± 0.8	-0.88	1948-vog-9
314.55	942.9 ± 0.8	0.82	1948-vog-9
333.55	927.8 ± 1.0	0.54	1948-vog-9
359.35	906.7 ± 1.0	-0.44	1948-vog-9

Table 3. Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	961.2 ± 1.6	310.00	945.6 ± 1.2	340.00	922.2 ± 1.3
293.15	958.8 ± 1.5	320.00	937.8 ± 1.1	350.00	914.4 ± 1.6
298.15	954.9 ± 1.4	330.00	930.0 ± 1.2	360.00	906.6 ± 1.9

Dibutyl hexanedioate

[105-99-7]

C₁₄H₂₆O₄

MW = 258.36

495

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation $\sigma_w = 0.510$.

Coefficient	$\rho = A + BT$
<i>A</i>	1196.74
<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.
293.15	962.4 ± 0.8	0.18	1948-vog-9
314.75	944.8 ± 0.8	-0.14	1948-vog-9
334.65	928.2 ± 1.0	-0.82	1948-vog-9
360.25	909.3 ± 1.0	0.76	1948-vog-9

Table 3. Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	964.7 ± 1.6	320.00	940.7 ± 1.0	350.00	916.7 ± 1.5
293.15	962.2 ± 1.5	330.00	932.7 ± 1.0	360.00	908.7 ± 1.8
298.15	958.2 ± 1.3	340.00	924.7 ± 1.2	370.00	900.7 ± 2.2
310.00	948.7 ± 1.0				

Dibutyl propylpropanedioate

[54580-49-3]

C₁₄H₂₆O₄

MW = 258.36

496

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation $\sigma_w = 0.369$.

Coefficient	$\rho = A + BT$
<i>A</i>	1163.06
<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.
293.15	933.9 ± 0.8	-0.51	1948-vog-9
313.15	919.2 ± 0.8	0.39	1948-vog-9
333.45	903.2 ± 1.0	0.23	1948-vog-9
359.25	882.8 ± 1.0	-0.05	1948-vog-9

cont.

Table 3. Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	936.9 ± 1.5	310.00	921.3 ± 1.0	340.00	897.9 ± 1.2
293.15	934.4 ± 1.4	320.00	913.5 ± 0.9	350.00	890.1 ± 1.5
298.15	930.5 ± 1.2	330.00	905.7 ± 1.0	360.00	882.3 ± 1.8

Diethyl decanedioate [110-40-7] **C₁₄H₂₆O₄** **MW = 258.36** **497**

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation $\sigma_{\text{w}} = 0.450$.

Coefficient	$\rho = A + BT$
<i>A</i>	1192.25
<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.
291.45	963.4 ± 2.0	-1.52	1893-eyk-1 ¹⁾
293.15	964.0 ± 0.8	0.40	1948-vog-9
316.35	945.6 ± 0.8	0.10	1948-vog-9
335.05	931.0 ± 1.0	0.09	1948-vog-9
358.95	911.4 ± 1.0	-0.87	1948-vog-9

Table 3. Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	966.1 ± 1.5	310.00	950.5 ± 0.9	340.00	927.1 ± 1.1
293.15	963.6 ± 1.4	320.00	942.7 ± 0.8	350.00	919.3 ± 1.4
298.15	959.7 ± 1.2	330.00	934.9 ± 0.9	360.00	911.5 ± 1.7

Dihexyl ethanedioate [20602-87-3] **C₁₄H₂₆O₄** **MW = 258.36** **498**

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation $\sigma_{\text{w}} = 0.087$.

Coefficient	$\rho = A + BT$
<i>A</i>	1184.67
<i>B</i>	-0.800

cont.

Dihexyl ethanedioate (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	950.2 ± 0.6	0.05	1960-kyt/jef
313.15	934.2 ± 0.6	0.05	1960-kyt/jef
333.15	918.0 ± 0.6	-0.15	1960-kyt/jef
358.15	898.2 ± 0.6	0.05	1960-kyt/jef

Table 3. Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	952.7 ± 1.2	310.00	936.7 ± 0.7	340.00	912.7 ± 0.7
293.15	950.1 ± 1.1	320.00	928.7 ± 0.6	350.00	904.7 ± 0.9
298.15	946.1 ± 1.0	330.00	920.7 ± 0.6	360.00	896.7 ± 1.2

Dipentyl butanedioate

[645-69-2]

C₁₄H₂₆O₄

MW = 258.36

499

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation $\sigma_{\text{w}} = 0.316$.

Coefficient	$\rho = A + BT$
<i>A</i>	1188.81
<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.
293.15	959.8 ± 0.8	-0.35	1948-vog-9
315.05	943.5 ± 0.8	0.43	1948-vog-9
335.45	927.2 ± 1.0	0.04	1948-vog-9
360.05	907.8 ± 1.0	-0.17	1948-vog-9

Table 3. Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	962.6 ± 1.5	320.00	939.2 ± 0.9	350.00	915.8 ± 1.4
293.15	960.2 ± 1.4	330.00	931.4 ± 0.9	360.00	908.0 ± 1.8
298.15	956.3 ± 1.3	340.00	923.6 ± 1.1	370.00	900.2 ± 2.1
310.00	947.0 ± 1.0				

Dipropyl octanedioate [51238-93-8] $C_{14}H_{26}O_4$ MW = 258.36 500

Table 1. Fit with estimated B coefficient for 4 accepted points. Deviation $\sigma_w = 0.218$.

Coefficient	$\rho = A + BT$
A	1199.40
B	-0.810

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.
293.15	962.1 ± 0.8	0.15	1948-vog-9
315.15	943.8 ± 0.8	-0.33	1948-vog-9
334.65	928.5 ± 1.0	0.17	1948-vog-9
359.15	908.6 ± 1.0	0.11	1948-vog-9

Table 3. Recommended values.

T K	$\rho \pm \sigma_{\text{fit}}$ kg · m ⁻³	T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ kg · m ⁻³	T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ kg · m ⁻³
290.00	964.5 ± 1.5	310.00	948.3 ± 0.9	340.00	924.0 ± 1.1
293.15	961.9 ± 1.4	320.00	940.2 ± 0.8	350.00	915.9 ± 1.4
298.15	957.9 ± 1.2	330.00	932.1 ± 0.9	360.00	907.8 ± 1.8

Dipropyl pentylpropanedioate [500030-49-9] $C_{14}H_{26}O_4$ MW = 258.36 501

Table 1. Fit with estimated B coefficient for 4 accepted points. Deviation $\sigma_w = 0.462$.

Coefficient	$\rho = A + BT$
A	1189.68
B	-0.825

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.
293.15	947.4 ± 0.8	-0.43	1948-vog-9
314.15	930.7 ± 0.8	0.19	1948-vog-9
333.75	915.1 ± 1.0	0.76	1948-vog-9
359.25	892.9 ± 1.0	-0.40	1948-vog-9

Table 3. Recommended values.

T K	$\rho \pm \sigma_{\text{fit}}$ kg · m ⁻³	T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ kg · m ⁻³	T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ kg · m ⁻³
290.00	950.4 ± 1.5	310.00	933.9 ± 1.0	340.00	909.2 ± 1.2
293.15	947.8 ± 1.4	320.00	925.7 ± 0.9	350.00	900.9 ± 1.5
298.15	943.7 ± 1.3	330.00	917.4 ± 1.0	360.00	892.7 ± 1.8

Bis(3-methylbutyl) pentanedioate

[71195-63-6]

C₁₅H₂₈O₄

MW = 272.38

502

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation σ_w = 0.149.

Coefficient	$\rho = A + BT$
<i>A</i>	1177.00
<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.
293.15	945.4 ± 0.8	-0.01	1948-vog-9
314.65	928.6 ± 0.8	0.18	1948-vog-9
333.85	913.0 ± 1.0	-0.25	1948-vog-9
359.35	893.1 ± 1.0	-0.01	1948-vog-9

Table 3. Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	947.9 ± 1.5	310.00	932.1 ± 0.9	340.00	908.4 ± 1.1
293.15	945.4 ± 1.4	320.00	924.2 ± 0.8	350.00	900.5 ± 1.4
298.15	941.5 ± 1.2	330.00	916.3 ± 0.9	360.00	892.6 ± 1.8

Dibutyl octanedioate

[16090-77-0]

C₁₆H₃₀O₄

MW = 286.41

503

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation σ_w = 0.097.

Coefficient	$\rho = A + BT$
<i>A</i>	1174.12
<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.
293.15	948.3 ± 0.8	-0.10	1948-vog-9
314.65	931.9 ± 0.8	0.06	1948-vog-9
333.95	916.9 ± 1.0	-0.08	1948-vog-9
359.05	897.8 ± 1.0	0.15	1948-vog-9

Table 3. Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	950.8 ± 1.5	310.00	935.4 ± 0.9	340.00	912.3 ± 1.1
293.15	948.4 ± 1.4	320.00	927.7 ± 0.8	350.00	904.6 ± 1.4
298.15	944.5 ± 1.2	330.00	920.0 ± 0.9	360.00	896.9 ± 1.8

Diheptyl ethanedioate [20442-03-9] $\text{C}_{16}\text{H}_{30}\text{O}_4$ MW = 286.41 504

Table 1. Fit with estimated B coefficient for 4 accepted points. Deviation $\sigma_w = 0.555$.

Coefficient	$\rho = A + BT$
A	1155.08
B	-0.740

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

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.
293.15	938.6 ± 0.6	0.45	1960-kyt/jef
313.15	923.6 ± 0.6	0.25	1960-kyt/jef
333.15	907.6 ± 0.6	-0.95	1960-kyt/jef
358.15	890.3 ± 0.6	0.25	1960-kyt/jef

Table 3. Recommended values.

T K	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	T K	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	T K	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	940.5 ± 1.3	310.00	925.7 ± 0.9	340.00	903.5 ± 0.9
293.15	938.2 ± 1.2	320.00	918.3 ± 0.8	350.00	896.1 ± 1.1
298.15	934.5 ± 1.1	330.00	910.9 ± 0.8	360.00	888.7 ± 1.3

Dipentyl hexanedioate [14027-78-2] $\text{C}_{16}\text{H}_{30}\text{O}_4$ MW = 286.41 505

Table 1. Fit with estimated B coefficient for 4 accepted points. Deviation $\sigma_w = 0.389$.

Coefficient	$\rho = A + BT$
A	1169.34
B	-0.756

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

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.
293.15	947.8 ± 0.8	0.09	1948-vog-9
314.95	931.6 ± 0.8	0.37	1948-vog-9
334.25	915.9 ± 1.0	-0.74	1948-vog-9
359.75	897.4 ± 1.0	0.04	1948-vog-9

Table 3. Recommended values.

T K	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	T K	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	T K	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	950.1 ± 1.5	310.00	935.0 ± 1.0	340.00	912.3 ± 1.2
293.15	947.7 ± 1.4	320.00	927.4 ± 0.9	350.00	904.7 ± 1.5
298.15	943.9 ± 1.3	330.00	919.9 ± 1.0	360.00	897.2 ± 1.8

Dipropyl decanedioate

[15419-91-7]

C₁₆H₃₀O₄

MW = 286.41

506

Table 1. Fit with estimated B coefficient for 4 accepted points. Deviation $\sigma_w = 0.105$.

Coefficient	$\rho = A + BT$
A	1178.28
B	-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.
293.15	949.5 ± 0.8	-0.13	1948-vog-9
313.85	933.6 ± 0.8	0.12	1948-vog-9
333.75	917.9 ± 1.0	-0.06	1948-vog-9
359.05	898.3 ± 1.0	0.07	1948-vog-9

Table 3. Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	952.1 ± 1.5	310.00	936.5 ± 0.9	340.00	913.1 ± 1.1
293.15	949.6 ± 1.4	320.00	928.7 ± 0.8	350.00	905.3 ± 1.4
298.15	945.7 ± 1.2	330.00	920.9 ± 0.9	360.00	897.5 ± 1.8

Bis(2-ethylhexyl) heptanedioate

[72630-12-7]

C₂₃H₄₄O₄

MW = 384.6

507

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	922.3 ± 0.4	1953-ano-16

Diocetyl decanedioate

[2432-87-3]

C₂₆H₅₀O₄

MW = 426.68

508

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	913.0 ± 3.0	1970-sel-3

1,2-Ethanediy l ditetradecanoate

[627-84-9]

C₃₀H₅₈O₄

MW = 482.79

509

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.
353.15	860.0 ± 0.5	1952-mcg/cur