

2.Tabulated Data on Density - Esters

2.1 Saturated Monoesters

2.1.1 Saturated Monoesters, C₂ - C₅

Methyl methanoate

[107-31-3]

C₂H₄O₂

MW = 60.05

1

$T_c = 487.15\text{ K}$ [1910-you]
 $\rho_c = 349.00\text{ kg}\cdot\text{m}^{-3}$ [1910-you]

Table 1. Coefficients for the polynomial expansion equations. Standard deviations (see introduction):
 $\sigma_l = 2.1575 \cdot 10^{-1}$ (low temperature range), $\sigma_{c,w} = (4.3434 \cdot 10^{-1})$ combined temperature ranges, weighted),
 $\sigma_{c,uw} = 2.1276 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

Coefficient	$T = 273.10\text{ to }400.00\text{ K}$ $\rho = A + BT + CT^2 + DT^3 + \dots$	$T = 400.00\text{ to }487.15\text{ K}$ $\rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)]$ $[\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$
A	$1.66205 \cdot 10^3$	1.41369
B	-4.36423	$-3.69223 \cdot 10^{-2}$
C	$1.07504 \cdot 10^{-2}$	$4.30461 \cdot 10^{-4}$
D	$-1.31931 \cdot 10^{-5}$	$-1.78772 \cdot 10^{-6}$

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)
305.45	956.60 ± 1.00	0.58	1883-sch-3(×)	323.15	929.40 ± 0.40	0.23	1910-you-1(×)
288.15	981.51 ± 0.50	0.05	1884-per(◆)	333.15	913.30 ± 0.60	-0.16	1910-you-1(×)
298.15	966.62 ± 0.50	-0.21	1884-per(◆)	343.15	896.80 ± 0.60	-0.46	1910-you-1(×)
291.15	976.30 ± 0.70	-0.79	1891-sch/kos(×)	353.15	880.30 ± 0.60	-0.20	1910-you-1(×)
293.15	973.33 ± 0.70	-0.84	1891-sch/kos(×)	363.15	863.40 ± 0.60	0.31	1910-you-1(×)
273.15	1003.20 ± 0.60	0.02	1893-you/tho(×)	373.15	845.20 ± 0.80	0.25	1910-you-1(×)
284.70	986.74 ± 0.60	0.27	1893-you/tho(×)	383.15	826.40 ± 0.80	0.38	1910-you-1 ¹⁾
273.15	1003.37 ± 0.20	0.19	1910-tim(□)	393.15	807.00 ± 0.80	0.80	1910-you-1 ¹⁾
273.15	1003.37 ± 0.20	0.19	1910-tim(□)	403.15	786.00 ± 1.00	0.70	1910-you-1(×)
273.15	1002.97 ± 0.20	-0.21	1910-tim(□)	413.15	763.80 ± 1.00	1.55	1910-you-1(×)
273.15	1003.16 ± 0.40	-0.02	1910-you-1(×)	423.15	740.30 ± 1.00	2.51	1910-you-1(×)
283.15	988.90 ± 0.40	0.18	1910-you-1(×)	433.15	713.60 ± 1.00	1.31	1910-you-1(×)
293.15	974.50 ± 0.40	0.33	1910-you-1(×)	443.15	684.40 ± 1.00	-0.60	1910-you-1(×)
303.15	959.80 ± 0.40	0.36	1910-you-1(×)	453.15	652.10 ± 1.00	-1.93	1910-you-1(×)
313.15	944.70 ± 0.40	0.23	1910-you-1(×)	463.15	614.80 ± 1.00	-1.24	1910-you-1(×)

¹⁾ Not included in Fig. 1.

cont.

Methyl methanoate (cont.)

Table 2. (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)
473.15	565.80 ± 1.50	0.91	1910-you-1(×)	293.10	974.21 ± 0.30	-0.03	1930-tim/hen(Δ)
479.15	524.10 ± 1.50	2.21	1910-you-1(×)	303.10	959.73 ± 0.30	0.21	1930-tim/hen(Δ)
483.15	485.70 ± 1.50	4.42	1910-you-1(×)	273.15	1003.25 ± 0.60	0.07	1955-naq(×)
485.15	454.90 ± 2.00	3.59	1910-you-1(×)	487.15	348.90 ± 0.60	-0.10	1955-naq(×)
486.15	432.80 ± 2.50	3.96	1910-you-1(×)	288.15	981.40 ± 0.70	-0.06	1962-rot/bit(×)
486.65	415.70 ± 4.00	4.00	1910-you-1(×)	293.15	974.13 ± 0.30	-0.04	1972-pol/lu -1(○)
293.15	974.50 ± 0.70	0.33	1914-low(×)	298.15	966.82 ± 0.30	-0.01	1972-pol/lu -1(○)
273.10	1003.14 ± 0.30	-0.12	1930-tim/hen(Δ)	293.15	974.20 ± 0.50	0.03	1976-cih/hyn(×)
283.10	988.61 ± 0.30	-0.18	1930-tim/hen(Δ)	293.15	974.35 ± 0.40	0.18	1991-fen/wan(∇)
288.10	981.49 ± 0.30	-0.04	1930-tim/hen(Δ)	298.15	966.30 ± 0.50	-0.53	1993-sal-1(×)

Further references: [1848-kop, 1854-kop, 1890-gar, 1893-eyk-1, 1893-ram/shi-3, 1909-wal-3, 1919-kro, 1922-tro, 1926-mat, 1926-mun, 1946-lem/kor, 1947-fre, 1955-kot/mar, 1960-sol/bar, 1962-rot/ste, 1967-bar/fro].

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	1007.73 ± 0.52	330.00	918.45 ± 0.52	410.00	769.71 ± 3.30
280.00	993.28 ± 0.51	340.00	902.42 ± 0.55	420.00	745.60 ± 3.32
290.00	978.77 ± 0.51	350.00	885.84 ± 0.61	430.00	720.46 ± 3.34
293.15	974.17 ± 0.50	360.00	868.65 ± 0.74	440.00	693.88 ± 3.36
298.15	966.83 ± 0.50	370.00	850.75 ± 1.02	450.00	664.35 ± 3.38
300.00	964.11 ± 0.50	380.00	832.07 ± 1.50	460.00	629.05 ± 3.42
310.00	949.22 ± 0.50	390.00	812.54 ± 2.21	470.00	583.03 ± 3.46
320.00	934.03 ± 0.50	400.00	792.07 ± 3.17	480.00	514.43 ± 3.51

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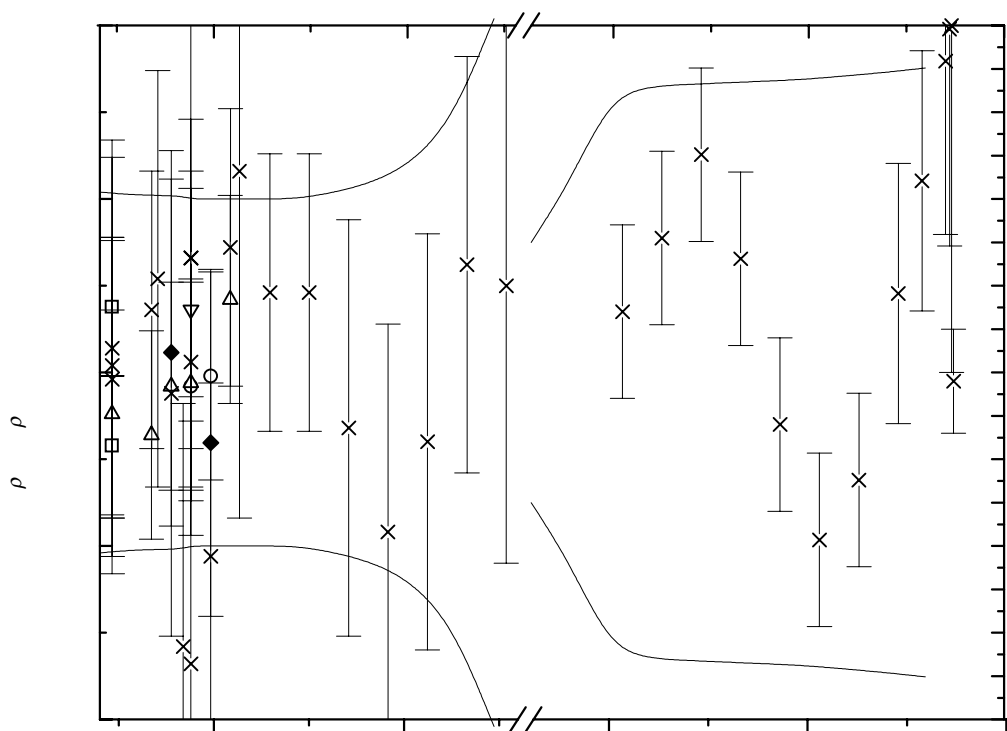


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the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

Ethyl methanoate

[109-94-4]

C₃H₆O₂

MW = 74.08

2

$T_c = 508.45\text{ K}$ [1910-you]

$\rho_c = 323.00\text{ kg}\cdot\text{m}^{-3}$ [1910-you]

Table 1. Coefficients for the polynomial expansion equations. Standard deviations (see introduction):
 $\sigma_l = 2.2404 \cdot 10^{-1}$ (low temperature range), $\sigma_{c,w} = (4.0231 \cdot 10^{-1})$ combined temperature ranges, weighted),
 $\sigma_{c,uw} = 2.7140 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

Coefficient	$T = 273.15\text{ to }410.00\text{ K}$ $\rho = A + BT + CT^2 + DT^3 + \dots$	$T = 410.00\text{ to }508.45\text{ K}$ $\rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)]$ $[\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$
A	$1.37808 \cdot 10^3$	1.36340
B	-2.31305	$-3.31677 \cdot 10^{-2}$
C	$4.28197 \cdot 10^{-3}$	$3.57136 \cdot 10^{-4}$
D	$-5.77749 \cdot 10^{-6}$	$-1.36589 \cdot 10^{-6}$

cont.

Ethyl methanoate (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	948.07 ± 0.50	0.07	1893-you/tho(×)	473.15	606.60 ± 1.50	-1.65	1910-you-1(×)
273.15	947.99 ± 0.40	-0.01	1910-you-1(×)	483.15	572.40 ± 1.50	-1.64	1910-you-1(×)
283.15	934.60 ± 0.40	-0.68	1910-you-1(×)	493.15	529.00 ± 2.00	0.49	1910-you-1(×)
293.15	922.60 ± 0.40	0.16	1910-you-1(×)	498.15	501.40 ± 2.00	3.14	1910-you-1(×)
303.15	909.40 ± 0.40	-0.03	1910-you-1(×)	503.15	463.50 ± 3.00	5.68	1910-you-1(×)
313.15	896.30 ± 0.40	0.07	1910-you-1(×)	506.15	428.10 ± 4.00	6.69	1910-you-1(×)
323.15	882.70 ± 0.40	-0.10	1910-you-1(×)	507.15	411.70 ± 5.00	8.66	1910-you-1 ¹⁾
333.15	868.90 ± 0.60	-0.21	1910-you-1(×)	298.15	916.40 ± 0.50	0.44	1913-bak(◆)
343.15	855.20 ± 0.60	0.08	1910-you-1(×)	293.15	922.60 ± 0.50	0.16	1914-low(∇)
353.15	840.90 ± 0.60	0.11	1910-you-1(×)	273.15	948.12 ± 0.30	0.12	1932-tim/hen(□)
363.15	826.20 ± 0.60	0.10	1910-you-1(×)	288.15	928.89 ± 0.30	0.01	1932-tim/hen(□)
373.15	811.20 ± 0.80	0.20	1910-you-1(×)	303.15	909.55 ± 0.30	0.12	1932-tim/hen(□)
383.15	795.50 ± 0.80	0.03	1910-you-1(×)	273.15	947.40 ± 1.00	-0.60	1947-udo/air(×)
393.15	779.60 ± 0.80	0.13	1910-you-1(×)	298.15	916.80 ± 1.00	0.84	1947-udo/air(×)
403.15	762.80 ± 1.00	-0.16	1910-you-1(×)	323.15	881.80 ± 1.00	-1.00	1947-udo/air(×)
413.15	744.80 ± 1.00	-0.95	1910-you-1(×)	293.15	922.90 ± 0.60	0.46	1948-vog-9(×)
423.15	725.70 ± 1.00	-0.53	1910-you-1(×)	313.35	898.50 ± 0.60	2.53	1948-vog-9 ¹⁾
433.15	705.80 ± 1.00	0.67	1910-you-1(×)	293.15	922.60 ± 0.50	0.16	1976-cih/hyn(×)
443.15	684.30 ± 1.00	1.05	1910-you-1(×)	298.15	915.87 ± 0.30	-0.09	1987-ort/mat(○)
453.15	661.00 ± 1.50	0.45	1910-you-1(×)	298.15	915.82 ± 0.50	-0.14	1998-bla/ort(Δ)
463.15	635.50 ± 1.50	-0.63	1910-you-1(×)				

¹⁾ Not included in Fig. 1.

Further references: [1848-kop, 1854-kop, 1864-lan, 1880-bru-2, 1880-pry, 1881-nac/pag, 1883-els, 1883-sch-3, 1884-per, 1884-sch-6, 1886-gar, 1891-sch/kos, 1892-lan/jah, 1893-eyk-1, 1898-kah, 1910-sch-7, 1911-eis, 1911-sch, 1917-jae-1, 1919-eyk, 1922-tro, 1924-kur/kro, 1926-mat, 1926-mun, 1928-car/adk, 1931-pfe/adk, 1947-fre, 1950-mum/phi, 1956-usa/bil, 1960-sol/bar, 1967-bar/fro, 1976-nag/oh, 1980-oh/nag].

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	951.99 ± 0.50	340.00	859.56 ± 0.54	430.00	711.88 ± 2.02
280.00	939.30 ± 0.48	350.00	845.34 ± 0.58	440.00	690.21 ± 2.07
290.00	926.50 ± 0.49	360.00	830.77 ± 0.65	450.00	667.82 ± 2.14
293.15	922.44 ± 0.49	370.00	815.80 ± 0.73	460.00	644.09 ± 2.23
298.15	915.96 ± 0.49	380.00	800.41 ± 0.85	470.00	617.55 ± 2.36
300.00	913.55 ± 0.49	390.00	784.56 ± 1.05	480.00	585.73 ± 2.54
310.00	900.41 ± 0.49	400.00	768.21 ± 1.33	490.00	544.55 ± 2.80
320.00	887.06 ± 0.49	410.00	751.34 ± 1.74	500.00	484.93 ± 3.22
330.00	873.45 ± 0.51	420.00	732.61 ± 1.98		

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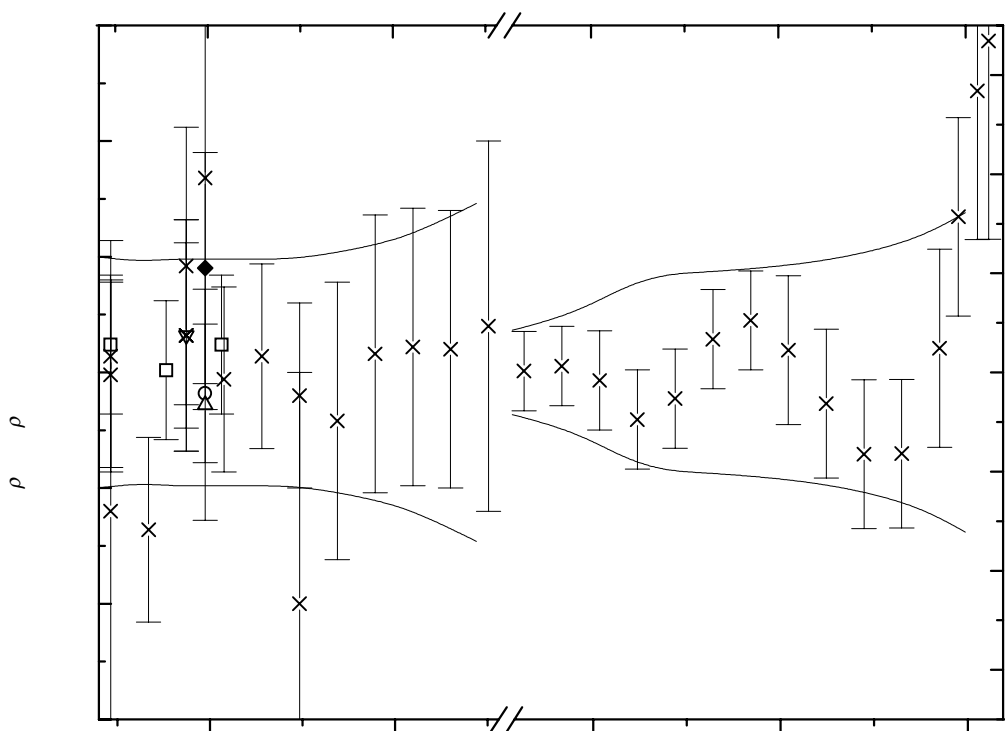


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the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

Methyl ethanoate [79-20-9] C₃H₆O₂ MW = 74.08 3

$T_c = 506.55$ K [1981-amb/ell]
 $\rho_c = 325.00$ kg·m⁻³ [1910-you]

Table 1. Coefficients for the polynomial expansion equations. Standard deviations (see introduction):
 $\sigma_l = 4.0043 \cdot 10^{-1}$ (low temperature range), $\sigma_{c,w} = (6.4344 \cdot 10^{-1})$ combined temperature ranges, weighted),
 $\sigma_{c,uw} = 5.6317 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

Coefficient	$T = 273.15$ to 425.00 K $\rho = A + BT + CT^2 + DT^3 + \dots$	$T = 425.00$ to 506.55 K $\rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)]$ $[\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$
	A B C D	$1.50820 \cdot 10^3$ -3.45762 $7.96113 \cdot 10^{-3}$ $-9.71646 \cdot 10^{-6}$
		1.94471 $-5.86728 \cdot 10^{-2}$ $7.60575 \cdot 10^{-4}$ $-3.46635 \cdot 10^{-6}$

cont.

Methyl ethanoate (cont.)

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

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref. (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	959.34 ± 0.50	-0.37	1893-you/tho(×)	493.15	528.10 ± 2.00	0.61	1910-you-1(×)
273.15	959.29 ± 0.50	-0.42	1910-you-1(×)	500.15	481.80 ± 3.00	6.75	1910-you-1(×)
283.15	946.50 ± 0.50	-0.37	1910-you-1(×)	503.15	452.70 ± 4.00	10.82	1910-you-1(×)
293.15	933.80 ± 0.50	-0.17	1910-you-1 ¹⁾	505.15	422.60 ± 5.00	13.85	1910-you-1(×)
303.15	920.80 ± 0.50	-0.15	1910-you-1 ¹⁾	506.15	399.50 ± 6.00	20.84	1910-you-1 ¹⁾
313.15	907.50 ± 0.50	-0.26	1910-you-1(×)	285.30	943.88 ± 0.50	-0.22	1919-eyk(×)
323.15	893.90 ± 0.50	-0.43	1910-you-1(×)	273.15	959.47 ± 0.60	-0.24	1955-tim/hen(×)
333.15	880.00 ± 0.60	-0.61	1910-you-1(×)	288.15	940.25 ± 0.60	-0.18	1955-tim/hen ¹⁾
343.15	866.20 ± 0.60	-0.34	1910-you-1(×)	303.15	920.89 ± 0.60	-0.06	1955-tim/hen ¹⁾
353.15	851.90 ± 0.60	-0.17	1910-you-1(×)	293.15	933.80 ± 0.50	-0.17	1964-gou/vlu ¹⁾
363.15	837.40 ± 0.80	0.28	1910-you-1(×)	313.15	907.90 ± 0.50	0.14	1964-gou/vlu(∇)
373.15	822.10 ± 0.80	0.44	1910-you-1(×)	283.15	947.67 ± 0.50	0.80	1985-cos/pat(◆)
383.15	806.00 ± 0.80	0.40	1910-you-1(×)	298.15	927.96 ± 0.50	0.48	1985-cos/pat ¹⁾
393.15	789.30 ± 0.80	0.39	1910-you-1(×)	313.15	907.84 ± 0.50	0.08	1985-cos/pat(◆)
403.15	771.50 ± 1.00	-0.02	1910-you-1(×)	298.15	927.24 ± 0.30	-0.24	1986-hne/cib(Δ)
413.15	753.20 ± 1.00	-0.17	1910-you-1(×)	278.15	954.06 ± 0.50	0.76	1989-khi/zhu(×)
423.15	733.90 ± 1.00	-0.50	1910-you-1(×)	323.15	894.43 ± 0.00	0.10	1989-khi/zhu ¹⁾
433.15	713.30 ± 1.00	-0.08	1910-you-1(×)	298.15	927.84 ± 0.30	0.36	1990-lu /ish(○)
443.15	690.70 ± 1.00	0.92	1910-you-1(×)	293.15	933.89 ± 0.40	-0.08	1992-qin/hof-2(□)
453.15	667.10 ± 1.50	1.67	1910-you-1(×)	298.15	928.20 ± 0.60	0.72	1998-ami/ban-1 ¹⁾
463.15	641.00 ± 1.50	0.76	1910-you-1(×)	303.15	921.80 ± 0.60	0.85	1998-ami/ban-1 ¹⁾
473.15	610.00 ± 1.50	-2.16	1910-you-1(×)	308.15	915.20 ± 0.60	0.82	1998-ami/ban-1(×)
483.15	574.10 ± 2.00	-2.95	1910-you-1(×)				

¹⁾ Not included in Fig. 1.

Further references: [1848-kop, 1854-kop, 1864-lan, 1880-pry, 1883-els, 1883-sch-3, 1884-per, 1884-sch-6, 1886-gar, 1890-gar, 1891-sch/kos, 1892-lan/jah, 1898-kah, 1906-mar, 1908-ric/mat, 1910-daw, 1911-sch, 1912-ric/stu, 1913-ste, 1914-kre/mei, 1914-low, 1925-ric/cha, 1926-cha-1, 1926-han, 1926-mat, 1926-mun, 1926-sch, 1927-krc/wil, 1929-hof/rei, 1934-gil/dex, 1937-woj, 1937-woj/smi-1, 1947-fre, 1948-vog-9, 1950-mum/phi, 1960-sol/bar, 1962-nag-2, 1962-nag-3, 1964-bre/ulu, 1965-pol/mer, 1967-bar/fro, 1968-bek/hal, 1970-nag, 1971-iva/val, 1971-nag/oht, 1973-lut/nik, 1977-svo/ves, 1977-toj/arc, 1980-mey/awe, 1981-lut/leb, 1987-sal/ped, 1987-zur/pos, 1988-des/zur, 1990-ort/sus-1, 1991-ace/ped-1, 1991-fen/doh, 1991-yos/kat, 1992-qin/hof-1, 1993-ami/pha, 1993-ami/rai-2, 1995-pos/gar, 1996-pal].

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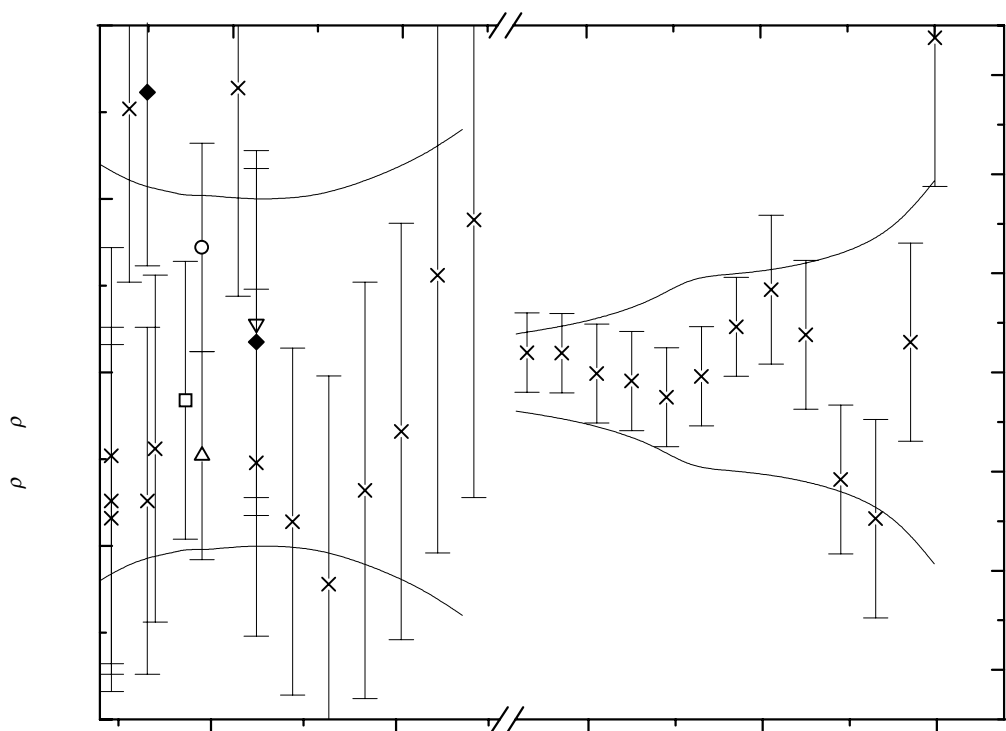


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the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

$\frac{T}{K}$	$\frac{\rho \pm \sigma_{fit}}{kg \cdot m^{-3}}$	$\frac{T}{K}$	$\frac{\rho \pm \sigma_{fit}}{kg \cdot m^{-3}}$	$\frac{T}{K}$	$\frac{\rho \pm \sigma_{fit}}{kg \cdot m^{-3}}$
270.00	963.76 ± 0.60	340.00	871.02 ± 0.54	430.00	720.41 ± 1.91
280.00	950.92 ± 0.54	350.00	856.68 ± 0.58	440.00	697.34 ± 1.97
290.00	938.04 ± 0.52	360.00	841.89 ± 0.63	450.00	673.15 ± 2.04
293.15	933.97 ± 0.51	370.00	826.59 ± 0.70	460.00	648.35 ± 2.15
298.15	927.48 ± 0.51	380.00	810.73 ± 0.78	470.00	621.52 ± 2.32
300.00	925.07 ± 0.51	390.00	794.24 ± 0.89	480.00	589.23 ± 2.57
310.00	911.94 ± 0.50	400.00	777.08 ± 1.03	490.00	545.36 ± 3.01
320.00	898.59 ± 0.50	410.00	759.17 ± 1.22	500.00	476.46 ± 3.86
330.00	884.97 ± 0.51	420.00	740.47 ± 1.49		

Ethyl ethanoate

[141-78-6]

C₄H₈O₂

MW = 88.11

4

$T_c = 523.30\text{ K}$ [1981-amb/ell]

$\rho_c = 307.00\text{ kg}\cdot\text{m}^{-3}$ [1910-you]

Table 1. Coefficients for the polynomial expansion equations. Standard deviations (see introduction): $\sigma_v = 1.4379 \cdot 10^{-1}$ (low temperature range), $\sigma_{c,w} = (1.8449 \cdot 10^{-1})$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 2.0836 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

Coefficient	$T = 190.77\text{ to }415.00\text{ K}$ $\rho = A + BT + CT^2 + DT^3 + \dots$	$T = 415.00\text{ to }523.30\text{ K}$ $\rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)]$ $[\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$
A	$1.29944 \cdot 10^3$	1.49945
B	-1.83899	$-3.39557 \cdot 10^{-2}$
C	$2.76227 \cdot 10^{-3}$	$3.35439 \cdot 10^{-4}$
D	$-3.86062 \cdot 10^{-6}$	$-1.17159 \cdot 10^{-6}$

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)	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{cal}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref. (Symbol in Fig. 1)
348.65	830.00 ± 1.00	-0.43	1884-sch-6(×)	363.15	811.20 ± 0.80	0.20	10-you-1(×)
293.15	900.50 ± 0.30	0.04	1893-ram/shi-3 ¹⁾	373.15	797.20 ± 0.80	-0.05	10-you-1(×)
353.15	824.50 ± 0.30	0.04	1893-ram/shi-3(×)	383.15	783.10 ± 0.80	-0.09	1910-you-1(×)
190.77	1022.23 ± 0.20	-0.11	1909-tim(∇)	393.15	768.30 ± 0.80	-0.49	1910-you-1(×)
200.24	1010.99 ± 0.20	0.03	1909-tim(∇)	403.15	753.30 ± 1.00	-0.74	1910-you-1 ¹⁾
210.46	998.90 ± 0.20	0.14	1909-tim(∇)	413.15	737.80 ± 1.00	-1.10	1910-you-1 ¹⁾
228.15	977.72 ± 0.20	-0.09	1909-tim(∇)	423.15	721.00 ± 1.00	-1.39	1910-you-1(×)
237.88	966.38 ± 0.15	0.06	1909-tim(∇)	433.15	703.30 ± 1.00	-0.33	1910-you-1(×)
237.88	966.33 ± 0.15	0.01	1909-tim(∇)	443.15	684.80 ± 1.00	0.91	1910-you-1(×)
242.58	960.76 ± 0.15	-0.01	1909-tim(∇)	453.15	665.30 ± 1.50	1.54	1910-you-1(×)
250.19	951.62 ± 0.15	-0.16	1909-tim(∇)	463.15	644.10 ± 1.50	0.98	1910-you-1(×)
267.05	931.69 ± 0.15	-0.11	1909-tim(∇)	473.15	621.00 ± 1.50	-0.17	1910-you-1(×)
273.15	924.48 ± 0.15	-0.05	1909-tim(∇)	483.15	594.40 ± 1.50	-2.02	1910-you-1(×)
289.15	905.54 ± 0.15	0.23	1909-tim(∇)	493.15	564.80 ± 1.50	-1.76	1910-you-1(×)
273.15	924.73 ± 0.20	0.20	1910-tim(×)	503.15	528.10 ± 2.00	0.07	1910-you-1(×)
288.15	906.74 ± 0.20	0.22	1910-tim(×)	513.15	477.80 ± 2.00	4.08	1910-you-1(×)
273.15	924.33 ± 0.40	-0.20	1910-you-1 ¹⁾	518.15	440.10 ± 3.00	6.21	1910-you-1(×)
283.15	912.70 ± 0.40	0.15	1910-you-1 ¹⁾	520.15	419.50 ± 4.00	7.57	1910-you-1 ¹⁾
293.15	900.50 ± 0.40	0.04	1910-you-1 ¹⁾	522.15	383.90 ± 5.00	4.48	1910-you-1(×)
303.15	888.50 ± 0.40	0.26	1910-you-1 ¹⁾	273.15	924.48 ± 0.20	-0.05	1912-tim(◆)
313.15	876.20 ± 0.40	0.32	1910-you-1 ¹⁾	273.15	924.50 ± 0.20	-0.03	1930-tim/hen(×)
323.15	863.60 ± 0.40	0.26	1910-you-1(×)	288.15	906.54 ± 0.20	0.02	1930-tim/hen(×)
333.15	850.80 ± 0.60	0.19	1910-you-1(×)	303.15	888.50 ± 0.20	0.26	1930-tim/hen(×)
343.15	837.60 ± 0.60	-0.05	1910-you-1(×)	313.15	876.13 ± 0.30	0.25	1978-nit/fuj(×)
353.15	824.50 ± 0.60	0.04	1910-you-1(×)	278.15	918.60 ± 0.20	0.05	1989-khi/zhu(×)

¹⁾ Not included in Fig. 1.

cont.

$\frac{T}{K}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	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)
333.15	850.37 ± 0.20	-0.24	1989-khi/zhu(×)	298.15	894.27 ± 0.10	-0.10	1998-bla/ort(O)
293.15	900.96 ± 0.40	0.50	1992-qin/hof-2(×)	298.15	894.20 ± 0.10	-0.17	1998-sen(Δ)
293.15	900.50 ± 0.10	0.04	1996-pal(□)				

¹⁾ Not included in Fig. 1.

Further references: [1848-kop, 1854-kop, 1864-lan, 1869-zin, 1881-nac/pag, 1883-els, 1883-sch-3, 1884-per, 1886-gar, 1890-gar, 1891-sch/kos, 1892-lan/jah, 1893-eyk-1, 1893-you/tho, 1896-lin-1, 1898-kah, 1903-you/for, 1904-dun, 1907-tim, 1908-ric/mat, 1909-hol/sag, 1909-ken/wal, 1909-wal-3, 1910-bir, 1910-daw, 1910-hub, 1910-tyr, 1911-sch, 1912-mal, 1912-ric/stu, 1912-wad/mer, 1913-bak, 1913-ste, 1914-kre/mei, 1914-low, 1914-tyr, 1915-pea, 1917-jae-1, 1919-eyk, 1920-ken/wri, 1921-ken/bra, 1922-tim/van, 1922-tro, 1923-tim/van, 1923-wil/smi, 1924-kur/kro, 1924-mil, 1925-rak, 1926-cha-1, 1926-mat, 1926-mun, 1926-sch, 1927-krc/wil, 1929-ham/and, 1929-hof/rei, 1930-pus/pin, 1931-tre/spe, 1932-ess/cla, 1934-gil/dex, 1936-all/wil, 1936-kur/sht, 1937-bue/gar, 1937-dol/bri, 1937-woj/smi, 1937-woj/smi-1, 1947-fre, 1947-udo/air, 1948-vog-9, 1949-dre/mar, 1949-eng/sch, 1949-gri/chu, 1949-vve/iva, 1950-mum/phi, 1951-str/boy, 1952-gro/feu, 1952-mcg/cur, 1952-mye/col, 1952-soh/war, 1953-ano-5, 1954-gar/ell, 1954-smi/otv, 1956-byr/bro, 1958-mur/van, 1962-nag-4, 1963-aga/men, 1963-aki/yos, 1964-bre/ulu, 1964-tur/den, 1965-pol/mer, 1967-bar/fro, 1967-dei, 1967-loi/mer, 1967-mat/san-1, 1967-nak/nak, 1968-ano, 1970-kat/kon, 1970-nak/shi, 1971-abr/ber, 1975-mus/ver, 1975-nag/yam, 1977-cha/nag-2, 1977-ker/dev, 1977-svo/ves, 1978-rou/per, 1979-tho/nag, 1980-mey/awe, 1980-oht/nag, 1982-ami/pat, 1982-gaz/bel, 1984-osw/rat-1, 1985-cos/pat, 1985-pat/san, 1986-ami/man, 1986-jim/rom, 1986-ort/pen, 1986-osw/rat, 1987-ami, 1987-man/ami, 1987-ort/mat, 1988-fer/lap, 1988-kat-1, 1988-man/ami, 1988-rat, 1990-lu /ish, 1992-qin/hof-1, 1993-ami/rai-2, 1994-ami/pha, 1995-pet/gas, 1995-sen/say, 1996-nik/mah, 1998-ami/ban-1].

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

$\frac{T}{K}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{K}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{K}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$
190.00	1023.27 ± 0.28	298.15	894.37 ± 0.22	410.00	743.71 ± 1.59
200.00	1011.24 ± 0.25	300.00	892.11 ± 0.22	420.00	727.91 ± 1.95
210.00	999.31 ± 0.22	310.00	879.79 ± 0.26	430.00	709.70 ± 1.99
220.00	987.44 ± 0.20	320.00	867.31 ± 0.32	440.00	690.17 ± 2.03
230.00	975.62 ± 0.18	330.00	854.64 ± 0.38	450.00	670.13 ± 2.08
240.00	963.82 ± 0.17	340.00	841.76 ± 0.46	460.00	649.71 ± 2.15
250.00	952.01 ± 0.16	350.00	828.64 ± 0.56	470.00	628.30 ± 2.25
260.00	940.17 ± 0.16	360.00	815.27 ± 0.67	480.00	604.64 ± 2.37
270.00	928.29 ± 0.16	370.00	801.61 ± 0.81	490.00	576.70 ± 2.54
280.00	916.33 ± 0.17	380.00	787.65 ± 0.97	500.00	541.41 ± 2.78
290.00	904.28 ± 0.19	390.00	773.36 ± 1.15	510.00	493.34 ± 3.14
293.15	900.46 ± 0.20	400.00	758.72 ± 1.35	520.00	413.81 ± 3.73

cont.

Ethyl ethanoate (cont.)

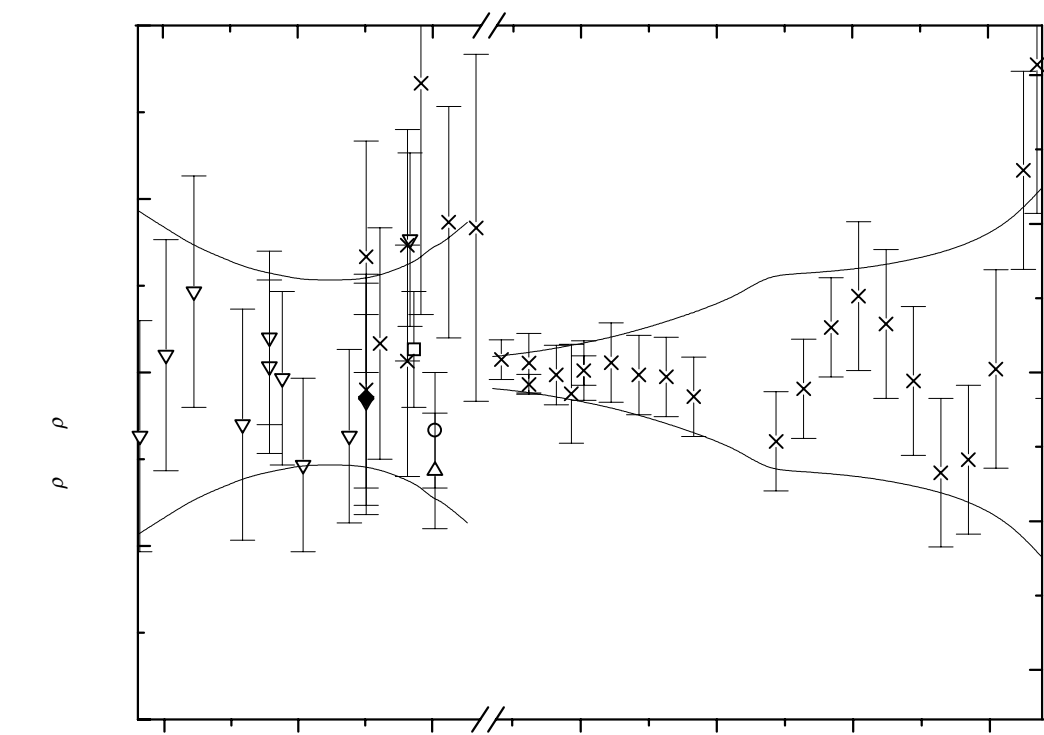


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the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

Methyl propanoate

[554-12-1]

C₄H₈O₂

MW = 88.11

5

$T_c = 530.55\text{ K}$ [1910-you]

$\rho_c = 312.00\text{ kg}\cdot\text{m}^{-3}$ [1910-you]

Table 1. Coefficients for the polynomial expansion equations. Standard deviations (see introduction):
 $\sigma_v = 1.9761 \cdot 10^{-1}$ (low temperature range), $\sigma_{c,w} = (1.8821 \cdot 10^{-1})$ combined temperature ranges, weighted),
 $\sigma_{c,uw} = 5.3481 \cdot 10^{-2}$ (combined temperature ranges, unweighted).

Coefficient	$T = 273.15\text{ to }435.00\text{ K}$ $\rho = A + BT + CT^2 + DT^3 + \dots$	$T = 435.00\text{ to }530.55\text{ K}$ $\rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)]$ $[\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$
	A B C D	$1.36217 \cdot 10^3$ -2.37030 $4.60236 \cdot 10^{-3}$ $-5.86289 \cdot 10^{-6}$
		1.42007 $-3.20545 \cdot 10^{-2}$ $3.24749 \cdot 10^{-4}$ $-1.19412 \cdot 10^{-6}$

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	938.71 ± 0.40	0.11	1893-you/tho(×)	503.15	563.50 ± 3.00	0.84	1910-you-1(×)
273.15	938.71 ± 0.40	0.08	1910-you-1(×)	513.15	522.00 ± 4.00	1.24	1910-you-1(×)
283.15	926.80 ± 0.40	-0.12	1910-you-1(×)	523.15	465.50 ± 5.00	6.09	1910-you-1 ¹⁾
293.15	915.10 ± 0.40	-0.03	1910-you-1(×)	530.55	312.40 ± 6.00	0.40	1910-you-1(×)
303.15	903.20 ± 0.40	-0.04	1910-you-1(×)	283.15	926.75 ± 0.40	-0.17	1911-liv/mor(×)
313.15	891.20 ± 0.40	0.01	1910-you-1(×)	307.85	897.55 ± 0.40	-0.05	1911-liv/mor(×)
323.15	879.00 ± 0.40	0.03	1910-you-1(×)	332.95	866.89 ± 0.40	0.11	1911-liv/mor(×)
333.15	866.50 ± 0.60	-0.03	1910-you-1(×)	293.15	915.50 ± 0.50	0.37	1926-mat(×)
343.15	853.70 ± 0.60	-0.14	1910-you-1(×)	293.15	914.80 ± 0.50	-0.33	1934-sch-4(×)
353.15	840.80 ± 0.60	-0.06	1910-you-1(×)	293.15	915.00 ± 0.50	-0.13	1948-vog-9(×)
363.15	827.30 ± 0.80	-0.27	1910-you-1(×)	313.45	891.40 ± 0.50	0.57	1948-vog-9(×)
373.15	813.70 ± 0.80	-0.21	1910-you-1(×)	330.35	870.90 ± 0.60	0.86	1948-vog-9 ¹⁾
383.15	799.60 ± 0.80	-0.26	1910-you-1(×)	273.15	938.87 ± 0.50	0.24	1959-tim/hen(×)
393.15	785.20 ± 0.80	-0.19	1910-you-1(×)	288.15	921.09 ± 0.50	0.05	1959-tim/hen(×)
403.15	770.50 ± 1.00	0.05	1910-you-1(×)	303.15	903.34 ± 0.50	0.10	1959-tim/hen(×)
413.15	755.30 ± 1.00	0.29	1910-you-1(×)	293.15	915.30 ± 0.40	0.17	1964-gou/vlu(◆)
423.15	739.00 ± 1.00	-0.04	1910-you-1 ¹⁾	313.15	891.50 ± 0.40	0.31	1964-gou/vlu(◆)
433.15	722.10 ± 1.00	-0.41	1910-you-1 ¹⁾	293.15	915.10 ± 0.40	-0.03	1965-pol/mer(∇)
443.15	704.50 ± 1.00	-0.33	1910-you-1(×)	298.15	908.90 ± 0.30	-0.30	1972-pol/lu(○)
453.15	685.60 ± 1.50	0.03	1910-you-1(×)	298.15	909.29 ± 0.50	0.09	1976-dus/pie(×)
463.15	665.70 ± 1.50	0.35	1910-you-1(×)	293.15	915.10 ± 0.50	-0.03	1977-svo/ves(×)
473.15	644.50 ± 1.50	0.38	1910-you-1(×)	298.15	909.17 ± 0.20	-0.03	1987-fer/ber(□)
483.15	620.70 ± 2.00	-0.40	1910-you-1(×)	298.15	909.03 ± 0.30	-0.17	1995-pos/gar(Δ)
493.15	593.80 ± 2.00	-0.96	1910-you-1(×)				

¹⁾ Not included in Fig. 1.

Further references: [1880-pry, 1883-els, 1883-sch-3, 1884-sch-6, 1886-gar, 1890-gar, 1911-dob, 1914-low, 1919-eyk, 1926-mun, 1934-gil/dex, 1947-fre, 1955-qui/ami, 1958-hen, 1970-sii/hal, 1972-ogl/sem, 1986-jim/rom, 1989-sus/ort].

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	942.30 ± 0.61	350.00	844.99 ± 0.54	450.00	691.75 ± 2.88
280.00	930.61 ± 0.52	360.00	831.79 ± 0.62	460.00	671.81 ± 2.95
290.00	918.85 ± 0.47	370.00	818.25 ± 0.71	470.00	650.95 ± 3.04
293.15	915.13 ± 0.46	380.00	804.33 ± 0.82	480.00	628.62 ± 3.17
298.15	909.20 ± 0.44	390.00	789.99 ± 0.98	490.00	603.54 ± 3.37
300.00	907.00 ± 0.44	400.00	775.21 ± 1.19	500.00	573.59 ± 3.71
310.00	895.01 ± 0.42	410.00	759.93 ± 1.47	510.00	535.39 ± 4.31
320.00	882.84 ± 0.42	420.00	744.13 ± 1.85	520.00	482.12 ± 5.57
330.00	870.48 ± 0.44	430.00	727.78 ± 2.33	530.00	368.41 ± 9.09
340.00	857.87 ± 0.48	440.00	710.61 ± 2.84		

Methyl propanoate (cont.)

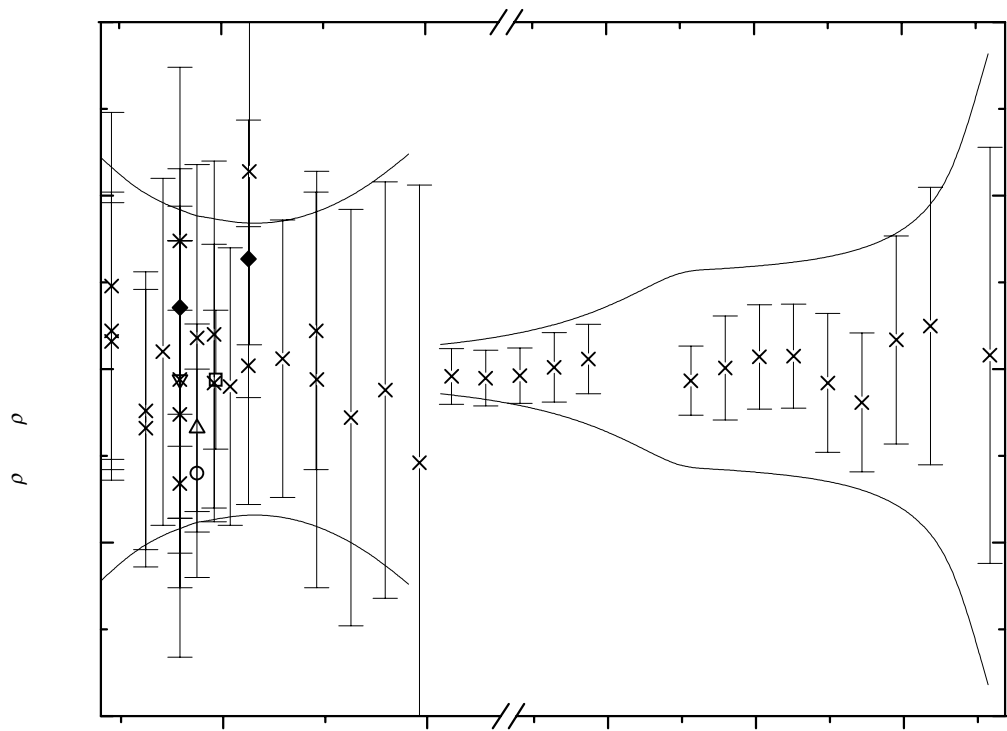


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the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

1-Methylethyl methanoate

[625-55-8]

C₄H₈O₂

MW = 88.11

6

Table 1. Experimental and recommended values with uncertainties.

T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ kg · m ⁻³	Ref.
293.15	868.6 ± 3.0	1890-gar ¹⁾
313.35	854.1 ± 3.0	1948-vog ¹⁾
293.15	877.4 ± 2.0	1948-vog-9
293.15	872.8 ± 2.0	1914-low
293.15	875.1 ± 2.6	Recommended

¹⁾ Not included in calculation of recommended value.

Propyl methanoate [110-74-7] C₄H₈O₂ MW = 88.11 7

$T_c = 538.00$ K [1910-you]
 $\rho_c = 309.00$ kg·m⁻³ [1910-you]

Table 1. Coefficients for the polynomial expansion equations. Standard deviations (see introduction): $\sigma_v = 1.6773 \cdot 10^{-1}$ (low temperature range), $\sigma_{c,w} = (2.8794 \cdot 10^{-1})$ combined temperature ranges, weighted), $\sigma_{c,uw} = 2.4170 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

Coefficient	$T = 273.15$ to 430.00 K $\rho = A + BT + CT^2 + DT^3 + \dots$	$T = 430.00$ to 538.00 K $\rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)]$ $[\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$
A	$1.35798 \cdot 10^3$	1.16019
B	-2.46251	$-2.27741 \cdot 10^{-2}$
C	$4.90500 \cdot 10^{-3}$	$1.99686 \cdot 10^{-4}$
D	$-6.03354 \cdot 10^{-6}$	$-6.34360 \cdot 10^{-7}$

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

$\frac{T}{K}$	$\frac{\rho_{exp} \pm 2\sigma_{est}}{kg \cdot m^{-3}}$	$\frac{\rho_{exp} - \rho_{calc}}{kg \cdot m^{-3}}$	Ref. (Symbol in Fig. 1)	$\frac{T}{K}$	$\frac{\rho_{exp} \pm 2\sigma_{est}}{kg \cdot m^{-3}}$	$\frac{\rho_{exp} - \rho_{calc}}{kg \cdot m^{-3}}$	Ref. (Symbol in Fig. 1)
273.15	928.65 ± 0.40	0.30	1910-you-1(∇)	443.15	704.50 ± 1.00	0.26	1910-you-1(∇)
283.15	917.30 ± 0.40	0.30	1910-you-1(∇)	453.15	687.30 ± 1.50	0.92	1910-you-1(∇)
293.15	905.80 ± 0.40	0.19	1910-you-1(∇)	463.15	669.10 ± 1.50	1.25	1910-you-1(∇)
303.15	894.30 ± 0.40	0.16	1910-you-1(∇)	473.15	648.70 ± 1.50	0.27	1910-you-1(∇)
313.15	882.70 ± 0.40	0.14	1910-you-1(∇)	483.15	625.90 ± 2.00	-1.64	1910-you-1(∇)
323.15	870.80 ± 0.40	-0.02	1910-you-1(∇)	493.15	602.40 ± 2.00	-1.74	1910-you-1(∇)
333.15	858.80 ± 0.60	-0.10	1910-you-1(∇)	503.15	575.70 ± 3.00	-1.02	1910-you-1(∇)
343.15	846.60 ± 0.60	-0.15	1910-you-1(∇)	513.15	548.30 ± 4.00	5.33	1910-you-1(∇)
353.15	834.10 ± 0.60	-0.23	1910-you-1(∇)	523.15	502.50 ± 5.00	3.80	1910-you-1(∇)
363.15	822.40 ± 0.80	0.78	1910-you-1(∇)	533.15	440.40 ± 6.00	9.76	1910-you-1 ¹⁾
373.15	808.00 ± 0.80	-0.58	1910-you-1(∇)	293.15	905.90 ± 0.40	0.29	1914-low(○)
383.15	794.70 ± 0.80	-0.47	1910-you-1(∇)	293.15	903.90 ± 1.00	-1.71	1948-vog-9 ¹⁾
393.15	781.10 ± 0.80	-0.25	1910-you-1(∇)	314.65	881.20 ± 1.00	0.39	1948-vog-9(Δ)
403.15	767.00 ± 1.00	-0.08	1910-you-1(∇)	333.15	860.20 ± 1.00	1.30	1948-vog-9 ¹⁾
413.15	752.30 ± 1.00	-0.04	1910-you-1(∇)	273.15	928.28 ± 0.20	-0.07	1959-tim/hen(□)
423.15	736.90 ± 1.00	-0.19	1910-you-1(∇)	288.15	911.06 ± 0.20	-0.25	1959-tim/hen(□)
433.15	720.90 ± 1.00	-0.33	1910-you-1(∇)	303.15	894.03 ± 0.20	-0.11	1959-tim/hen(□)

¹⁾ Not included in Fig. 1.

Further references: [1870-pie/puc, 1872-pie/puc, 1883-els, 1884-per, 1884-sch-6, 1886-gar, 1890-gar, 1892-lan/jah, 1893-you/tho, 1908-ric/mat, 1908-ric/mat-1, 1910-bir, 1912-ric/stu, 1916-kur/per, 1919-eyk, 1926-han, 1926-mat, 1947-fre, 1960-sol/bar, 1962-sok, 1967-bar/fro, 1970-ere, 1980-svo/uch, 1986-jim/rom, 1988-pin/bra].

cont.

Propyl methanoate (cont.)

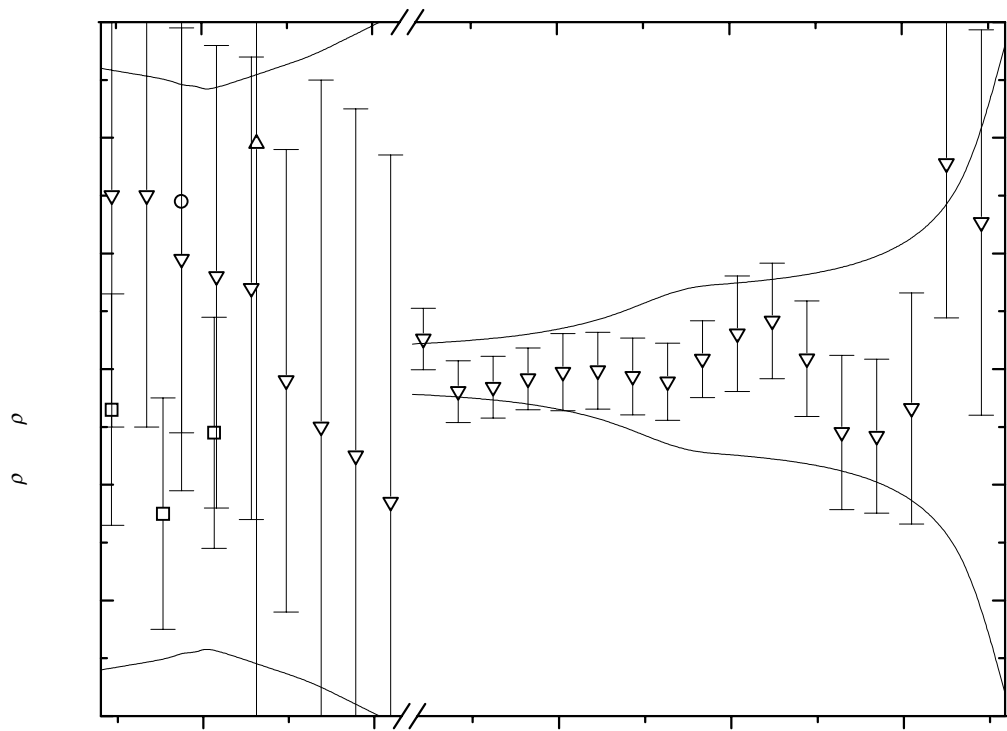


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the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

$\frac{T}{K}$	$\frac{\rho \pm \sigma_{fit}}{kg \cdot m^{-3}}$	$\frac{T}{K}$	$\frac{\rho \pm \sigma_{fit}}{kg \cdot m^{-3}}$	$\frac{T}{K}$	$\frac{\rho \pm \sigma_{fit}}{kg \cdot m^{-3}}$
270.00	931.92 ± 0.52	350.00	838.27 ± 0.60	450.00	692.08 ± 2.21
280.00	920.58 ± 0.51	360.00	825.66 ± 0.65	460.00	673.76 ± 2.29
290.00	909.21 ± 0.50	370.00	812.73 ± 0.70	470.00	654.67 ± 2.40
293.15	905.61 ± 0.49	380.00	799.43 ± 0.77	480.00	634.33 ± 2.56
298.15	899.89 ± 0.49	390.00	785.75 ± 0.86	490.00	611.86 ± 2.80
300.00	897.77 ± 0.49	400.00	771.63 ± 1.00	500.00	585.91 ± 3.18
310.00	886.22 ± 0.50	410.00	757.04 ± 1.19	510.00	554.47 ± 3.83
320.00	874.54 ± 0.52	420.00	741.95 ± 1.47	520.00	514.20 ± 5.10
330.00	862.68 ± 0.54	430.00	726.32 ± 1.85	530.00	456.84 ± 8.41
340.00	850.60 ± 0.57	440.00	709.70 ± 2.15		

Butyl methanoate [592-84-7] C₅H₁₀O₂ MW = 102.13 8

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{c,w} = 8.1084 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 1.6068 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

Coefficient	T = 273.15 to 370.30 K $\rho = A + BT + CT^2 + DT^3 + \dots$
A	$1.08212 \cdot 10^3$
B	$-3.06523 \cdot 10^{-1}$
C	$-1.17099 \cdot 10^{-3}$

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

$\frac{T}{K}$	$\frac{\rho_{exp} \pm 2\sigma_{est}}{kg \cdot m^{-3}}$	$\frac{\rho_{exp} - \rho_{calc}}{kg \cdot m^{-3}}$	Ref. (Symbol in Fig. 1)	$\frac{T}{K}$	$\frac{\rho_{exp} \pm 2\sigma_{est}}{kg \cdot m^{-3}}$	$\frac{\rho_{exp} - \rho_{calc}}{kg \cdot m^{-3}}$	Ref. (Symbol in Fig. 1)
273.15	910.60 ± 0.60	-0.43	1886-gar(◆)	360.05	819.60 ± 0.40	-0.36	1943-fri/har(□)
282.45	901.60 ± 0.60	-0.53	1886-gar(◆)	370.30	807.80 ± 0.50	-0.25	1943-fri/har(□)
294.15	890.00 ± 0.60	-0.64	1886-gar(◆)	293.15	891.70 ± 0.60	0.07	1948-vog-9(×)
301.15	883.10 ± 0.60	-0.51	1886-gar(◆)	314.85	870.10 ± 0.60	0.57	1948-vog-9(×)
305.65	878.40 ± 0.60	-0.64	1886-gar(◆)	334.95	849.20 ± 0.80	1.12	1948-vog-9(×)
311.45	872.50 ± 0.60	-0.57	1886-gar(◆)	358.75	823.10 ± 0.80	1.65	1948-vog-9(×)
324.15	859.60 ± 0.80	-0.12	1886-gar(◆)	293.15	892.00 ± 1.00	0.37	1960-sol/bar(×)
338.35	845.00 ± 0.80	0.65	1886-gar(◆)	293.15	892.00 ± 1.00	0.37	1967-bar/fro(×)
351.65	830.30 ± 0.80	0.77	1886-gar(◆)	293.15	891.70 ± 0.50	0.07	1970-ere(∇)
370.45	810.70 ± 0.80	2.83	1886-gar ¹⁾	298.15	885.33 ± 1.00	-1.31	1980-svo/uch(×)
289.45	894.60 ± 0.40	-0.69	1943-fri/har(□)	308.15	876.93 ± 1.00	0.46	1980-svo/uch(×)
325.28	856.90 ± 0.40	-1.62	1943-fri/har(□)	298.15	887.64 ± 0.50	1.00	1985-ort-2(Δ)
351.05	829.80 ± 0.40	-0.41	1943-fri/har(□)				

¹⁾ Not included in Fig. 1.

Further references: [1883-sch-3, 1890-gar, 1919-eyk, 1926-han, 1926-mat, 1926-mun, 1939-ger, 1975-nay/zor, 1986-jim/rom].

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

$\frac{T}{K}$	$\frac{\rho \pm \sigma_{fit}}{kg \cdot m^{-3}}$	$\frac{T}{K}$	$\frac{\rho \pm \sigma_{fit}}{kg \cdot m^{-3}}$	$\frac{T}{K}$	$\frac{\rho \pm \sigma_{fit}}{kg \cdot m^{-3}}$
270.00	914.00 ± 0.85	300.00	884.78 ± 0.67	350.00	831.39 ± 0.68
280.00	904.49 ± 0.75	310.00	874.57 ± 0.66	360.00	820.01 ± 0.71
290.00	894.75 ± 0.70	320.00	864.13 ± 0.66	370.00	808.40 ± 0.78
293.15	891.63 ± 0.68	330.00	853.45 ± 0.66	380.00	796.55 ± 0.89
298.15	886.64 ± 0.67	340.00	842.54 ± 0.67		

cont.

Butyl methanoate (cont.)

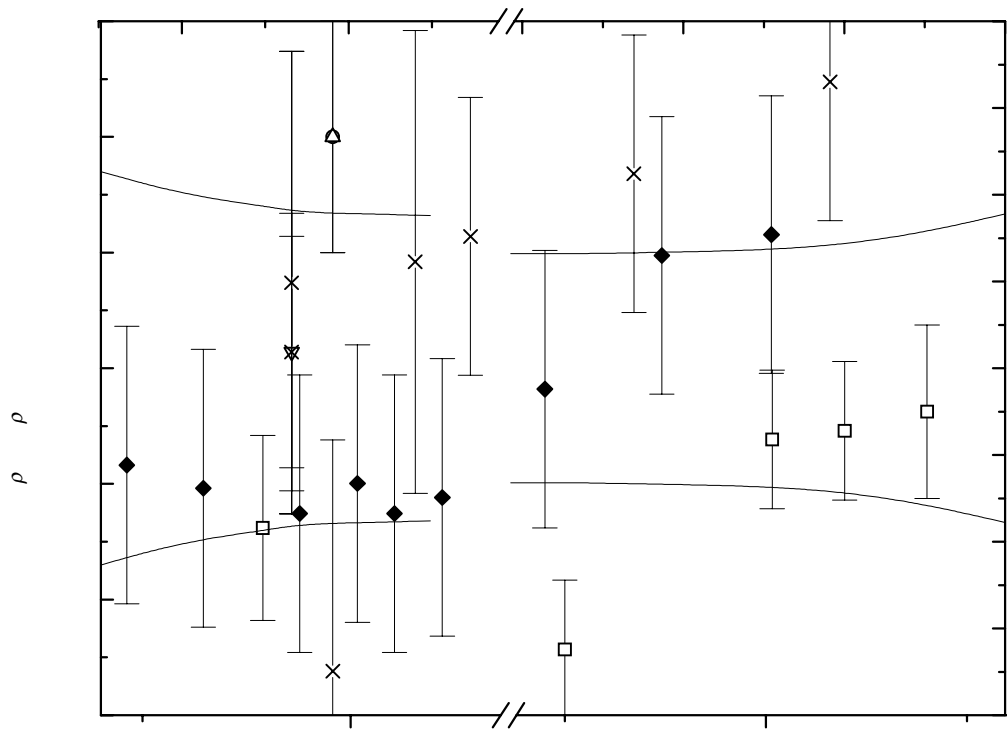


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the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

1,1-Dimethylethyl methanoate

[762-75-4]

C₅H₁₀O₂

MW = 102.13

9

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.
298.15	871.8 ± 2.0	1954-bar/naf
298.15	817.7 ± 2.0	1958-you/par

Ethyl propanoate [105-37-3] C₅H₁₀O₂ MW = 102.13 10

$T_c = 546.05$ K [1910-you]

$\rho_c = 296.00$ kg·m⁻³ [1910-you]

Table 1. Coefficients for the polynomial expansion equations. Standard deviations (see introduction): $\sigma_l = 5.3896 \cdot 10^{-1}$ (low temperature range), $\sigma_{c,w} = (5.8159 \cdot 10^{-1})$ combined temperature ranges, weighted), $\sigma_{c,uw} = 1.3357 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

Coefficient	$T = 273.15$ to 440.00 K $\rho = A + BT + CT^2 + DT^3 + \dots$	$T = 440.00$ to 546.05 K $\rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)]$ $[\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$
A	$1.27234 \cdot 10^3$	1.34312
B	-1.78530	$-2.74869 \cdot 10^{-2}$
C	$2.69168 \cdot 10^{-3}$	$2.56429 \cdot 10^{-4}$
D	$-3.59465 \cdot 10^{-6}$	$-8.70813 \cdot 10^{-7}$

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. (Symbol in Fig. 1)	T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ kg·m ⁻³	$\rho_{\text{exp}} - \rho_{\text{calc}}$ kg·m ⁻³	Ref. (Symbol in Fig. 1)
273.15	910.89 ± 1.00	-1.36	1881-nac/pag ¹⁾	273.15	912.38 ± 0.60	0.13	1893-you/tho(X)
285.18	897.50 ± 1.00	-1.24	1881-nac/pag ¹⁾	273.15	912.42 ± 0.30	0.17	1910-tim(Δ)
289.75	896.80 ± 1.00	3.21	1881-nac/pag ¹⁾	273.15	912.40 ± 0.40	0.15	1910-you-1(X)
297.27	883.70 ± 1.00	-1.36	1881-nac/pag ¹⁾	283.15	901.10 ± 0.40	0.07	1910-you-1(X)
297.72	883.20 ± 1.00	-1.34	1881-nac/pag ¹⁾	293.15	890.10 ± 0.40	0.36	1910-you-1(X)
303.58	876.40 ± 1.00	-1.45	1881-nac/pag ¹⁾	303.15	879.10 ± 0.40	0.75	1910-you-1(X)
304.87	875.80 ± 1.00	-0.58	1881-nac/pag ¹⁾	313.15	867.20 ± 0.40	0.36	1910-you-1(X)
314.69	863.70 ± 1.00	-1.36	1881-nac/pag(X)	323.15	855.70 ± 0.40	0.50	1910-you-1(X)
315.33	862.90 ± 1.00	-1.41	1881-nac/pag(X)	333.15	844.00 ± 0.60	0.60	1910-you-1(X)
324.44	852.30 ± 1.00	-1.39	1881-nac/pag(X)	343.15	832.00 ± 0.60	0.58	1910-you-1(X)
325.20	851.40 ± 1.00	-1.39	1881-nac/pag(X)	353.15	820.10 ± 0.60	0.87	1910-you-1(X)
336.47	837.90 ± 1.00	-1.54	1881-nac/pag(X)	363.15	807.70 ± 0.80	0.87	1910-you-1(X)
337.61	836.50 ± 1.00	-1.58	1881-nac/pag(X)	373.15	795.10 ± 0.80	0.92	1910-you-1(X)
347.03	825.40 ± 1.00	-1.31	1881-nac/pag(X)	383.15	782.30 ± 0.80	1.04	1910-you-1(X)
347.61	824.70 ± 1.00	-1.31	1881-nac/pag(X)	393.15	769.20 ± 0.80	1.15	1910-you-1(X)
355.93	814.80 ± 1.50	-1.01	1881-nac/pag(X)	403.15	754.80 ± 1.00	0.26	1910-you-1(X)
357.73	812.40 ± 1.50	-1.18	1881-nac/pag(X)	413.15	741.30 ± 1.00	0.61	1910-you-1(X)
366.11	802.00 ± 1.50	-1.11	1881-nac/pag(X)	423.15	726.70 ± 1.00	0.21	1910-you-1(X)
273.15	912.35 ± 0.60	0.10	1883-els(X)	433.15	711.50 ± 1.00	-0.42	1910-you-1 ¹⁾
371.95	796.30 ± 1.00	0.59	1883-sch-3(X)	443.15	695.80 ± 1.00	-1.05	1910-you-1(X)
371.95	796.10 ± 1.00	0.39	1883-sch-3(X)	453.15	679.50 ± 1.00	-0.62	1910-you-1(X)
288.15	895.01 ± 0.50	-0.38	1884-per(X)	463.15	662.50 ± 1.50	0.34	1910-you-1(X)
298.15	883.68 ± 0.50	-0.37	1884-per(X)	473.15	644.30 ± 1.50	0.89	1910-you-1(X)
372.15	796.00 ± 1.00	0.55	1884-sch-6(X)	483.15	624.30 ± 1.50	0.47	1910-you-1(X)
291.15	891.24 ± 0.50	-0.76	1891-sch/kos(X)	493.15	602.70 ± 1.50	-0.13	1910-you-1(X)

¹⁾ Not included in Fig. 1.

cont.

Ethyl propanoate (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)
503.15	578.40 ± 2.00	-0.89	1910-you-1(×)	273.15	912.48 ± 0.50	0.23	1930-tim/hen(×)
513.15	550.10 ± 2.00	-1.38	1910-you-1(×)	288.15	895.71 ± 0.50	0.32	1930-tim/hen(×)
523.15	518.10 ± 3.00	1.37	1910-you-1(×)	303.15	879.00 ± 0.50	0.65	1930-tim/hen(×)
533.15	474.40 ± 4.00	4.34	1910-you-1(×)	293.15	890.10 ± 0.40	0.36	1947-fre(×)
543.15	401.80 ± 5.00	9.44	1910-you-1 ¹⁾	293.15	891.70 ± 0.60	1.96	1948-vog-9 ¹⁾
283.15	901.03 ± 0.50	-0.00	1911-liv/mor(×)	315.65	865.50 ± 0.60	1.56	1948-vog-9(×)
307.05	874.32 ± 0.50	0.45	1911-liv/mor(×)	332.75	845.70 ± 0.60	1.83	1948-vog-9(×)
332.35	845.02 ± 0.50	0.67	1911-liv/mor(×)	298.15	884.04 ± 0.40	-0.01	1986-jim/rom(◆)
273.15	912.41 ± 0.40	0.16	1912-tim-1(∇)	298.15	883.98 ± 0.20	-0.07	1988-mat/ort(○)
298.15	883.00 ± 1.00	-1.05	1924-kur/kro ¹⁾	298.15	884.02 ± 0.20	-0.03	1998-bla/ort(□)
343.15	830.20 ± 1.00	-1.22	1924-kur/kro(×)				

¹⁾ Not included in Fig. 1.

Further references: [1871-lin, 1872-pie/puc, 1890-gar, 1891-sch/kos, 1893-eyk-1, 1903-you/for, 1908-ric/mat, 1908-ric/mat-1, 1911-dob, 1911-eis, 1912-ric/stu, 1913-bak, 1913-von/eis, 1918-mat/fav, 1919-eyk, 1922-dri/fir, 1922-tro, 1926-mat, 1926-mun, 1934-gil/dex, 1949-eng/sch, 1965-pau/nar, 1965-pol/mer, 1970-ere, 1970-sii/hal, 1977-svo/ves].

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	915.78 ± 0.71	350.00	823.09 ± 0.89	450.00	685.56 ± 2.20
280.00	904.57 ± 0.69	360.00	810.76 ± 0.95	460.00	667.91 ± 2.25
290.00	893.30 ± 0.67	370.00	798.19 ± 1.02	470.00	649.39 ± 2.32
293.15	889.74 ± 0.67	380.00	785.36 ± 1.08	480.00	630.12 ± 2.41
298.15	884.05 ± 0.67	390.00	772.25 ± 1.14	490.00	609.66 ± 2.54
300.00	881.94 ± 0.67	400.00	758.83 ± 1.22	500.00	587.07 ± 2.72
310.00	870.48 ± 0.69	410.00	745.09 ± 1.32	510.00	560.84 ± 2.99
320.00	858.88 ± 0.72	420.00	731.00 ± 1.46	520.00	528.65 ± 3.41
330.00	847.13 ± 0.76	430.00	716.55 ± 1.65	530.00	486.57 ± 4.15
340.00	835.21 ± 0.83	440.00	701.71 ± 1.92	540.00	423.97 ± 5.61

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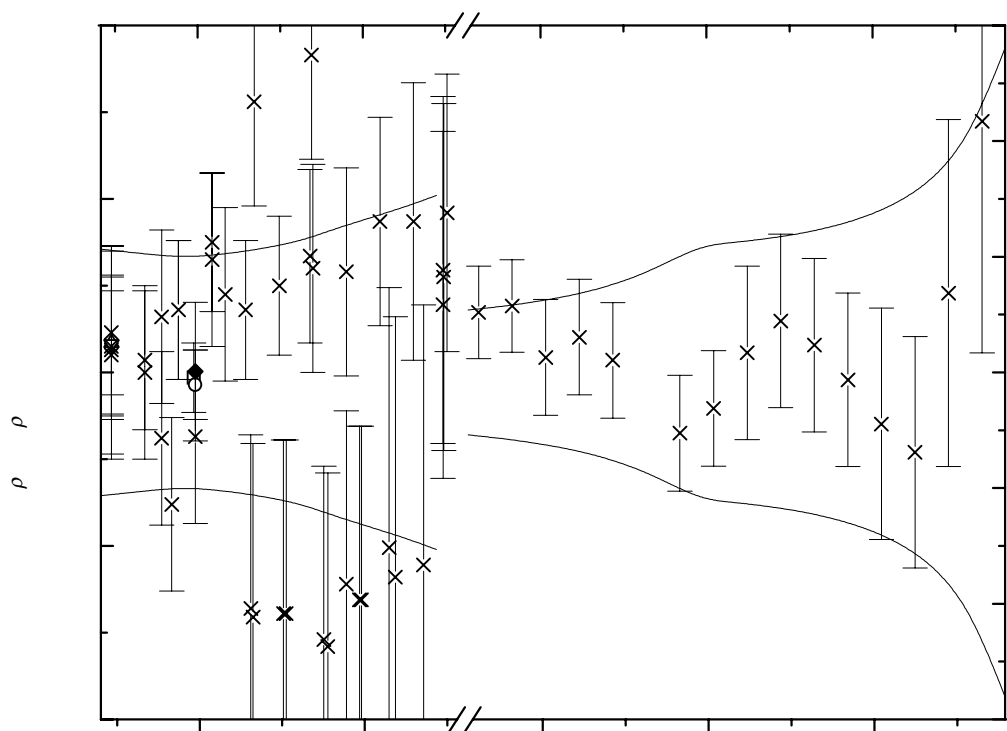


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the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

Methyl butanoate [623-42-7] C₅H₁₀O₂ MW = 102.13 11

$T_c = 554.45$ K [1910-you]
 $\rho_c = 299.00$ kg·m⁻³ [1910-you]

Table 1. Coefficients for the polynomial expansion equations. Standard deviations (see introduction):
 $\sigma_l = 3.0769 \cdot 10^{-1}$ (low temperature range), $\sigma_{c,w} = (3.0947 \cdot 10^{-1})$ combined temperature ranges, weighted),
 $\sigma_{c,uw} = 1.8313 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

Coefficient	$T = 273.15$ to 445.00 K $\rho = A + BT + CT^2 + DT^3 + \dots$	$T = 445.00$ to 554.45 K $\rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)]$ $[\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$
	A B C D	$1.39809 \cdot 10^3$ -2.88852 $6.01111 \cdot 10^{-3}$ $-6.74161 \cdot 10^{-6}$
		1.31613 $-2.52260 \cdot 10^{-2}$ $2.13975 \cdot 10^{-4}$ $-6.56755 \cdot 10^{-7}$

cont.

Methyl butanoate (cont.)

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

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref. (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)
288.15	902.82 ± 0.50	-0.75	1884-per(×)	523.15	550.50 ± 2.00	-0.29	1910-you-1(×)
298.15	891.86 ± 0.50	-0.69	1884-per(×)	533.15	516.60 ± 3.00	2.44	1910-you-1(×)
273.15	919.94 ± 0.60	-0.25	1893-you/tho(×)	543.15	472.10 ± 4.00	7.76	1910-you-1(×)
273.15	920.03 ± 0.40	-0.16	1910-you-1(×)	553.15	381.20 ± 5.00	10.10	1910-you-1 ¹⁾
283.15	909.30 ± 0.40	0.20	1910-you-1(×)	554.45	300.20 ± 6.00	1.20	1910-you-1(×)
293.15	898.40 ± 0.40	0.34	1910-you-1(×)	291.15	900.50 ± 0.50	0.24	1911-dob(×)
303.15	887.30 ± 0.40	0.26	1910-you-1(×)	283.15	909.22 ± 0.50	0.12	1911-liv/mor(×)
313.15	876.00 ± 0.40	0.01	1910-you-1(×)	307.95	881.72 ± 0.50	-0.02	1911-liv/mor(×)
323.15	864.90 ± 0.40	0.02	1910-you-1(×)	333.05	853.72 ± 0.50	-0.06	1911-liv/mor(×)
333.15	853.50 ± 0.60	-0.17	1910-you-1(×)	293.15	898.20 ± 0.50	0.14	1912-ric/stu(◆)
343.15	842.20 ± 0.60	-0.11	1910-you-1(×)	293.15	898.40 ± 0.50	0.34	1914-low(×)
353.15	830.80 ± 0.60	0.04	1910-you-1(×)	285.95	905.92 ± 0.60	-0.08	1919-eyk(×)
363.15	818.80 ± 0.60	-0.19	1910-you-1(×)	293.15	898.10 ± 0.50	0.04	1947-fre(×)
373.15	806.80 ± 0.80	-0.15	1910-you-1(×)	273.15	920.95 ± 0.50	0.76	1948-kop-1(×)
383.15	794.50 ± 0.80	-0.10	1910-you-1(×)	293.15	898.10 ± 0.50	0.04	1948-vog-9(×)
393.15	781.60 ± 0.80	-0.31	1910-you-1(×)	313.85	877.10 ± 0.60	1.88	1948-vog-9 ¹⁾
403.15	768.50 ± 1.00	-0.33	1910-you-1(×)	333.75	853.70 ± 0.60	0.71	1948-vog-9(×)
413.15	755.10 ± 1.00	-0.22	1910-you-1(×)	360.25	826.10 ± 0.00	3.67	1948-vog-9 ¹⁾
423.15	741.50 ± 1.00	0.16	1910-you-1(×)	293.15	898.20 ± 0.40	0.14	1964-gou/vlu(∇)
433.15	727.00 ± 1.00	0.15	1910-you-1(×)	313.15	876.30 ± 0.40	0.31	1964-gou/vlu(∇)
443.15	712.20 ± 1.00	0.39	1910-you-1 ¹⁾	298.15	892.60 ± 0.50	0.05	1976-dus/pie(×)
453.15	696.40 ± 1.50	0.44	1910-you-1(×)	298.15	892.49 ± 0.20	-0.06	1985-fer/pin(Δ)
463.15	680.00 ± 1.50	0.84	1910-you-1(×)	298.15	892.48 ± 0.15	-0.07	1987-fer/ber(□)
473.15	663.30 ± 1.50	1.51	1910-you-1(×)	278.15	914.27 ± 0.50	-0.36	1989-khi/zhu(×)
483.15	644.80 ± 1.50	1.01	1910-you-1(×)	333.15	853.77 ± 0.50	0.10	1989-khi/zhu(×)
493.15	625.10 ± 2.00	0.37	1910-you-1(×)	298.15	892.37 ± 0.20	-0.18	1990-ort/sus(○)
503.15	601.80 ± 2.00	-2.01	1910-you-1(×)	298.15	892.61 ± 0.62	0.06	1995-pos/gar(×)
513.15	577.30 ± 2.00	-2.46	1910-you-1(×)				

¹⁾ Not included in Fig. 1.

Further references: [1864-lan, 1883-els, 1883-sch-3, 1884-sch-6, 1886-gar, 1890-gar, 1898-kah, 1908-ric/mat, 1908-ric/mat-1, 1919-kro, 1926-mun, 1934-gil/dex, 1935-sch-2, 1943-ang/hil, 1952-gro/feu, 1959-shu/bel-3, 1963-voi, 1972-ogl/sem].

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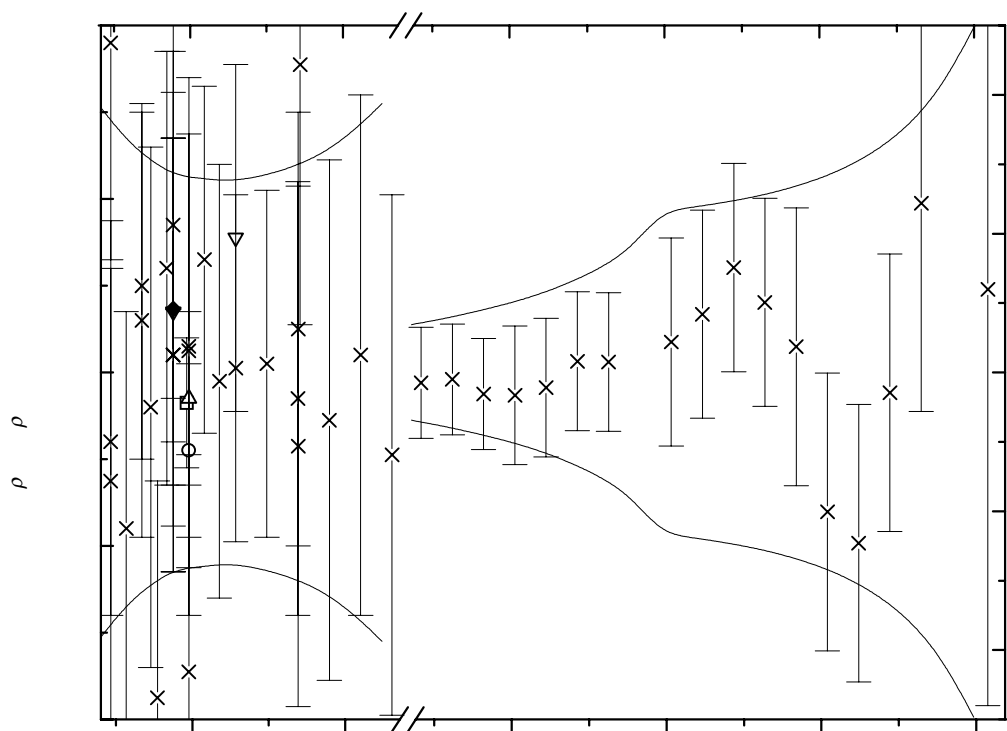


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the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

$\frac{T}{K}$	$\frac{\rho \pm \sigma_{fit}}{kg \cdot m^{-3}}$	$\frac{T}{K}$	$\frac{\rho \pm \sigma_{fit}}{kg \cdot m^{-3}}$	$\frac{T}{K}$	$\frac{\rho \pm \sigma_{fit}}{kg \cdot m^{-3}}$
270.00	923.70 ± 0.61	360.00	822.72 ± 0.62	460.00	684.53 ± 2.38
280.00	912.58 ± 0.52	370.00	810.77 ± 0.69	470.00	667.32 ± 2.45
290.00	901.53 ± 0.47	380.00	798.53 ± 0.77	480.00	649.54 ± 2.53
293.15	898.06 ± 0.46	390.00	785.95 ± 0.87	490.00	630.89 ± 2.64
298.15	892.55 ± 0.45	400.00	772.99 ± 0.98	500.00	610.67 ± 2.78
300.00	890.51 ± 0.45	410.00	759.62 ± 1.11	510.00	587.76 ± 2.97
310.00	879.48 ± 0.44	420.00	745.80 ± 1.28	520.00	560.59 ± 3.23
320.00	868.39 ± 0.45	430.00	731.47 ± 1.49	530.00	526.76 ± 3.59
330.00	857.21 ± 0.47	440.00	716.61 ± 1.77	540.00	482.08 ± 4.13
340.00	845.90 ± 0.50	450.00	701.08 ± 2.32	550.00	412.85 ± 4.97
350.00	834.42 ± 0.55				

Methyl 2-methylpropanoate

[547-63-7]

C₅H₁₀O₂

MW = 102.13

12

$T_c = 540.70\text{ K}$ [1910-you]

$\rho_c = 301.00\text{ kg}\cdot\text{m}^{-3}$ [1910-you]

Table 1. Coefficients for the polynomial expansion equations. Standard deviations (see introduction): $\sigma_l = 2.6829 \cdot 10^{-1}$ (low temperature range), $\sigma_{c,w} = (6.7584 \cdot 10^{-1}$ combined temperature ranges, weighted), $\sigma_{c,uw} = 4.4433 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

Coefficient	$T = 273.15\text{ to }430.00\text{ K}$ $\rho = A + BT + CT^2 + DT^3 + \dots$	$T = 430.00\text{ to }540.70\text{ K}$ $\rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)]$ $[\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$
A	$1.37776 \cdot 10^3$	1.30468
B	-2.79882	$-2.67575 \cdot 10^{-2}$
C	$5.86678 \cdot 10^{-3}$	$2.37637 \cdot 10^{-4}$
D	$-6.84868 \cdot 10^{-6}$	$-7.51693 \cdot 10^{-7}$

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)
365.55	804.90 ± 1.50	0.82	1884-sch-6(∇)	463.15	659.30 ± 1.50	1.83	1910-you-1(Δ)
273.15	911.33 ± 0.50	-0.09	1893-you/tho(◆)	473.15	641.10 ± 1.50	2.05	1910-you-1(Δ)
295.80	886.10 ± 0.50	0.15	1893-you/tho(◆)	483.15	620.00 ± 1.50	0.45	1910-you-1(Δ)
297.85	883.65 ± 0.50	0.01	1893-you/tho(◆)	493.15	596.10 ± 1.50	-1.86	1910-you-1(Δ)
273.15	911.31 ± 0.50	-0.11	1910-you-1(Δ)	503.15	569.00 ± 2.00	-3.78	1910-you-1(Δ)
283.15	900.30 ± 0.50	0.13	1910-you-1(Δ)	513.15	538.60 ± 2.00	-3.21	1910-you-1(Δ)
293.15	889.00 ± 0.50	0.07	1910-you-1(Δ)	523.15	502.10 ± 2.00	0.63	1910-you-1(Δ)
303.15	877.60 ± 0.50	-0.06	1910-you-1(Δ)	529.15	473.50 ± 2.00	3.73	1910-you-1(Δ)
313.15	866.20 ± 0.50	-0.12	1910-you-1(Δ)	533.15	449.50 ± 3.00	6.44	1910-you-1(Δ)
323.15	854.60 ± 0.50	-0.26	1910-you-1(Δ)	536.15	425.80 ± 4.00	8.40	1910-you-1(Δ)
333.15	843.10 ± 0.60	-0.15	1910-you-1(Δ)	538.15	403.60 ± 5.00	9.11	1910-you-1(Δ)
343.15	831.20 ± 0.60	-0.24	1910-you-1(Δ)	539.65	379.00 ± 6.00	10.21	1910-you-1(Δ)
353.15	819.20 ± 0.60	-0.20	1910-you-1(Δ)	283.15	900.30 ± 0.60	0.13	1911-liv/mor(□)
363.15	806.90 ± 0.60	-0.18	1910-you-1(Δ)	307.05	873.25 ± 0.60	0.00	1911-liv/mor(□)
373.15	794.50 ± 0.80	0.06	1910-you-1(Δ)	333.25	842.92 ± 0.60	-0.21	1911-liv/mor(□)
383.15	781.50 ± 0.80	0.06	1910-you-1(Δ)	293.15	888.40 ± 0.60	-0.53	1948-vog-9(○)
393.15	768.00 ± 0.80	-0.04	1910-you-1(Δ)	294.15	887.30 ± 0.60	-0.50	1948-vog-9(○)
403.15	753.90 ± 1.00	-0.30	1910-you-1(Δ)	296.85	884.40 ± 0.60	-0.37	1948-vog-9(○)
413.15	739.60 ± 1.00	-0.27	1910-you-1(Δ)	301.65	879.30 ± 0.60	-0.05	1948-vog-9(○)
423.15	724.80 ± 1.00	-0.22	1910-you-1(Δ)	313.55	867.10 ± 1.00	1.24	1948-vog-9(○)
433.15	709.50 ± 1.00	-0.04	1910-you-1(Δ)	314.05	866.50 ± 1.00	1.21	1948-vog-9(○)
443.15	693.30 ± 1.00	0.46	1910-you-1(Δ)	331.05	847.20 ± 1.00	1.50	1948-vog-9 ¹⁾
453.15	676.70 ± 1.50	1.33	1910-you-1(Δ)	333.55	844.50 ± 1.00	1.72	1948-vog-9 ¹⁾

¹⁾ Not included in Fig. 1.

Further references: [1890-gar, 1908-ric/mat, 1912-ric/stu, 1917-jae-1, 1926-mat, 1963-sch].

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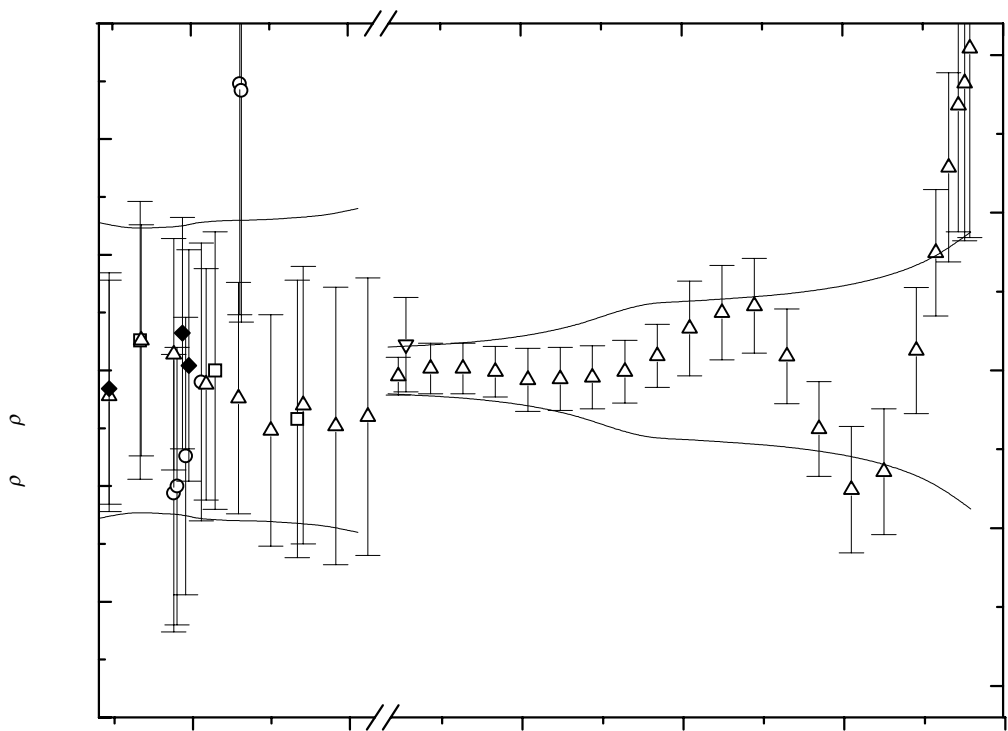


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the 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	914.97 ± 0.64	350.00	823.22 ± 0.70	450.00	680.93 ± 2.18
280.00	903.71 ± 0.61	360.00	810.99 ± 0.74	460.00	663.15 ± 2.24
290.00	892.47 ± 0.62	370.00	798.46 ± 0.79	470.00	644.94 ± 2.31
293.15	888.93 ± 0.62	380.00	785.58 ± 0.85	480.00	625.86 ± 2.39
298.15	883.30 ± 0.63	390.00	772.31 ± 0.94	490.00	605.07 ± 2.51
300.00	881.22 ± 0.64	400.00	758.61 ± 1.06	500.00	581.22 ± 2.66
310.00	869.90 ± 0.65	410.00	744.44 ± 1.24	510.00	552.37 ± 2.88
320.00	858.48 ± 0.65	420.00	729.76 ± 1.49	520.00	515.52 ± 3.18
330.00	846.93 ± 0.66	430.00	714.52 ± 1.85	530.00	464.58 ± 3.64
340.00	835.19 ± 0.67	440.00	698.22 ± 2.14	540.00	359.77 ± 4.39

1-Methylethyl ethanoate

[108-21-4]

C₅H₁₀O₂

MW = 102.13

13

Table 1. Fit with estimated *B* coefficient for 8 accepted points. Deviation $\sigma_w = 0.920$.

Coefficient	$\rho = A + BT$
<i>A</i>	1194.47
<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.	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
298.15	869.0 ± 2.0	2.50	1926-mun ¹⁾	293.15	872.1 ± 0.6	0.10	1968-ano
298.15	857.0 ± 4.0	-9.50	1934-dor/sow ¹⁾	293.15	871.8 ± 0.6	-0.20	1973-gei/qui
293.15	871.8 ± 0.6	-0.20	1948-vog-9	298.15	866.5 ± 0.6	-0.03	1991-kri/vis
314.85	850.2 ± 0.6	2.07	1948-vog-9	308.15	854.1 ± 0.6	-1.35	1991-kri/vis
335.25	825.1 ± 0.8	-0.59	1948-vog-9	298.15	866.5 ± 0.6	-0.03	1994-kri/vis

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	875.5 ± 1.1	310.00	853.5 ± 1.1	330.00	831.5 ± 1.5
293.15	872.0 ± 1.1	320.00	842.5 ± 1.2	340.00	820.5 ± 1.8
298.15	866.5 ± 1.0				

2-Methylpropyl methanoate

[542-55-2]

C₅H₁₀O₂

MW = 102.13

14

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{c,w} = 6.7803 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 2.8035 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

Coefficient	T = 289.20 to 361.15 K $\rho = A + BT + CT^2 + DT^3 + \dots$
<i>A</i>	$1.19183 \cdot 10^3$
<i>B</i>	-1.06032

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

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref. (Symbol in Fig. 1)	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref. (Symbol in Fig. 1)
289.20	886.10 ± 0.60	0.91	1943-fri/har(□)	361.15	808.50 ± 1.00	-0.40	1943-fri/har(□)
325.45	847.40 ± 0.60	0.65	1943-fri/har(□)	293.15	879.80 ± 0.80	-1.20	1948-vog-9(○)
336.55	835.40 ± 0.60	0.42	1943-fri/har(□)	313.65	858.80 ± 0.80	-0.46	1948-vog-9(○)
347.75	823.90 ± 0.80	0.80	1943-fri/har(□)	332.45	838.60 ± 1.00	-0.73	1948-vog-9(○)

¹⁾ Not included in Fig. 1.

Further references: [1872-pie/puc, 1884-sch-6, 1890-gar, 1891-sch/kos, 1892-lan/jah, 1912-ric/stu, 1918-mat/fav, 1926-han, 1926-mat, 1926-mun].

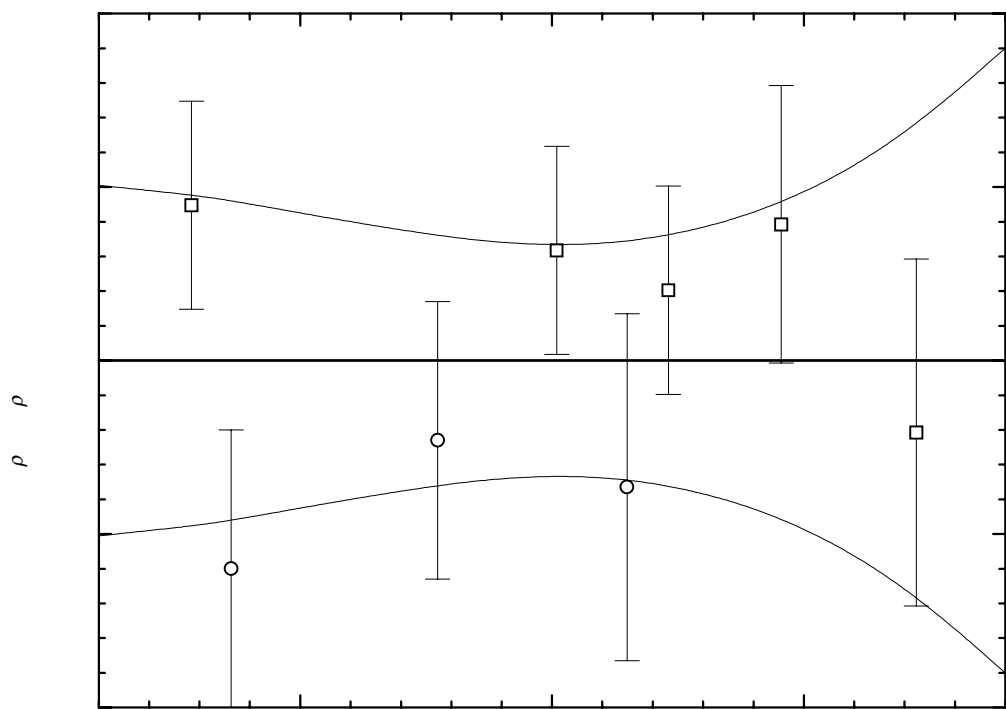


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the 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	894.94 ± 1.01	300.00	873.73 ± 0.85	340.00	831.32 ± 0.75
290.00	884.34 ± 0.95	310.00	863.13 ± 0.75	350.00	820.72 ± 0.95
293.15	881.00 ± 0.92	320.00	852.53 ± 0.67	360.00	810.12 ± 1.29
298.15	875.70 ± 0.87	330.00	841.92 ± 0.66	370.00	799.51 ± 1.80

Propyl ethanoate

[109-60-4]

C₅H₁₀O₂

MW = 102.13

15

$T_c = 549.73\text{ K}$ [1981-amb/ell]

$\rho_c = 295.00\text{ kg}\cdot\text{m}^{-3}$ [1910-you]

Table 1. Coefficients for the polynomial expansion equations. Standard deviations (see introduction): $\sigma_l = 2.8680 \cdot 10^{-1}$ (low temperature range), $\sigma_{c,w} = (2.8555 \cdot 10^{-1})$ combined temperature ranges, weighted), $\sigma_{c,uw} = 1.2217 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

Coefficient	$T = 273.15\text{ to }430.00\text{ K}$ $\rho = A + BT + CT^2 + DT^3 + \dots$	$T = 430.00\text{ to }549.73\text{ K}$ $\rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)]$ $[\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$
A	$1.25252 \cdot 10^3$	1.21582
B	-1.68559	$-2.14651 \cdot 10^{-2}$
C	$2.52018 \cdot 10^{-3}$	$1.72702 \cdot 10^{-4}$
D	$-3.44262 \cdot 10^{-6}$	$-5.08103 \cdot 10^{-7}$

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	910.13 ± 0.50	0.16	1893-you/tho(×)	513.15	558.60 ± 2.00	-1.30	1910-you-1(×)
273.15	910.13 ± 0.50	0.16	1910-you-1(×)	523.15	528.90 ± 3.00	1.42	1910-you-1(×)
283.15	899.30 ± 0.50	0.16	1910-you-1(×)	533.15	490.80 ± 4.00	4.91	1910-you-1(×)
293.15	888.40 ± 0.50	0.16	1910-you-1 ¹⁾	543.15	433.30 ± 5.00	7.53	1910-you-1 ¹⁾
303.15	877.30 ± 0.50	0.07	1910-you-1 ¹⁾	298.15	883.01 ± 0.20	0.27	1937-woj/smi-1(□)
313.15	866.30 ± 0.50	0.21	1910-you-1(×)	273.15	910.21 ± 0.40	0.24	1959-tim/hen(×)
323.15	855.10 ± 0.50	0.28	1910-you-1(×)	288.15	893.74 ± 0.40	0.04	1959-tim/hen(×)
333.15	843.50 ± 0.60	0.12	1910-you-1(×)	303.15	877.13 ± 0.40	-0.10	1959-tim/hen(×)
343.15	832.00 ± 0.60	0.24	1910-you-1(×)	296.85	884.50 ± 0.30	0.33	1980-mey/awe(×)
353.15	820.10 ± 0.60	0.17	1910-you-1(×)	298.15	882.90 ± 0.30	0.16	1980-mey/awe(×)
363.15	807.90 ± 0.80	0.02	1910-you-1(×)	303.15	877.30 ± 0.30	0.07	1980-mey/awe(×)
373.15	795.70 ± 0.80	0.12	1910-you-1(×)	308.15	871.90 ± 0.30	0.22	1980-mey/awe(×)
383.15	783.00 ± 0.80	-0.02	1910-you-1(×)	313.15	866.10 ± 0.30	0.01	1980-mey/awe(×)
393.15	770.20 ± 0.80	0.04	1910-you-1(×)	323.15	854.80 ± 0.40	-0.02	1980-mey/awe(×)
403.15	757.10 ± 1.00	0.10	1910-you-1(×)	333.15	843.30 ± 0.40	-0.08	1980-mey/awe(×)
413.15	743.50 ± 1.00	-0.01	1910-you-1(×)	343.15	831.40 ± 0.40	-0.36	1980-mey/awe(×)
423.15	729.70 ± 1.00	0.03	1910-you-1 ¹⁾	353.15	819.80 ± 0.40	-0.13	1980-mey/awe(×)
433.15	714.90 ± 1.00	-0.50	1910-you-1(×)	373.15	795.30 ± 0.50	-0.28	1980-mey/awe(×)
443.15	699.70 ± 1.00	-0.17	1910-you-1(×)	298.15	882.76 ± 0.20	0.02	1985-fer/pin(○)
453.15	683.50 ± 1.50	0.14	1910-you-1(×)	293.15	887.80 ± 0.30	-0.44	1992-qin/hof-1(∇)
463.15	666.70 ± 1.50	0.51	1910-you-1(×)	293.15	887.75 ± 0.30	-0.49	1992-qin/hof-1(∇)
473.15	648.80 ± 1.50	0.42	1910-you-1(×)	293.15	887.81 ± 0.30	-0.43	1992-qin/hof-1(∇)
483.15	630.10 ± 1.50	0.47	1910-you-1(×)	293.15	887.78 ± 0.30	-0.46	1992-qin/hof-1(∇)
493.15	608.70 ± 2.00	-0.62	1910-you-1(×)	293.15	887.95 ± 0.30	-0.29	1992-qin/hof-2(◆)
503.15	585.50 ± 2.00	-1.02	1910-you-1(×)	298.15	883.10 ± 0.30	0.36	1994-ben/car(Δ)

¹⁾ Not included in Fig. 1.

cont.

$\frac{T}{K}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	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)
298.15	882.40 ± 0.50	-0.34	1998-ami/ban-1 ¹⁾	308.15	871.30 ± 0.50	-0.38	1998-ami/ban-1(X)
303.15	876.70 ± 0.50	-0.53	1998-ami/ban-1 ¹⁾				

¹⁾ Not included in Fig. 1.

Further references: [1870-pie/puc, 1871-ros, 1872-lin, 1872-pie/puc, 1880-bru-3, 1883-sch-3, 1884-sch-6, 1886-gar, 1890-gar, 1892-lan/jah, 1898-kah, 1910-bir, 1913-bak, 1913-von/eis, 1914-kre/mei, 1914-low, 1918-her-2, 1918-mat/fav, 1926-han, 1926-mat, 1926-mun, 1934-gil/dex, 1935-sch-2, 1937-bue/gar, 1937-woj/smi, 1947-fre, 1948-vog-9, 1949-eng/sch, 1950-mum/phi, 1952-mye/col, 1956-tor, 1958-laf, 1960-smi/mor, 1960-sol/bar, 1964-bre/ulo, 1964-tur/den, 1965-pol/mer, 1967-bar/fro, 1970-ere, 1973-gei/qui, 1975-bel/bal, 1976-dus/pie, 1977-svo/ves, 1977-toj/arc, 1983-kor/tol-1, 1986-jim/rom, 1996-pal].

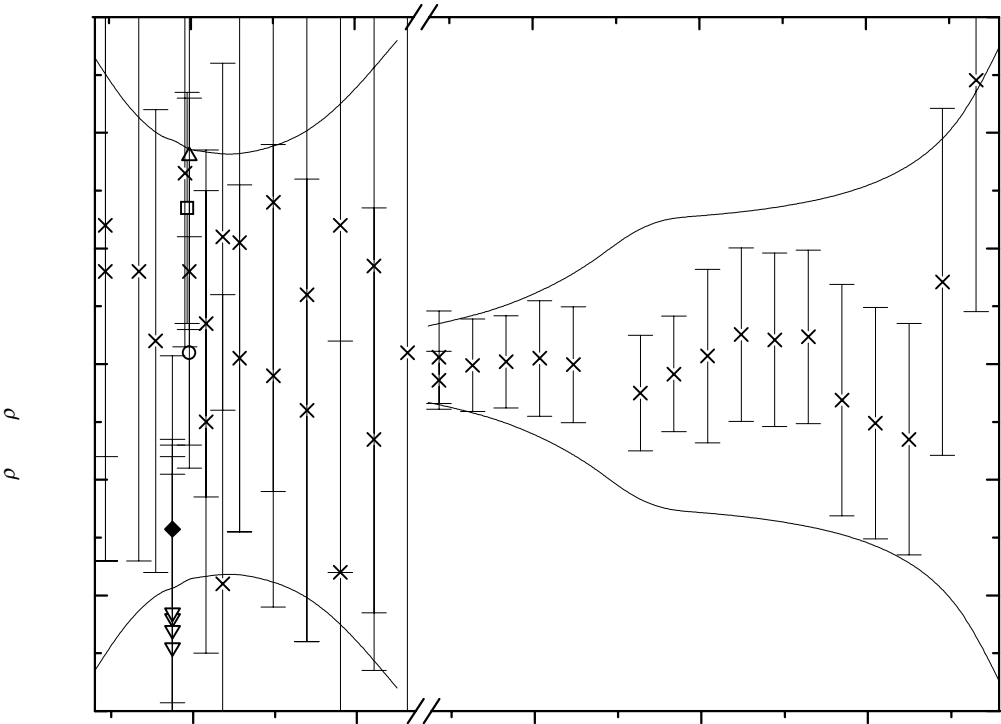


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the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

cont.

Propyl ethanoate (cont.)

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

$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$
270.00	913.37 ± 0.53	350.00	823.68 ± 0.49	450.00	688.64 ± 2.56
280.00	902.56 ± 0.44	360.00	811.70 ± 0.56	460.00	671.66 ± 2.61
290.00	891.68 ± 0.39	370.00	799.48 ± 0.66	470.00	654.07 ± 2.68
293.15	888.24 ± 0.39	380.00	787.00 ± 0.79	480.00	635.67 ± 2.77
298.15	882.74 ± 0.37	390.00	774.24 ± 0.95	490.00	615.93 ± 2.89
300.00	880.71 ± 0.37	400.00	761.18 ± 1.17	500.00	594.04 ± 3.06
310.00	869.61 ± 0.36	410.00	747.80 ± 1.45	510.00	568.80 ± 3.31
320.00	858.39 ± 0.37	420.00	734.07 ± 1.81	520.00	538.48 ± 3.69
330.00	847.00 ± 0.39	430.00	719.98 ± 2.27	530.00	500.31 ± 4.32
340.00	835.44 ± 0.43	440.00	704.89 ± 2.52	540.00	448.08 ± 5.48