

2.1.2 Saturated Monoesters, C₆

Butyl ethanoate

[123-86-4]

C₆H₁₂O₂

MW = 116.16

16

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{c,w} = 3.7747 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 1.3018 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

Coefficient	T = 273.15 to 383.15 K $\rho = A + BT + CT^2 + DT^3 + \dots$
A	$1.14449 \cdot 10^3$
B	$-7.79266 \cdot 10^{-1}$
C	$-4.02678 \cdot 10^{-4}$

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

$\frac{T}{K}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref. (Symbol in Fig. 1)	$\frac{T}{K}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{c}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref. (Symbol in Fig. 1)
273.15	901.40 ± 0.60	-0.19	1886-gar(×)	288.15	886.52 ± 0.20	0.01	1959-tim/hen(Δ)
280.65	894.10 ± 0.60	0.02	1886-gar(×)	303.15	871.29 ± 0.20	0.04	1959-tim/hen(Δ)
293.15	881.70 ± 0.60	0.25	1886-gar ¹⁾	293.15	881.45 ± 0.50	0.00	1961-sch/bot ¹⁾
303.85	870.80 ± 0.60	0.26	1886-gar ¹⁾	298.15	876.67 ± 0.50	0.31	1961-sch/bot ¹⁾
312.25	862.30 ± 0.80	0.39	1886-gar ¹⁾	303.15	871.33 ± 0.50	0.08	1961-sch/bot ¹⁾
318.95	855.30 ± 0.80	0.32	1886-gar ¹⁾	308.15	866.27 ± 0.50	0.14	1961-sch/bot ¹⁾
338.35	835.20 ± 1.00	0.47	1886-gar(×)	313.15	861.37 ± 0.50	0.39	1961-sch/bot(◆)
351.05	821.80 ± 1.00	0.49	1886-gar(×)	308.15	866.60 ± 0.30	0.47	1967-mur/rao(V)
369.05	803.20 ± 1.00	1.14	1886-gar(×)	293.15	881.68 ± 0.30	0.23	1992-qin/hof-2(□)
383.15	786.00 ± 1.50	-0.80	1886-gar(×)	298.15	875.90 ± 0.50	-0.46	1993-ami/pha-1 ¹⁾
273.15	901.50 ± 0.50	-0.09	1926-han(×)	303.15	870.50 ± 0.50	-0.75	1993-ami/pha-1 ¹⁾
298.15	876.36 ± 0.20	-0.00	1937-woj/smi-1(○)	308.15	865.30 ± 0.50	-0.83	1993-ami/pha-1 ¹⁾
298.15	876.25 ± 0.20	-0.11	1937-woj/smi-1(○)	313.15	860.00 ± 0.50	-0.98	1993-ami/pha-1(×)
298.15	876.30 ± 0.20	-0.06	1937-woj/smi-1(○)	318.15	854.80 ± 0.50	-1.01	1993-ami/pha-1(×)
273.15	901.60 ± 0.20	0.01	1959-tim/hen(Δ)				

¹⁾ Not included in Fig. 1.

Further references: [1869-lie, 1871-lie/ros, 1872-lin, 1883-sch-3, 1919-eyk, 1925-smi/ols, 1926-mun, 1933-was/shi, 1934-gil/dex, 1935-bru/fur, 1935-woo, 1937-bue/gar, 1937-woj/smi, 1945-ley/oth, 1946-hou/ste, 1947-flo-1, 1948-vog-9, 1949-eng/sch, 1950-gor, 1950-mum/phi, 1951-sie/cru, 1953-par/cha, 1955-usa/bil, 1956-tor, 1956-usa/bil-1, 1958-laf, 1958-mil-1, 1960-sol/bar, 1962-nar/red-1, 1962-sol/gur, 1962-zil/kul, 1964-bre/ulo, 1964-kli/fri, 1964-tur/den, 1965-bus/bal, 1966-dub/afo, 1967-bar/fro, 1968-ano, 1969-sch/tor, 1970-bla/pop, 1970-ere, 1970-kru/gla, 1970-rid/bun, 1971-tha/rao, 1973-lut/nik, 1975-khi/gri-1, 1976-dus/pie, 1977-toj/arc, 1978-siv/rao, 1980-dia/pal, 1980-mey/awe, 1980-svo/uch, 1981-lut/leb, 1983-bal/kna, 1985-ort/paz-1, 1986-jim/rom, 1988-fer/lap, 1989-khi/zhu, 1990-fer/lap, 1992-qin/hof-1, 1993-ami/rai-2, 1993-ami/rai-3, 1995-kri/ram, 1998-ami/ban-1, 1998-fen/cho].

cont.

Butyl ethanoate (cont.)

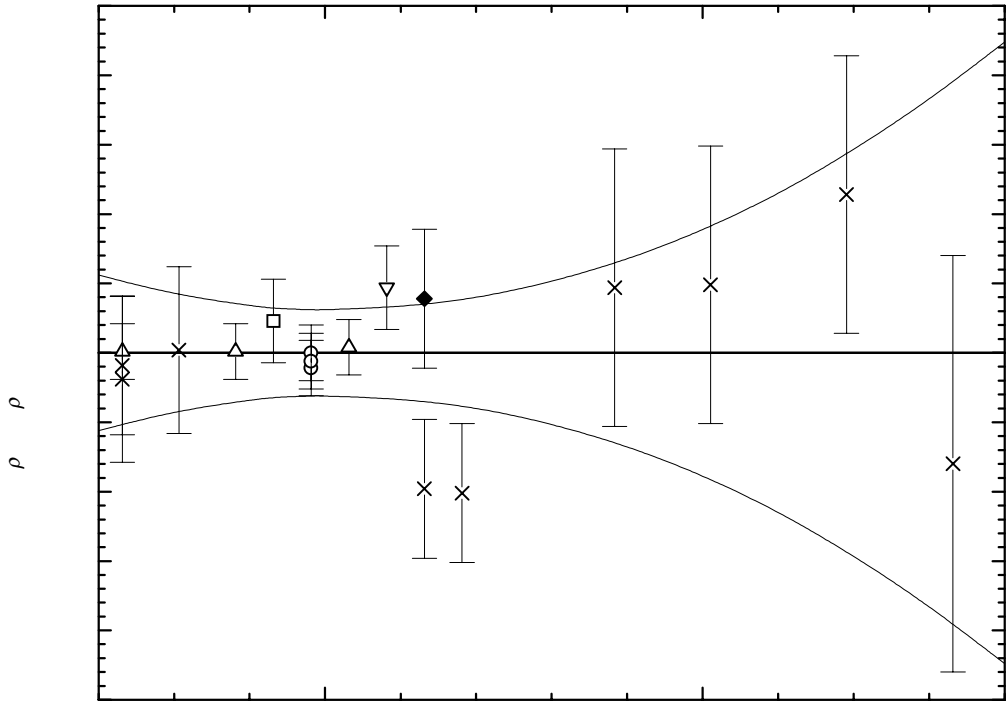


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the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

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	904.74 ± 0.56	300.00	874.47 ± 0.31	350.00	822.42 ± 0.88
280.00	894.73 ± 0.42	310.00	864.23 ± 0.33	360.00	811.77 ± 1.14
290.00	884.64 ± 0.34	320.00	853.90 ± 0.39	370.00	801.04 ± 1.46
293.15	881.45 ± 0.32	330.00	843.49 ± 0.51	380.00	790.23 ± 1.82
298.15	876.36 ± 0.31	340.00	832.99 ± 0.67	390.00	779.33 ± 2.24

1,1-Dimethylethyl ethanoate [540-88-5] C₆H₁₂O₂ MW = 116.16 17

Table 1. Fit with estimated *B* coefficient for 8 accepted points. Deviation $\sigma_w = 0.436$.

Coefficient	$\rho = A + BT$
<i>A</i>	1171.67
<i>B</i>	-1.040

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	859.3 ± 2.0	-2.29	1932-nor/rig ¹⁾	298.45	861.2 ± 0.6	-0.08	1948-vog-9
293.15	866.5 ± 0.6	-0.29	1946-hou/ste	314.35	845.3 ± 0.6	0.55	1948-vog-9
293.15	855.7 ± 8.0	-11.09	1960-pet/sok ¹⁾	315.45	844.4 ± 0.6	0.80	1948-vog-9
293.15	866.5 ± 0.6	-0.29	1948-vog-9	333.65	824.4 ± 0.8	-0.27	1948-vog-9
293.55	866.1 ± 0.6	-0.28	1948-vog-9	334.25	823.6 ± 0.8	-0.45	1948-vog-9

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	870.1 ± 0.9	310.00	849.3 ± 0.7	330.00	828.5 ± 1.1
293.15	866.8 ± 0.8	320.00	838.9 ± 0.8	340.00	818.1 ± 1.5
298.15	861.6 ± 0.7				

1,1-Dimethylpropyl methanoate [757-88-0] C₆H₁₂O₂ MW = 116.16 18

Table1. Experimental and recommended values with uncertainties.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
298.15	885.3 ± 2.0	1954-bar/naf
298.15	882.1 ± 2.0	1958-you/par
298.15	883.7 ± 2.3	Recommended

Ethyl butanoate [105-54-4] C₆H₁₂O₂ MW = 116.16 19

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{c,w} = 8.5435 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 1.8494 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

Coefficient	T = 273.15 to 392.65 K $\rho = A + BT + CT^2 + DT^3 + \dots$
<i>A</i>	$1.13471 \cdot 10^3$
<i>B</i>	$-7.08068 \cdot 10^{-1}$
<i>C</i>	$-5.60493 \cdot 10^{-4}$

cont.

Ethyl 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)
392.65	770.50 ± 1.00	0.22	1883-sch-3(×)	288.15	882.57 ± 0.50	-1.58	1922-tro(×)
392.65	770.30 ± 1.00	0.02	1883-sch-3(×)	298.15	871.82 ± 0.50	-1.96	1922-tro ¹⁾
391.95	770.30 ± 1.00	-0.78	1884-sch-6(×)	273.15	899.96 ± 0.30	0.47	1932-tim/hen(□)
291.15	880.30 ± 0.60	-0.75	1909-fal ¹⁾	288.15	884.38 ± 0.30	0.23	1932-tim/hen(□)
300.45	871.10 ± 0.60	-0.28	1909-fal ¹⁾	303.15	868.69 ± 0.30	0.14	1932-tim/hen(□)
307.75	863.30 ± 0.60	-0.42	1909-fal(×)	293.15	879.00 ± 0.60	0.02	1948-vog-9 ¹⁾
318.95	851.50 ± 0.60	-0.36	1909-fal(×)	314.05	859.40 ± 0.60	2.34	1948-vog-9(×)
330.15	839.40 ± 0.70	-0.45	1909-fal(×)	333.85	839.40 ± 1.00	3.55	1948-vog-9 ¹⁾
341.85	826.40 ± 0.70	-0.76	1909-fal(×)	359.85	811.30 ± 1.00	3.96	1948-vog-9 ¹⁾
273.15	899.70 ± 0.40	0.21	1910-bir(◆)	293.15	879.40 ± 0.40	0.42	1950-mum/phi(Δ)
293.15	878.80 ± 0.40	-0.18	1910-bir(◆)	298.15	874.20 ± 0.40	0.42	1950-mum/phi(Δ)
313.15	857.60 ± 0.40	-0.42	1910-bir(◆)	273.15	899.50 ± 0.60	0.01	1959-hof(×)
298.15	873.60 ± 0.50	-0.18	1916-kur/per ¹⁾	288.15	882.60 ± 0.60	-1.55	1959-hof ¹⁾
323.15	846.80 ± 0.50	-0.57	1916-kur/per(×)	293.15	879.00 ± 0.40	0.02	1963-voi(∇)
343.15	827.90 ± 0.50	2.16	1916-kur/per(×)	298.15	873.54 ± 0.30	-0.24	1998-bla/ort(O)
288.65	882.69 ± 0.50	-0.94	1919-eyk(×)				

¹⁾ Not included in Fig. 1.

Further references: [1848-kop, 1854-kop, 1864-lan, 1866-fra/dup, 1872-lin/von, 1883-els, 1884-per, 1886-gar, 1890-gar, 1893-eyk-1, 1898-kah, 1908-ric/mat, 1908-ric/mat-1, 1911-dob, 1912-ric/stu, 1913-bak, 1913-von/eis, 1915-ric/coo, 1918-mat/fav, 1924-kur, 1925-fai, 1926-mat, 1926-mun, 1934-gil/dex, 1935-sch-2, 1947-fre, 1952-gro/feu, 1953-par/cha, 1963-pan/mat, 1964-kul/zil, 1965-pau/nar, 1969-bes, 1969-sch/tor-1, 1970-chu/kam, 1970-ere, 1970-sii/hal, 1971-che/shv, 1988-mat/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	902.67 ± 0.50	310.00	861.35 ± 0.47	370.00	796.00 ± 0.82
280.00	892.51 ± 0.49	320.00	850.74 ± 0.48	380.00	784.71 ± 1.02
290.00	882.24 ± 0.48	330.00	840.01 ± 0.49	390.00	773.32 ± 1.27
293.15	878.98 ± 0.47	340.00	829.18 ± 0.53	400.00	761.81 ± 1.58
298.15	873.78 ± 0.47	350.00	818.23 ± 0.59		
300.00	871.85 ± 0.47	360.00	807.17 ± 0.68		

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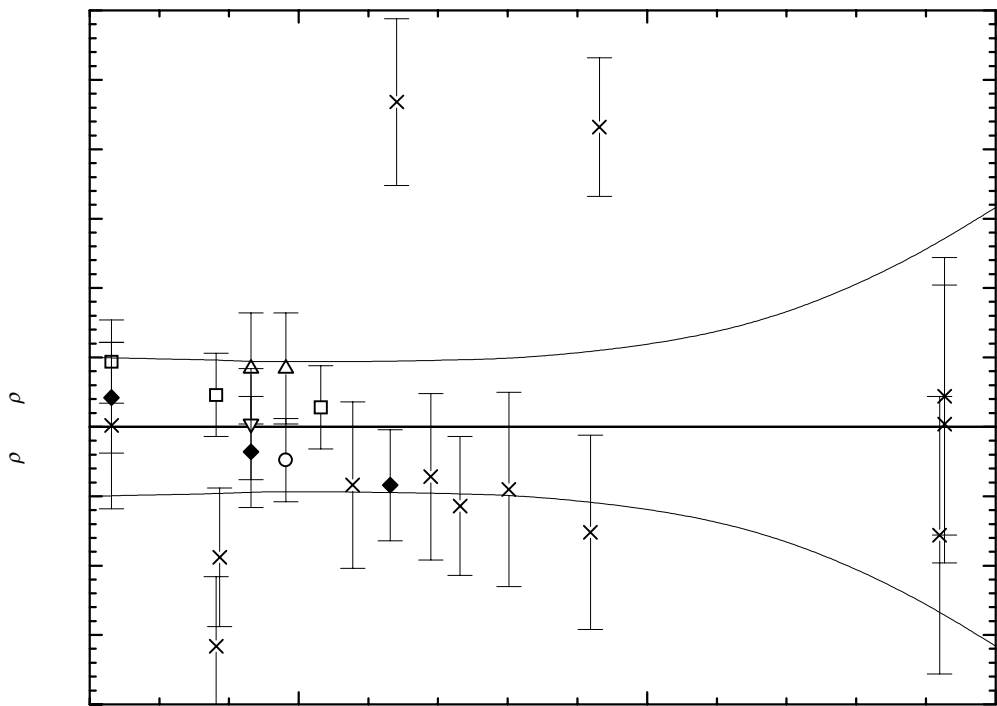


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the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

Ethyl 2-methylpropanoate [97-62-1] C₆H₁₂O₂ MW = 116.16 20

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{c,w} = 8.6719 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 3.0304 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

Coefficient	T = 273.15 to 383.25 K
	$\rho = A + BT + CT^2 + DT^3 + \dots$
A	$1.02330 \cdot 10^3$
B	$-7.94458 \cdot 10^{-2}$
C	$-1.52510 \cdot 10^{-3}$

cont.

Ethyl 2-methylpropanoate (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	889.16 ± 1.00	1.35	1866-mar(○)	313.75	847.90 ± 0.50	-0.34	1948-vog-9(×)
383.25	768.10 ± 1.00	-0.74	1883-sch-3(∇)	336.15	824.20 ± 0.60	-0.06	1948-vog-9(×)
288.15	875.01 ± 1.50	1.23	1884-per(◆)	359.85	798.40 ± 0.60	1.18	1948-vog-9(×)
383.05	768.10 ± 1.00	-0.99	1884-sch-6(Δ)	293.15	868.50 ± 0.60	-0.45	1963-voi(□)
293.15	868.50 ± 0.50	-0.45	1948-vog-9(×)				

¹⁾ Not included in Fig. 1.

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

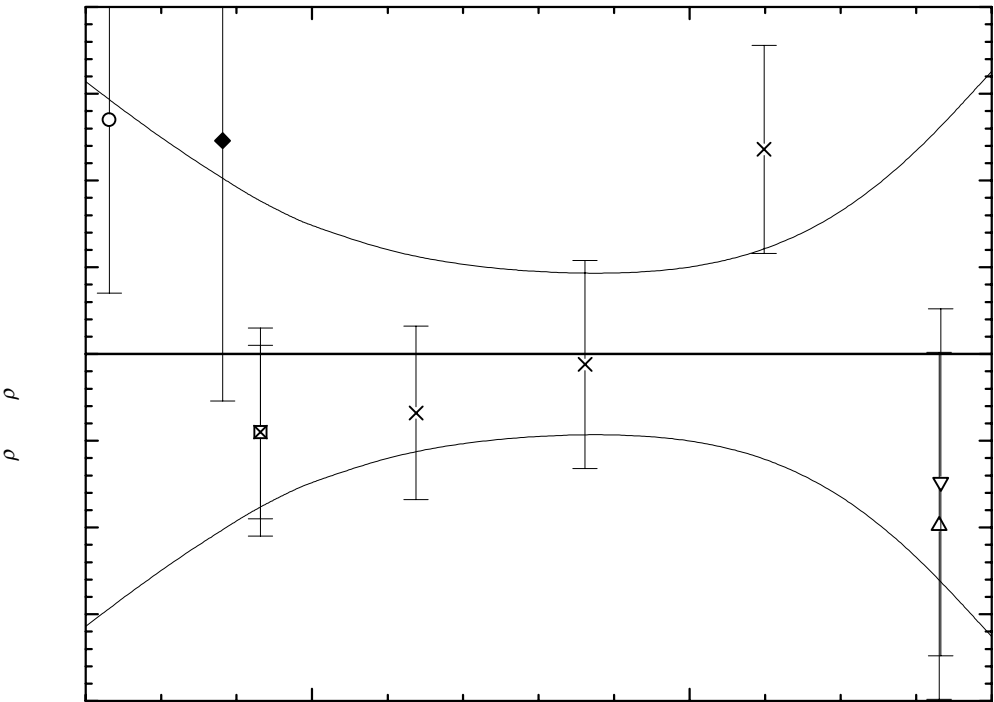


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cont.

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	890.67 ± 1.57	300.00	862.20 ± 0.74	350.00	808.67 ± 0.49
280.00	881.48 ± 1.24	310.00	852.11 ± 0.59	360.00	797.04 ± 0.59
290.00	872.00 ± 0.96	320.00	841.70 ± 0.51	370.00	785.12 ± 0.80
293.15	868.95 ± 0.88	330.00	831.00 ± 0.47	380.00	772.88 ± 1.15
298.15	864.04 ± 0.77	340.00	819.98 ± 0.46	390.00	760.35 ± 1.63

Methyl 2,2-dimethylpropanoate [598-98-1] C₆H₁₂O₂ MW = 116.16 21

Table 1. Experimental values with uncertainties .

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
273.15	891.0 ± 3.0	1910-ric
293.15	850.0 ± 3.0	1957-tra/bat

Methyl 2-methylbutanoate [868-57-5] C₆H₁₂O₂ MW = 116.16 22

Table 1. Experimental values with uncertainties.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
293.15	884.7 ± 3.0	1890-gar
288.15	897.0 ± 2.0	1944-pre/zal

Methyl 3-methylbutanoate [556-24-1] C₆H₁₂O₂ MW = 116.16 23

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{\text{c,w}} = 2.1659 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{\text{c,uw}} = 1.3025 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

Coefficient	T = 289.25 to 359.25 K $\rho = A + BT + CT^2 + DT^3 + \dots$
A	$1.14851 \cdot 10^3$
B	$-8.25210 \cdot 10^{-1}$
C	$-2.99226 \cdot 10^{-4}$

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

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref. (Symbol in Fig. 1)	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref. (Symbol in Fig. 1)
290.15	885.42 ± 2.00	1.53	1878-sch/sac(∇)	293.15	880.80 ± 1.00	-0.09	1912-ric/stu(O)
290.15	884.24 ± 2.00	0.35	1891-sch/kos(Δ)	289.25	884.60 ± 0.60	-0.18	1948-vog-9(□)
293.15	880.80 ± 0.60	-0.09	1908-ric/mat(X)	293.05	880.80 ± 0.60	-0.19	1948-vog-9(□)

cont.

Methyl 3-methylbutanoate (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)
293.15	880.70 ± 0.60	-0.19	1948-vog-9(□)	333.25	840.10 ± 0.80	-0.18	1948-vog-9(□)
298.45	875.30 ± 0.60	-0.27	1948-vog-9(□)	333.85	839.50 ± 0.80	-0.16	1948-vog-9(□)
314.65	859.20 ± 0.80	-0.03	1948-vog-9(□)	359.05	813.40 ± 1.00	-0.24	1948-vog-9(□)
315.15	858.70 ± 0.80	-0.03	1948-vog-9(□)	359.25	813.20 ± 1.00	-0.24	1948-vog-9(□)

¹⁾ Not included in Fig. 1.

Further references: [1898-kah, 1926-mun].

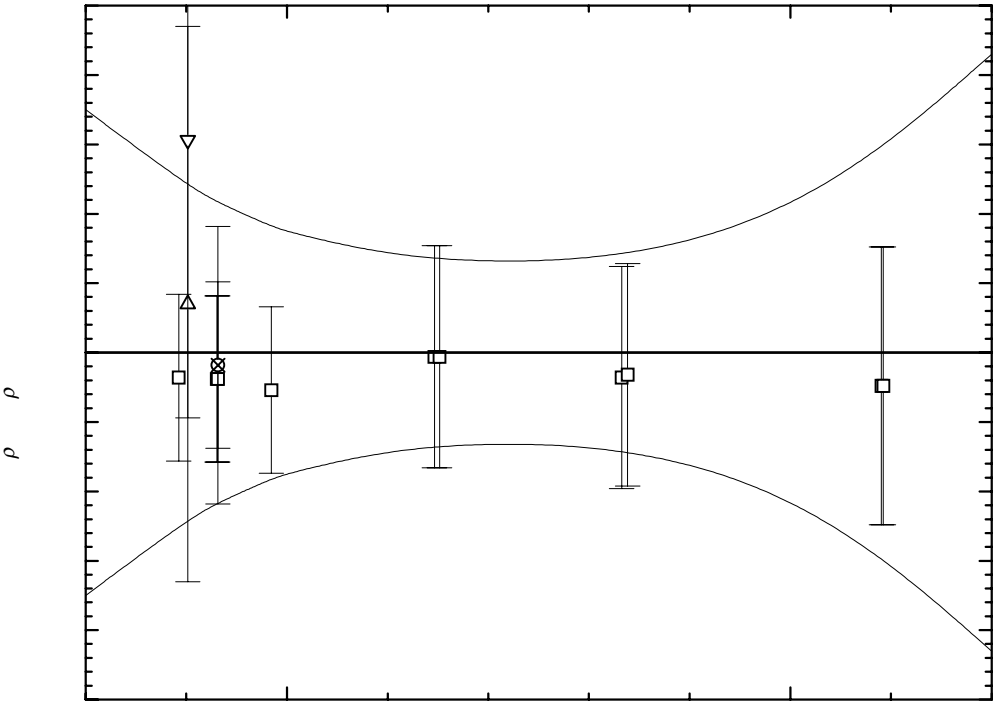


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cont.

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

$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$
280.00	893.99 ± 1.75	300.00	874.02 ± 0.87	340.00	833.35 ± 0.79
290.00	884.04 ± 1.21	310.00	863.94 ± 0.70	350.00	823.03 ± 1.05
293.15	880.89 ± 1.08	320.00	853.80 ± 0.65	360.00	812.66 ± 1.51
298.15	875.88 ± 0.92	330.00	843.61 ± 0.67	370.00	802.22 ± 2.15

Methyl pentanoate [624-24-8] C₆H₁₂O₂ MW = 116.16 24

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{\text{c,w}} = 5.3688 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{\text{c,uw}} = 8.9505 \cdot 10^{-2}$ (combined temperature ranges, unweighted).

Coefficient	T = 273.15 to 383.85 K $\rho = A + BT + CT^2 + DT^3 + \dots$
A	1.12524 · 10 ³
B	-6.31348 · 10 ⁻¹
C	-5.83052 · 10 ⁻⁴

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

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref. (Symbol in Fig. 1)	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref. (Symbol in Fig. 1)
273.15	909.70 ± 1.00	0.41	1886-gar(×)	293.15	889.50 ± 0.60	-0.56	1948-vog-9(◆)
295.05	888.90 ± 0.60	0.69	1886-gar(×)	299.35	883.40 ± 0.60	-0.60	1948-vog-9(◆)
303.05	881.20 ± 0.60	0.83	1886-gar(×)	313.95	869.50 ± 0.80	-0.06	1948-vog-9(◆)
311.45	872.70 ± 0.80	0.65	1886-gar(×)	314.05	869.40 ± 0.80	-0.06	1948-vog-9(◆)
320.15	863.90 ± 0.80	0.54	1886-gar(×)	333.15	850.40 ± 1.00	0.20	1948-vog-9(◆)
327.15	856.80 ± 0.80	0.50	1886-gar(×)	334.35	849.20 ± 1.00	0.23	1948-vog-9(◆)
338.45	844.80 ± 1.00	0.02	1886-gar(×)	358.15	823.60 ± 1.00	-0.74	1948-vog-9(◆)
351.85	830.60 ± 1.00	-0.32	1886-gar(×)	359.75	822.00 ± 1.00	-0.66	1948-vog-9(◆)
370.35	811.30 ± 1.00	-0.15	1886-gar(×)	288.15	894.70 ± 0.50	-0.21	1950-bru/tit(∇)
383.85	797.30 ± 1.00	0.31	1886-gar(×)	293.15	889.90 ± 0.50	-0.16	1964-adr/dek(Δ)
273.15	909.60 ± 1.00	0.31	1924-lie(×)	293.15	890.10 ± 0.40	0.04	1964-gou/vlu(□)
288.15	894.70 ± 1.00	-0.21	1924-lie(×)	313.15	869.90 ± 0.40	-0.46	1964-gou/vlu(□)
292.45	890.20 ± 0.60	-0.54	1948-vog-9(◆)	298.15	885.19 ± 0.40	0.01	1976-dus/pie(○)

¹⁾ Not included in Fig. 1.

Further references: [1854-kop, 1864-lan, 1883-els, 1884-sch-6, 1890-gar, 1934-gil/dex, 1973-mak/smi].

cont.

Methyl pentanoate (cont.)

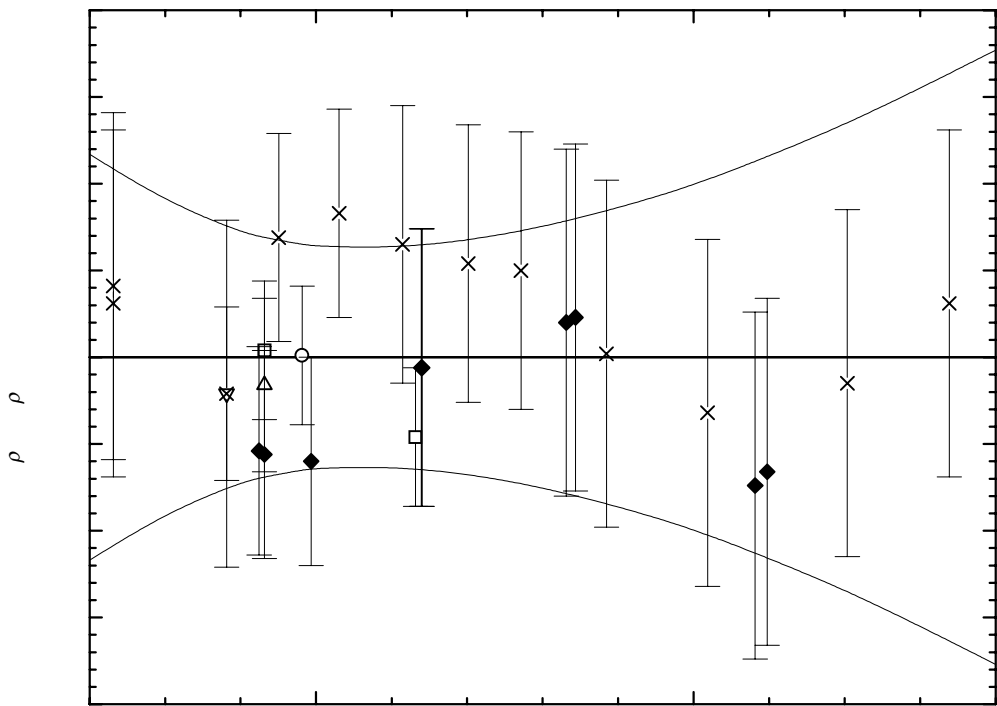


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the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

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

$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$
270.00	912.28 ± 1.17	300.00	883.37 ± 0.64	350.00	832.85 ± 0.99
280.00	902.76 ± 0.90	310.00	873.50 ± 0.63	360.00	822.40 ± 1.16
290.00	893.12 ± 0.72	320.00	863.51 ± 0.67	370.00	811.83 ± 1.34
293.15	890.06 ± 0.69	330.00	853.41 ± 0.75	380.00	801.14 ± 1.55
298.15	885.18 ± 0.65	340.00	843.19 ± 0.86	390.00	790.34 ± 1.77

3-Methylbutyl methanoate [110-45-2] C₆H₁₂O₂ MW = 116.16 25

Table 1. Fit with estimated *B* coefficient for 4 accepted points. Deviation σ_w = 0.255.

Coefficient	$\rho = A + BT$
<i>A</i>	1179.05
<i>B</i>	-1.000

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.
396.65	755.4 ± 3.0	-27.00	1884-sch-6 ¹⁾	293.15	882.0 ± 2.0	-3.90	1926-han ¹⁾
291.15	879.9 ± 2.0	-7.99	1891-sch/kos ¹⁾	298.15	877.0 ± 2.0	-3.90	1926-mun ¹⁾
293.15	878.1 ± 2.0	-7.75	1891-sch/kos ¹⁾	293.15	885.7 ± 1.0	-0.20	1948-vog-9
293.15	870.6 ± 2.0	-15.30	1908-ric/mat ¹⁾	312.55	866.2 ± 1.0	-0.30	1948-vog-9
293.15	870.6 ± 2.0	-15.30	1912-ric/stu ¹⁾	332.85	846.5 ± 1.0	0.30	1948-vog-9
293.15	877.3 ± 2.0	-8.60	1918-mat/fav ¹⁾	358.55	820.7 ± 1.0	0.20	1948-vog-9
273.15	901.5 ± 2.0	-4.40	1926-han ¹⁾				

¹⁾ Not included in calculation of linear coefficients.

Table 3. Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	889.0 ± 1.4	310.00	869.0 ± 0.7	340.00	839.0 ± 0.7
293.15	885.9 ± 1.3	320.00	859.0 ± 0.4	350.00	829.0 ± 1.1
298.15	880.9 ± 1.1	330.00	849.0 ± 0.4	360.00	819.0 ± 1.5

1-Methylethyl propanoate [637-78-5] C₆H₁₂O₂ MW = 116.16 26

Table 1. Fit with estimated *B* coefficient for 2 accepted points. Deviation σ_w = 0.070.

Coefficient	$\rho = A + BT$
<i>A</i>	1187.97
<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.
288.15	870.9 ± 1.50	-0.07	1884-per
298.15	860.1 ± 1.50	0.07	1884-per

1-Methylethyl propanoate (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	880.0 ± 1.4
290.00	869.0 ± 1.3
293.15	865.5 ± 1.3
298.15	860.0 ± 1.4

1-Methylpropyl ethanoate

[105-46-4]

C₆H₁₂O₂

MW = 116.16

27

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{\text{c,w}} = 9.9716 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{\text{c,uw}} = 3.2109 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

Coefficient	T = 288.65 to 361.15 K $\rho = A + BT + CT^2 + DT^3 + \dots$
A	1.19210 · 10 ³
B	-1.09359

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)
288.65	875.80 ± 0.50	-0.63	1914-pic/ken-1(∇)	293.15	871.60 ± 1.00	0.09	1946-hou/ste(×)
315.15	848.80 ± 0.60	1.35	1914-pic/ken-1(∇)	293.15	872.00 ± 0.60	0.49	1948-vog-9(◆)
336.65	824.60 ± 0.50	0.66	1914-pic/ken-1(∇)	314.55	848.20 ± 0.60	0.09	1948-vog-9(◆)
358.15	798.80 ± 0.50	-1.62	1914-pic/ken-1(∇)	332.15	828.60 ± 0.80	-0.26	1948-vog-9(◆)
293.15	870.10 ± 0.50	-1.41	1923-clo/joh(Δ)	361.15	799.10 ± 1.00	1.96	1948-vog-9(◆)
298.95	865.78 ± 0.30	0.61	1933-huc/ack(□)	298.15	864.70 ± 0.50	-1.34	1952-mye/col(○)

¹⁾ Not included in Fig. 1.

Further references: [1901-nor/gre, 1926-mun, 1935-ken/phi].

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	885.89 ± 0.96	300.00	864.02 ± 0.57	340.00	820.27 ± 0.63
290.00	874.95 ± 0.73	310.00	853.08 ± 0.47	350.00	809.34 ± 0.81
293.15	871.51 ± 0.67	320.00	842.15 ± 0.45	360.00	798.40 ± 1.06
298.15	866.04 ± 0.59	330.00	831.21 ± 0.50	370.00	787.47 ± 1.37

cont.

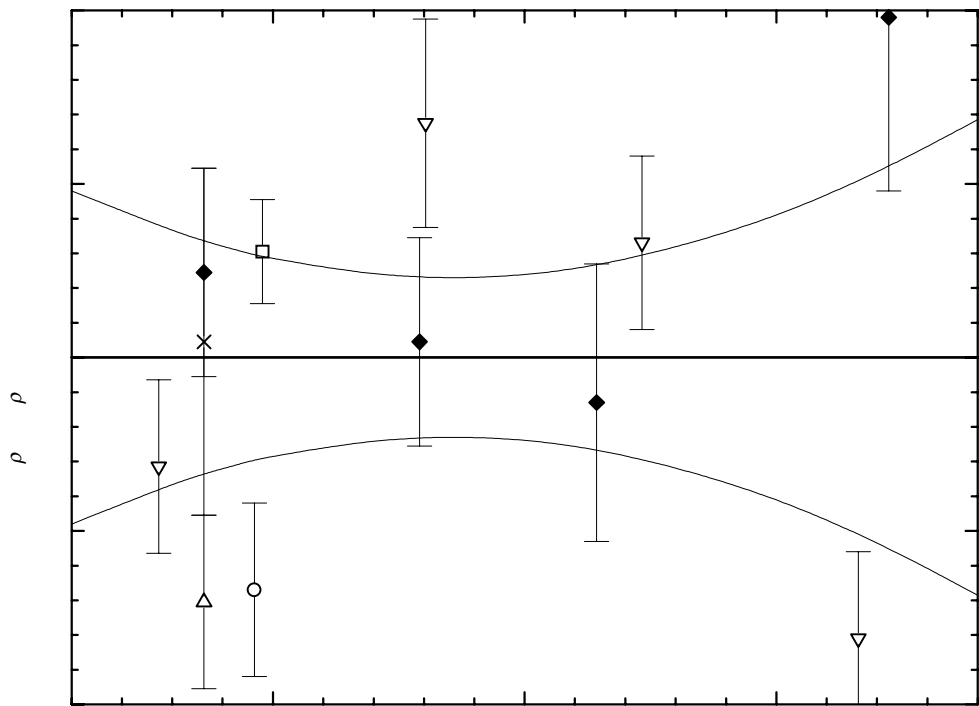


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the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

2-Methylpropyl ethanoate

[110-19-0]

C₆H₁₂O₂

MW = 116.16

28

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{c,w} = 9.6395 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 2.8536 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

Coefficient	T = 288.15 to 359.45 K $\rho = A + BT + CT^2 + DT^3 + \dots$
A	$1.19147 \cdot 10^3$
B	-1.09288

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

$\frac{T}{K}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref. (Symbol in Fig. 1)	$\frac{T}{K}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref. (Symbol in Fig. 1)
288.15	876.64 ± 0.50	0.09	1884-per(▽)	293.15	871.10 ± 0.60	0.01	1908-ric/mat(×)
298.15	866.29 ± 0.50	0.66	1884-per(▽)	294.25	868.40 ± 1.00	-1.49	1909-fal(×)

cont.

2-Methylpropyl ethanoate (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)
303.95	858.30 ± 1.00	-0.99	1909-fal(×)	293.15	871.00 ± 0.60	-0.09	1948-vog-9(×)
314.25	847.50 ± 1.00	-0.53	1909-fal(×)	314.45	844.90 ± 0.60	-2.91	1948-vog-9(×)
325.25	835.90 ± 1.00	-0.11	1909-fal(×)	333.55	830.00 ± 0.80	3.06	1948-vog-9 ¹⁾
334.15	826.40 ± 1.00	0.12	1909-fal(×)	359.45	801.50 ± 1.00	2.87	1948-vog-9(×)
343.65	816.30 ± 1.00	0.40	1909-fal(×)	293.15	871.50 ± 0.40	0.41	1956-ano-4(○)
293.15	871.10 ± 0.50	0.01	1912-ric/stu(Δ)	293.15	871.20 ± 0.40	0.11	1968-ano(□)
293.15	871.80 ± 1.00	0.71	1926-mat(×)				

¹⁾ Not included in Fig. 1.

Further references: [1872-pie/puc, 1884-sch-6, 1891-sch/kos, 1892-lan/jah, 1926-han, 1926-mun, 1950-mum/phi, 1964-tur/den, 1994-sol/bar].

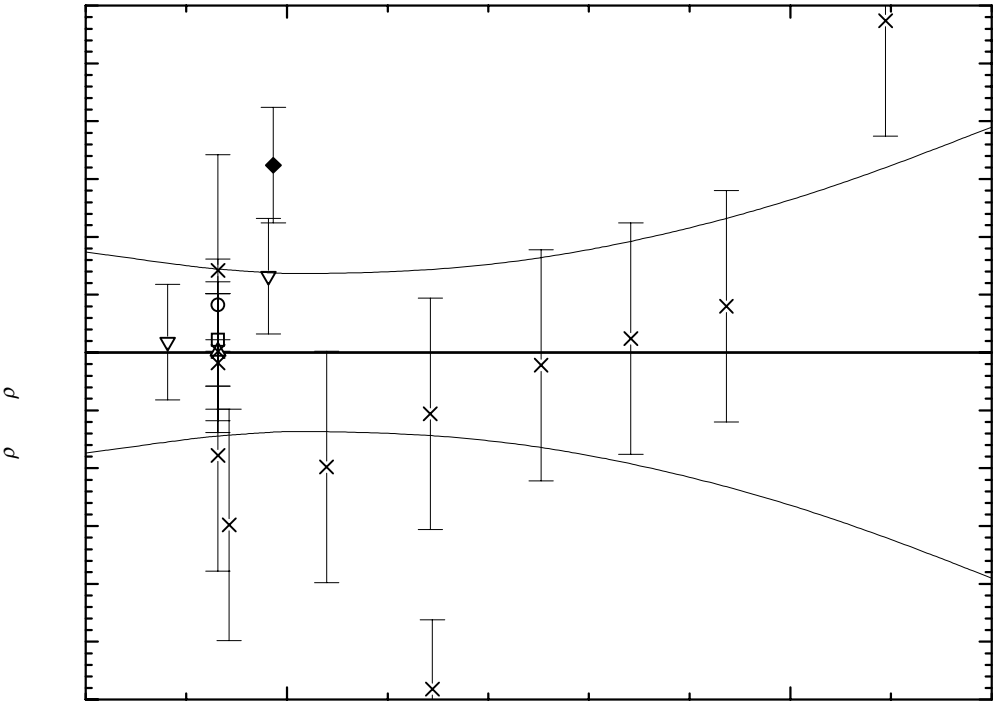


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the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

cont.

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

$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$
280.00	885.46 ± 0.87	300.00	863.60 ± 0.68	340.00	819.89 ± 1.07
290.00	874.53 ± 0.75	310.00	852.68 ± 0.69	350.00	808.96 ± 1.31
293.15	871.09 ± 0.72	320.00	841.75 ± 0.75	360.00	798.03 ± 1.61
298.15	865.63 ± 0.69	330.00	830.82 ± 0.88	370.00	787.10 ± 1.95

Pentyl methanoate [638-49-3] C₆H₁₂O₂ MW = 116.16 29

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{\text{c,w}} = 2.8321$ (combined temperature ranges, weighted), $\sigma_{\text{c,uw}} = 7.5975 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

Coefficient	T = 273.15 to 382.35 K $\rho = A + BT + CT^2 + DT^3 + \dots$
A	1.08457 · 10 ³
B	-3.84598 · 10 ⁻¹
C	-1.00716 · 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	882.20 ± 1.00	-3.07	1903-hom/guy(Δ)	293.15	884.60 ± 0.60	-0.67	1948-vog-9(○)
317.35	858.70 ± 1.00	-2.38	1903-hom/guy(Δ)	315.15	864.40 ± 0.60	1.07	1948-vog-9(○)
351.45	823.80 ± 1.00	-1.20	1903-hom/guy(Δ)	334.05	846.30 ± 0.80	2.60	1948-vog-9(○)
382.35	789.00 ± 1.00	-1.28	1903-hom/guy(Δ)	359.75	820.80 ± 1.00	4.94	1948-vog-9(○)
293.15	877.58 ± 4.62	-7.69	1914-kre/mei ¹⁾	273.15	905.21 ± 0.50	0.84	1959-tim/hen(□)
343.15	828.43 ± 4.12	-5.57	1914-kre/mei(◆)	288.15	890.61 ± 0.50	0.49	1959-tim/hen(□)
273.15	908.10 ± 2.00	3.73	1926-han(∇)	303.15	875.88 ± 0.50	0.46	1959-tim/hen(□)
293.15	885.30 ± 2.00	0.03	1926-han(∇)				

¹⁾ Not included in Fig. 1.

Further references: [1864-lan, 1883-sch-3, 1886-gar, 1891-gla, 1911-liv/mor, 1918-her-2, 1924-lie, 1976-nay/zor].

cont.

Pentyl methanoate (cont.)

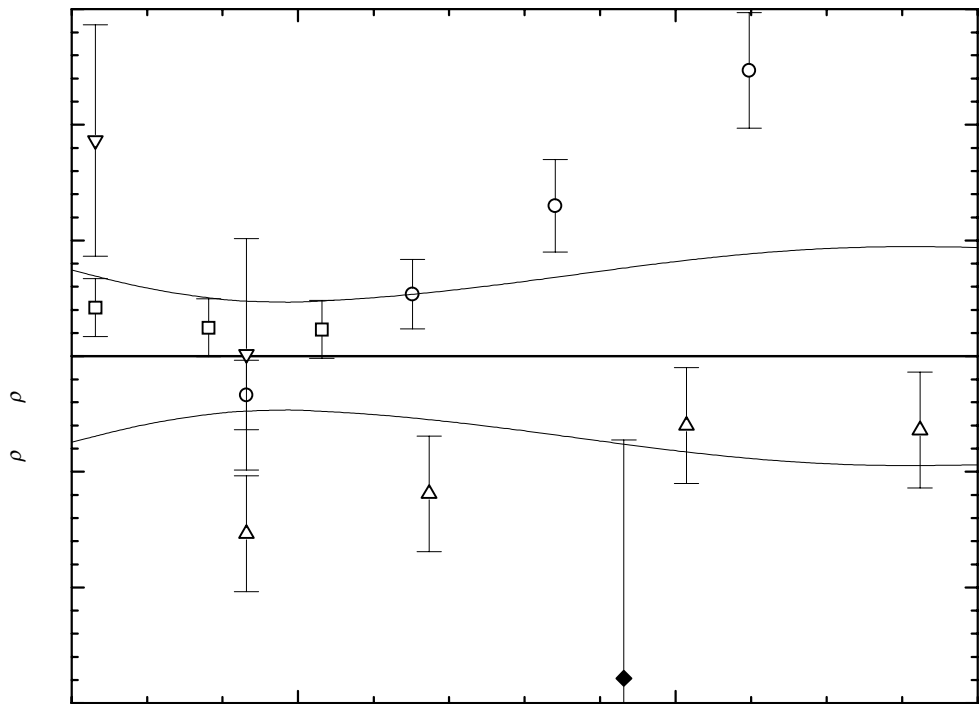


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the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

$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$
270.00	907.30 ± 1.49	300.00	878.54 ± 0.93	350.00	826.58 ± 1.64
280.00	897.92 ± 1.15	310.00	868.55 ± 1.00	360.00	815.58 ± 1.78
290.00	888.33 ± 0.97	320.00	858.36 ± 1.13	370.00	804.38 ± 1.87
293.15	885.27 ± 0.95	330.00	847.97 ± 1.29	380.00	792.99 ± 1.90
298.15	880.37 ± 0.93	340.00	837.38 ± 1.47	390.00	781.38 ± 1.88

Propyl propanoate [106-36-5] C₆H₁₂O₂ MW = 116.16 30

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{c,w} = 6.2518 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 1.8955 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

Coefficient	T = 273.15 to 394.85 K $\rho = A + BT + CT^2 + DT^3 + \dots$
A	$1.11563 \cdot 10^3$
B	$-5.61516 \cdot 10^{-1}$
C	$-8.08443 \cdot 10^{-4}$

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

$\frac{T}{K}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref. (Symbol in Fig. 1)	$\frac{T}{K}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref. (Symbol in Fig. 1)
273.15	902.20 ± 0.60	0.27	1872-pie/puc(×)	394.85	768.00 ± 1.50	0.13	1884-sch-6(×)
324.42	849.80 ± 0.60	1.43	1872-pie/puc(×)	273.15	902.20 ± 0.50	0.27	1886-gar(Δ)
373.75	794.40 ± 1.50	1.57	1872-pie/puc(×)	293.15	881.60 ± 0.50	0.06	1890-gar(□)
381.49	783.90 ± 1.50	0.14	1872-pie/puc(×)	292.15	882.00 ± 0.80	-0.58	1911-dob(◆)
394.15	768.30 ± 1.00	-0.41	1883-sch-3(×)	288.10	885.30 ± 1.00	-1.45	1919-eyk(×)
394.15	768.00 ± 1.00	-0.71	1883-sch-3(×)	273.15	902.24 ± 0.50	0.31	1959-tim/hen(○)
288.15	887.65 ± 1.00	0.95	1884-per(×)	288.15	886.58 ± 0.50	-0.12	1959-tim/hen(○)
298.15	875.47 ± 1.00	-0.88	1884-per(×)	303.15	870.82 ± 0.50	-0.29	1959-tim/hen(○)
394.85	768.00 ± 2.00	0.13	1884-sch-5(×)	298.15	875.53 ± 0.50	-0.82	1998-cas/seg(V)

¹⁾ Not included in Fig. 1.

Further references: [1871-lin, 1872-lin/von, 1883-els, 1918-mat/fav, 1926-mat, 1926-mun].

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

$\frac{T}{K}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{K}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{K}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$
270.00	905.08 ± 0.78	310.00	863.87 ± 0.66	360.00	808.71 ± 0.57
280.00	895.02 ± 0.77	320.00	853.16 ± 0.59	370.00	797.19 ± 0.76
290.00	884.80 ± 0.77	330.00	842.29 ± 0.54	380.00	785.51 ± 1.10
293.15	881.54 ± 0.76	340.00	831.26 ± 0.50	390.00	773.67 ± 1.63
298.15	876.35 ± 0.74	350.00	820.06 ± 0.50	400.00	761.67 ± 2.35
300.00	874.41 ± 0.73				

cont.

Propyl propanoate (cont.)

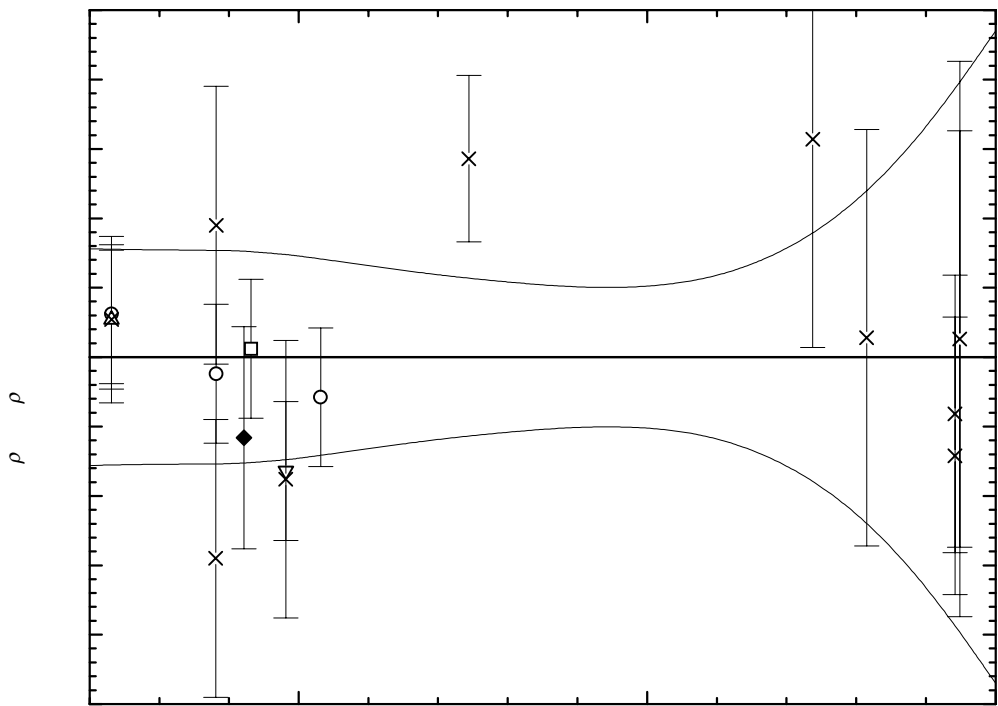


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the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