

5.2 Chloroalkylbenzenes

1,2,4-Trichlorobenzene

[120-82-1]



MW = 181.45

892

Table 1. Fit with estimated B coefficient for 5 accepted points. Deviation $\sigma_w = 0.218$.

Coefficient	$\rho = A + BT$
A	1806.10
B	-1.200

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

T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$	$\rho_{\text{exp}} - \rho_{\text{calc}}$ $\text{kg} \cdot \text{m}^{-3}$	Ref.
298.15	1448.20 ± 0.40	-0.07	1977-wil
293.15	1454.70 ± 0.60	0.38	1982-atr/kal
313.15	1430.70 ± 0.60	0.37	1982-atr/kal
298.15	1448.20 ± 0.40	-0.17	1982-wil/ing
298.15	1448.20 ± 0.50	-0.12	1986-wil/lai

Table 3. Recommended values.

T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$
290.00	1458.1 ± 0.6
293.15	1454.3 ± 0.6
298.15	1448.3 ± 0.5
310.00	1434.1 ± 0.7
320.00	1422.1 ± 1.0

1,2-Dichlorobenzene

[95-50-1]



MW = 147.00

893

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{c,w} = 5.4622 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 1.0280 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

Coefficient	$T = 260.50 \text{ to } 308.60 \text{ K}$ $\rho = A + BT + CT^2 + DT^3 + \dots$
A	$1.65971 \cdot 10^3$
B	-1.20502

cont.

1,2-Dichlorobenzene (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)
293.15	1305.87 ± 0.40	-0.58	1949-dre/mar(\square)	284.10	1317.50 ± 1.00	0.14	1980-vit/ber(Δ)
298.15	1300.31 ± 0.40	-0.12	1949-dre/mar(\square)	288.10	1312.70 ± 1.00	0.16	1980-vit/ber(Δ)
294.26	1304.10 ± 0.60	-1.02	1954-tri/bro(\circ)	293.20	1306.70 ± 1.00	0.31	1980-vit/ber(Δ)
260.50	1345.60 ± 1.00	-0.20	1980-vit/ber(Δ)	299.30	1299.40 ± 1.00	0.36	1980-vit/ber(Δ)
265.20	1340.00 ± 1.00	-0.13	1980-vit/ber(Δ)	302.90	1295.10 ± 1.00	0.40	1980-vit/ber(Δ)
270.30	1333.90 ± 1.00	-0.09	1980-vit/ber(Δ)	308.60	1288.40 ± 1.00	0.56	1980-vit/ber(Δ)
275.60	1327.60 ± 1.00	-0.00	1980-vit/ber(Δ)	303.15	1294.54 ± 0.40	0.14	1988-kal/abb(∇)
280.40	1321.90 ± 1.00	0.08	1980-vit/ber(Δ)				

Further references: [1954-hub/kno, 1984-pla/sim-1, 1989-vij/nai, 1992-kum/sre, 1996-sek/nai, 2002-mat/bal].

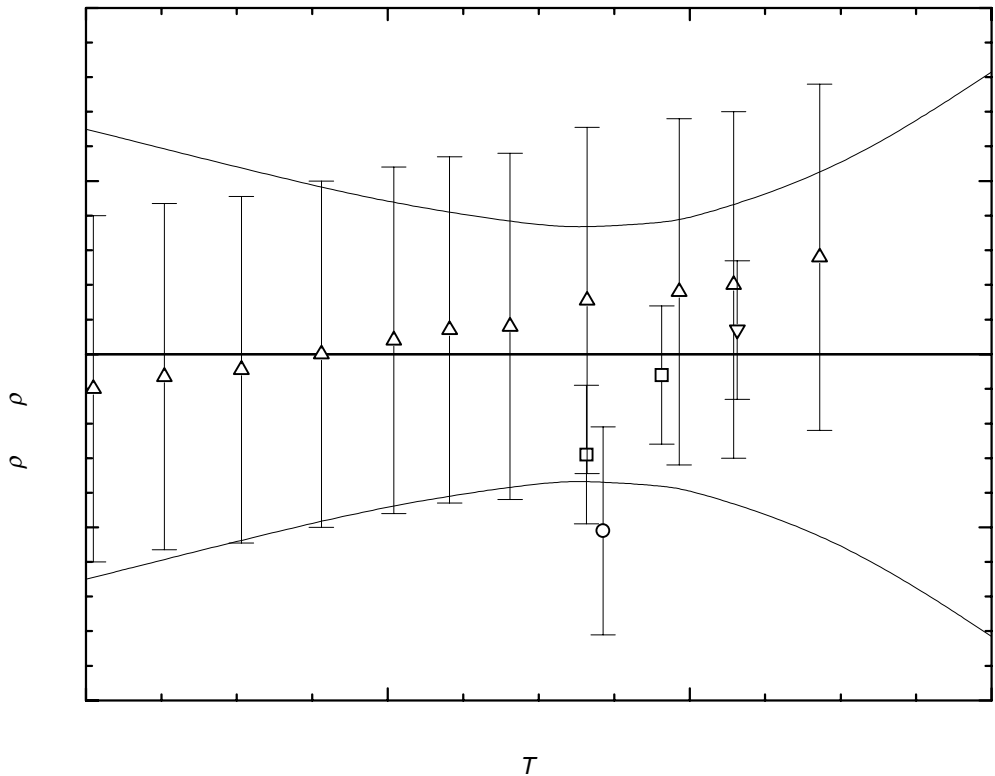


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the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

cont.

Table 3. Recommended values (fit to the reliable experimental values according to the equations

$$\rho = A + BT + CT^2 + DT^3 + \dots \text{ or } \rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$$

$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$
260.00	1346.40 \pm 1.30	290.00	1310.25 \pm 0.74	300.00	1298.20 \pm 0.78
270.00	1334.35 \pm 1.08	293.15	1306.45 \pm 0.73	310.00	1286.15 \pm 1.06
280.00	1322.30 \pm 0.87	298.15	1300.43 \pm 0.76	320.00	1274.10 \pm 1.63

1,3-Dichlorobenzene

[541-73-1]

C6H4Cl2

MW = 147.00

894

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction):

$\sigma_{c,w} = 4.2677 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 9.7689 \cdot 10^{-2}$ (combined temperature ranges, unweighted).

Coefficient	$T = 246.80 \text{ to } 303.15 \text{ K}$ $\rho = A + BT + CT^2 + DT^3 + \dots$
A	$1.63832 \cdot 10^3$
B	-1.19182

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	1288.42 \pm 0.40	-0.51	1949-dre/mar(∇)	271.80	1314.50 \pm 1.00	0.12	1980-vit/ber(Δ)
298.15	1282.78 \pm 0.40	-0.19	1949-dre/mar(∇)	274.70	1311.10 \pm 1.00	0.18	1980-vit/ber(Δ)
246.80	1343.60 \pm 1.00	-0.57	1980-vit/ber(Δ)	279.20	1305.90 \pm 1.00	0.34	1980-vit/ber(Δ)
251.80	1337.80 \pm 1.00	-0.41	1980-vit/ber(Δ)	283.60	1300.80 \pm 1.00	0.49	1980-vit/ber(Δ)
256.80	1332.00 \pm 1.00	-0.26	1980-vit/ber(Δ)	288.00	1295.70 \pm 1.00	0.63	1980-vit/ber(Δ)
262.00	1325.90 \pm 1.00	-0.16	1980-vit/ber(Δ)	303.15	1277.16 \pm 0.50	0.15	1990-vij/nai(□)
266.70	1320.50 \pm 1.00	0.04	1980-vit/ber(Δ)	303.15	1277.18 \pm 0.50	0.17	1996-raj/nai(○)

Further references: [1954-hub/kno, 1984-pla/sim-1, 2002-mat/bal].**Table 3.** Recommended values (fit to the reliable experimental values according to the equations

$$\rho = A + BT + CT^2 + DT^3 + \dots \text{ or } \rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$$

$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$
240.00	1352.28 \pm 1.31	280.00	1304.61 \pm 0.80	300.00	1280.77 \pm 0.71
250.00	1340.36 \pm 1.22	290.00	1292.69 \pm 0.72	310.00	1268.85 \pm 0.80
260.00	1328.44 \pm 1.08	293.15	1288.93 \pm 0.70		
270.00	1316.52 \pm 0.93	298.15	1282.97 \pm 0.70		

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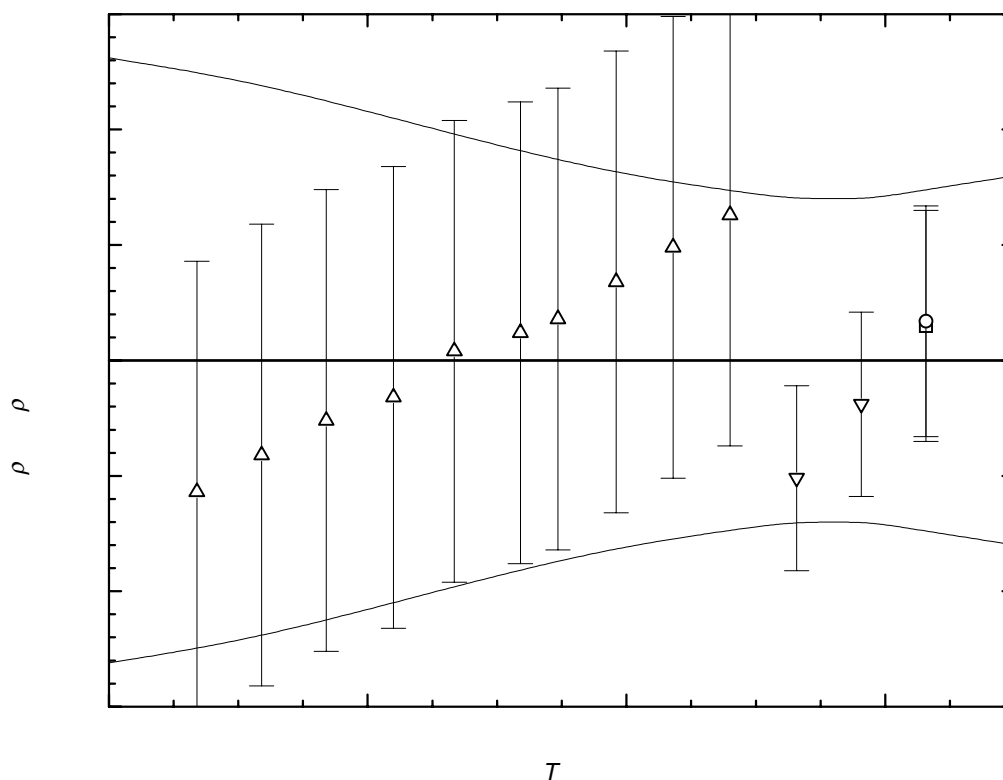
1,3-Dichlorobenzene (cont.)

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.)

1,4-Dichlorobenzene**[106-46-7]****C₆H₄Cl₂****MW = 147.00****895**

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{c,w} = 5.9038 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 3.0315 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

Coefficient	$T = 328.15 \text{ to } 363.15 \text{ K}$
	$\rho = A + BT + CT^2 + DT^3 + \dots$
<i>A</i>	$1.58896 \cdot 10^3$
<i>B</i>	-1.03997

cont.

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

T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$	$\rho_{\text{exp}} - \rho_{\text{calc}}$ $\text{kg} \cdot \text{m}^{-3}$	Ref. (Symbol in Fig. 1)	T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$	$\rho_{\text{exp}} - \rho_{\text{calc}}$ $\text{kg} \cdot \text{m}^{-3}$	Ref. (Symbol in Fig. 1)
<i>crystal</i>				<i>liquid</i>			
273.15	1520.0 ± 6.0		1930-mor/low	328.15	1249.42 ± 1.00	1.73	1896-per(□)
283.15	1512.0 ± 6.0		1930-mor/low	333.15	1243.55 ± 1.00	1.06	1896-per(□)
293.15	1505.0 ± 6.0		1930-mor/low	338.15	1237.71 ± 1.00	0.42	1896-per(□)
303.15	1498.0 ± 6.0		1930-mor/low	343.15	1231.90 ± 1.00	-0.19	1896-per(□)
313.15	1490.0 ± 6.0		1930-mor/low	348.15	1226.25 ± 1.00	-0.64	1896-per(□)
323.15	1483.0 ± 6.0		1930-mor/low	353.15	1220.66 ± 1.00	-1.03	1896-per(□)
298.15	1503.0 ± 5.0		1984-pla/sim	363.15	1210.99 ± 1.00	-0.30	1896-per(□)
				328.15	1247.50 ± 0.40	-0.19	1949-dre/mar(○)
				333.15	1241.66 ± 0.40	-0.83	1949-dre/mar(○)

Further references: [1954-hub/kno].

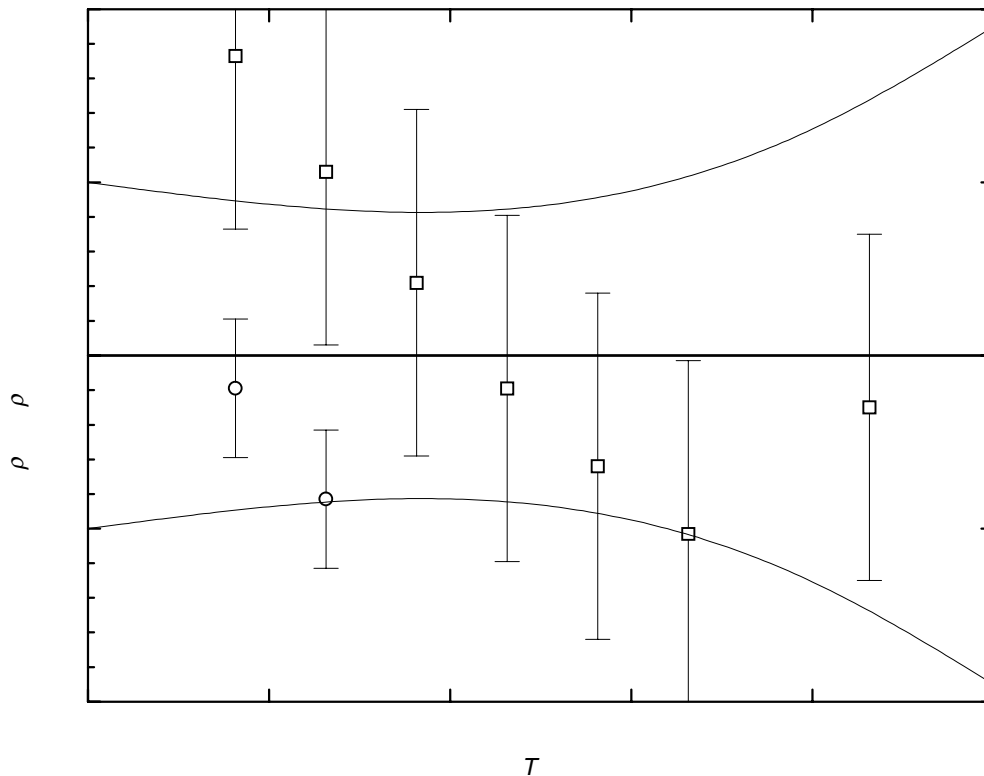


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the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

cont.

1,4-Dichlorobenzene (cont.)**Table 3.** Recommended values (fit to the reliable experimental values according to the equations

$$\rho = A + BT + CT^2 + DT^3 + \dots \text{ or } \rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$$

$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$
320.00	1256.17 ± 1.00	340.00	1235.37 ± 0.80	360.00	1214.57 ± 1.26
330.00	1245.77 ± 0.86	350.00	1224.97 ± 0.91	370.00	1204.17 ± 1.90

Chlorobenzene**[108-90-7]****C₆H₅Cl****MW = 112.56****896** $T_c = 632.35 \text{ K}$ [1910-you-1] $\rho_c = 365.00 \text{ kg} \cdot \text{m}^{-3}$ [1910-you-1]**Table 1.** Coefficients for the polynomial expansion equations. Standard deviations (see introduction): $\sigma_t = 7.0220 \cdot 10^{-1}$ (low temperature range), $\sigma_{c,w} = 5.2873 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 1.1320 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

Coefficient	$T = 228.15 \text{ to } 470.00 \text{ K}$ $\rho = A + BT + CT^2 + DT^3 + \dots$	$T = 470.00 \text{ to } 632.35 \text{ K}$ $\rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)]$ $[\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$
<i>A</i>	$1.49406 \cdot 10^3$	$9.22180 \cdot 10^{-1}$
<i>B</i>	-1.83327	$-1.27567 \cdot 10^{-2}$
<i>C</i>	$2.62670 \cdot 10^{-3}$	$7.58289 \cdot 10^{-5}$
<i>D</i>	$-3.01333 \cdot 10^{-6}$	$-1.62021 \cdot 10^{-7}$

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)
405.15	981.70 ± 0.60	-0.38	1883-sch-3(X)	383.15	1007.86 ± 0.40	0.10	1889-you-1(X)
273.15	1127.85 ± 0.40	-0.02	1889-you-1(X)	393.15	996.02 ± 0.40	-0.18	1889-you-1(X)
286.35	1114.08 ± 0.40	0.35	1889-you-1(X)	403.15	983.67 ± 0.40	-0.78	1889-you-1(X)
288.55	1111.61 ± 0.40	0.23	1889-you-1 ¹⁾	423.15	959.88 ± 0.40	-0.45	1889-you-1(X)
288.75	1110.74 ± 0.40	-0.42	1889-you-1 ¹⁾	433.15	948.05 ± 0.40	0.14	1889-you-1(X)
289.15	1110.93 ± 0.40	0.19	1889-you-1 ¹⁾	443.15	935.45 ± 0.40	0.21	1889-you-1(X)
289.35	1110.00 ± 0.40	-0.52	1889-you-1 ¹⁾	453.15	922.42 ± 0.40	0.12	1889-you-1(X)
303.15	1095.41 ± 0.40	-0.34	1889-you-1 ¹⁾	463.15	909.17 ± 0.50	0.11	1889-you-1(X)
313.15	1084.60 ± 0.40	-0.42	1889-you-1 ¹⁾	473.15	895.50 ± 0.50	0.03	1889-you-1(X)
323.15	1074.23 ± 0.40	-0.02	1889-you-1(X)	483.85	880.20 ± 0.50	0.07	1889-you-1(X)
333.15	1063.60 ± 0.40	0.18	1889-you-1(X)	493.15	867.23 ± 0.50	1.01	1889-you-1(X)
343.15	1052.63 ± 0.40	0.12	1889-you-1(X)	503.15	851.79 ± 0.50	0.93	1889-you-1(X)
353.15	1041.88 ± 0.40	0.37	1889-you-1(X)	513.15	835.56 ± 0.60	0.41	1889-you-1(X)
363.15	1030.50 ± 0.40	0.10	1889-you-1(X)	523.15	819.60 ± 0.60	0.52	1889-you-1(X)
373.15	1019.26 ± 0.40	0.11	1889-you-1(X)	533.15	801.42 ± 0.70	-1.07	1889-you-1(X)

¹⁾ Not included in Fig. 1.

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)
543.15	783.45 \pm 0.80	-1.72	1889-you-1(X)	375.15	1016.00 \pm 2.00	-0.89	1917-jae ¹⁾
273.15	1127.92 \pm 0.40	0.05	1910-tim(X)	387.65	1003.00 \pm 2.50	0.42	1917-jae ¹⁾
273.15	1127.86 \pm 0.40	-0.01	1910-you-1(X)	395.15	995.00 \pm 2.50	1.14	1917-jae ¹⁾
283.15	1117.10 \pm 0.40	-0.06	1910-you-1(X)	273.45	1128.00 \pm 0.40	0.45	1920-mey/myl(X)
293.15	1106.20 \pm 0.40	-0.26	1910-you-1 ¹⁾	277.85	1123.20 \pm 0.40	0.37	1920-mey/myl(X)
303.15	1095.40 \pm 0.40	-0.35	1910-you-1 ¹⁾	282.85	1117.20 \pm 0.40	-0.28	1920-mey/myl(X)
313.15	1084.60 \pm 0.40	-0.42	1910-you-1 ¹⁾	289.05	1111.00 \pm 0.40	0.16	1920-mey/myl ¹⁾
323.15	1074.20 \pm 0.40	-0.05	1910-you-1(X)	290.75	1109.00 \pm 0.40	-0.02	1920-mey/myl ¹⁾
333.15	1063.60 \pm 0.40	0.18	1910-you-1(X)	293.25	1106.00 \pm 0.40	-0.35	1920-mey/myl ¹⁾
343.15	1052.60 \pm 0.40	0.09	1910-you-1(X)	298.25	1101.00 \pm 0.40	0.00	1920-mey/myl ¹⁾
353.15	1041.90 \pm 0.40	0.39	1910-you-1(X)	303.35	1095.00 \pm 0.40	-0.53	1920-mey/myl ¹⁾
363.15	1030.50 \pm 0.40	0.10	1910-you-1(X)	308.15	1090.10 \pm 0.40	-0.29	1920-mey/myl ¹⁾
373.15	1019.30 \pm 0.40	0.15	1910-you-1(X)	308.35	1090.00 \pm 0.40	-0.17	1920-mey/myl ¹⁾
383.15	1007.90 \pm 0.40	0.14	1910-you-1(X)	313.35	1084.80 \pm 0.40	-0.00	1920-mey/myl ¹⁾
393.15	996.00 \pm 0.40	-0.20	1910-you-1(X)	318.15	1079.80 \pm 0.40	0.16	1920-mey/myl ¹⁾
403.15	983.60 \pm 0.40	-0.85	1910-you-1(X)	323.05	1074.90 \pm 0.40	0.54	1920-mey/myl(X)
413.15	972.30 \pm 0.40	-0.20	1910-you-1(X)	328.15	1069.00 \pm 0.40	0.16	1920-mey/myl(X)
423.15	959.90 \pm 0.40	-0.43	1910-you-1(X)	333.15	1064.00 \pm 0.40	0.58	1920-mey/myl(X)
433.15	948.00 \pm 0.40	0.09	1910-you-1(X)	336.85	1060.00 \pm 0.40	0.60	1920-mey/myl(X)
443.15	935.40 \pm 0.40	0.16	1910-you-1(X)	345.25	1050.50 \pm 0.40	0.29	1920-mey/myl(X)
453.15	922.40 \pm 0.40	0.10	1910-you-1(X)	348.25	1047.00 \pm 0.40	0.08	1920-mey/myl(X)
463.15	909.10 \pm 0.50	0.04	1910-you-1(X)	353.55	1041.50 \pm 0.40	0.43	1920-mey/myl(X)
473.15	899.50 \pm 0.50	4.03	1910-you-1(X)	356.45	1038.50 \pm 0.40	0.64	1920-mey/myl(X)
483.15	881.50 \pm 0.50	0.34	1910-you-1(X)	361.25	1033.00 \pm 0.40	0.48	1920-mey/myl(X)
493.15	867.20 \pm 0.50	0.98	1910-you-1(X)	369.35	1023.50 \pm 0.40	0.06	1920-mey/myl(X)
503.15	851.80 \pm 0.50	0.94	1910-you-1(X)	375.35	1017.00 \pm 0.40	0.34	1920-mey/myl(X)
513.15	835.60 \pm 0.60	0.45	1910-you-1(X)	380.95	1010.00 \pm 0.40	-0.28	1920-mey/myl(X)
523.15	819.60 \pm 0.60	0.52	1910-you-1(X)	386.25	1004.00 \pm 0.50	-0.19	1920-mey/myl(X)
533.15	801.60 \pm 0.70	-0.89	1910-you-1(X)	392.75	996.20 \pm 0.50	-0.46	1920-mey/myl(X)
543.15	783.40 \pm 0.80	-1.77	1910-you-1(X)	396.75	991.50 \pm 0.50	-0.49	1920-mey/myl(X)
602.35	641.10 \pm 1.50	1.67	1910-you-1(X)	273.15	1127.95 \pm 0.30	0.08	1922-tim/van(X)
621.95	553.00 \pm 2.00	8.97	1910-you-1(X)	273.15	1127.89 \pm 0.30	0.02	1926-tim/mar-1(X)
631.95	440.00 \pm 2.00	19.57	1910-you-1 ¹⁾	288.15	1111.69 \pm 0.30	-0.12	1926-tim/mar-1(X)
632.35	365.40 \pm 3.00	0.40	1910-you-1(X)	303.15	1095.47 \pm 0.30	-0.28	1926-tim/mar-1 ¹⁾
273.15	1127.92 \pm 0.40	0.05	1912-tim(X)	303.25	1095.50 \pm 0.40	-0.14	1927-vel ¹⁾
257.15	1144.00 \pm 1.50	-1.09	1917-jae(X)	321.05	1076.30 \pm 0.40	-0.22	1927-vel(X)
273.15	1128.00 \pm 1.50	0.13	1917-jae ¹⁾	339.55	1056.20 \pm 0.40	-0.25	1927-vel(X)
298.15	1101.00 \pm 1.50	-0.10	1917-jae ¹⁾	348.25	1047.00 \pm 0.50	0.08	1927-vel(X)
308.15	1090.00 \pm 1.50	-0.39	1917-jae ¹⁾	367.95	1025.10 \pm 0.50	0.08	1927-vel(X)
323.15	1073.00 \pm 2.00	-1.25	1917-jae ¹⁾	293.15	1106.21 \pm 0.30	-0.25	1930-zma(X)
343.65	1051.00 \pm 2.00	-0.97	1917-jae ¹⁾	293.15	1106.14 \pm 0.30	-0.32	1930-zma(X)
363.15	1029.00 \pm 2.00	-1.40	1917-jae ¹⁾	293.15	1106.51 \pm 0.30	0.05	1961-nyv/erd(V)

¹⁾ Not included in Fig. 1.

cont.

Chlorobenzene (cont.)

Table 2. (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	1101.15 \pm 0.30	0.05	1961-nyv/erd ¹⁾	303.15	1095.90 \pm 0.30	0.15	1967-mat/san ¹⁾
303.15	1095.71 \pm 0.30	-0.04	1961-nyv/erd ¹⁾	298.15	1100.90 \pm 0.30	-0.20	1971-des/bha ¹⁾
308.15	1090.35 \pm 0.30	-0.04	1961-nyv/erd(∇)	298.15	1100.90 \pm 0.30	-0.20	1971-des/bha ¹⁾
313.15	1084.81 \pm 0.30	-0.21	1961-nyv/erd(∇)	308.15	1090.00 \pm 0.30	-0.39	1971-des/bha(Δ)
228.15	1177.00 \pm 2.00	0.26	1965-mal/hil(×)	308.15	1090.00 \pm 0.30	-0.39	1971-des/bha(Δ)
233.15	1172.00 \pm 2.00	0.77	1965-mal/hil(×)	318.15	1079.10 \pm 0.30	-0.54	1971-des/bha(Δ)
243.15	1160.00 \pm 2.00	-0.28	1965-mal/hil(×)	318.15	1079.10 \pm 0.30	-0.54	1971-des/bha(Δ)
253.15	1150.00 \pm 2.00	0.59	1965-mal/hil(×)	293.15	1106.28 \pm 0.40	-0.18	1979-mal/pat ¹⁾
263.15	1138.00 \pm 2.00	-0.62	1965-mal/hil ¹⁾	303.15	1095.89 \pm 0.40	0.14	1979-mal/pat ¹⁾
273.15	1128.00 \pm 2.00	0.13	1965-mal/hil ¹⁾	313.15	1084.68 \pm 0.40	-0.34	1979-mal/pat ¹⁾
283.15	1117.00 \pm 2.00	-0.16	1965-mal/hil ¹⁾	323.15	1073.89 \pm 0.40	-0.36	1979-mal/pat(×)
293.15	1105.00 \pm 2.00	-1.46	1965-mal/hil ¹⁾	298.15	1101.00 \pm 0.20	-0.10	1998-art/dom(□)
293.15	1106.50 \pm 0.30	0.04	1967-mat/san(◆)	298.15	1101.09 \pm 0.20	-0.01	2001-tam-1(○)
298.15	1101.10 \pm 0.30	-0.00	1967-mat/san ¹⁾				

¹⁾ Not included in Fig. 1.

Further references: [1880-bru-3, 1887-bru-1, 1889-fei, 1889-seu, 1892-per-1, 1893-sch-1, 1894-jah/mol, 1894-ram/ast, 1896-per, 1898-kah, 1907-tim, 1908-liv/mor, 1910-daw, 1914-kre/mei, 1918-her-2, 1920-har/cla, 1921-von, 1924-bus-1, 1926-mat, 1927-ker, 1932-mar/col, 1939-gib/loe, 1948-lag/eva, 1948-vog-1, 1949-dre/mar, 1949-fre/hob, 1949-lag/mcm, 1950-mum/phi, 1952-bro, 1953-con/li, 1953-kal/reu, 1953-par/cha, 1954-hub/kno, 1956-tor-2, 1958-afe, 1958-pan/mak-1, 1959-fre/hut, 1960-fro/shr, 1960-ter/kep, 1965-des/pan, 1965-for/moo, 1966-hey/sch, 1966-lin/ste, 1968-des/bha, 1968-nak/shi, 1970-har/dun, 1970-nak/shi, 1971-let/bay, 1972-let, 1973-gra/ker, 1973-nay/kud, 1975-mil/wac, 1978-siv/rao, 1979-cha/ses, 1980-dia/cre, 1981-kor/kov, 1982-ami/pat-1, 1982-red/red, 1982-sin/sin, 1983-oht/kin, 1984-bau/mee, 1985-sin/sin, 1985-sin/sin-1, 1986-ash/sri, 1986-gok/raj, 1986-red, 1986-sin/sin, 1989-ram/sur, 1990-jos/ami-2, 1992-acr/ten, 1992-acr/ten-2, 1992-acr/ten-3, 1992-acr/ten-4, 1992-acr/ten-5, 1995-kri/ram, 1995-kri/ram-1, 1995-ram/rao, 1996-vis/rao, 1999-sas/geo].

Table 3. Recommended values (fit to the reliable experimental values according to the equations

$$\rho = A + BT + CT^2 + DT^3 + \dots \text{ or } \rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$$

$\frac{T}{K}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{K}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{K}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$
220.00	1185.79 \pm 2.65	290.00	1109.83 \pm 1.02	340.00	1055.96 \pm 0.88
230.00	1174.70 \pm 2.14	293.15	1106.46 \pm 1.01	350.00	1044.99 \pm 0.86
240.00	1163.72 \pm 1.75	298.15	1101.10 \pm 1.00	360.00	1033.91 \pm 0.84
250.00	1152.83 \pm 1.51	300.00	1099.12 \pm 0.99	370.00	1022.71 \pm 0.82
260.00	1142.01 \pm 1.35	310.00	1088.40 \pm 0.96	380.00	1011.37 \pm 0.80
270.00	1131.25 \pm 1.17	320.00	1077.65 \pm 0.93	390.00	999.86 \pm 0.79
280.00	1120.53 \pm 1.08	330.00	1066.84 \pm 0.90	400.00	988.17 \pm 0.78

cont.

Table 3. (cont.)

$\frac{T}{\text{K}}$	$\rho \pm \sigma_{\text{fit}}$ $\text{kg} \cdot \text{m}^{-3}$	$\frac{T}{\text{K}}$	$\rho \pm \sigma_{\text{fit}}$ $\text{kg} \cdot \text{m}^{-3}$	$\frac{T}{\text{K}}$	$\rho \pm \sigma_{\text{fit}}$ $\text{kg} \cdot \text{m}^{-3}$
410.00	976.29 ± 0.76	490.00	870.98 ± 0.68	570.00	731.96 ± 1.08
420.00	964.19 ± 0.75	500.00	855.74 ± 0.70	580.00	707.98 ± 1.20
430.00	951.85 ± 0.73	510.00	840.14 ± 0.73	590.00	680.44 ± 1.36
440.00	939.26 ± 0.71	520.00	824.19 ± 0.77	600.00	647.98 ± 1.58
450.00	926.41 ± 0.69	530.00	807.78 ± 0.81	610.00	608.38 ± 1.89
460.00	913.26 ± 0.68	540.00	790.72 ± 0.86	620.00	556.60 ± 2.39
470.00	899.81 ± 0.66	550.00	772.70 ± 0.92	630.00	467.63 ± 3.29
480.00	885.74 ± 0.67	560.00	753.29 ± 0.99		

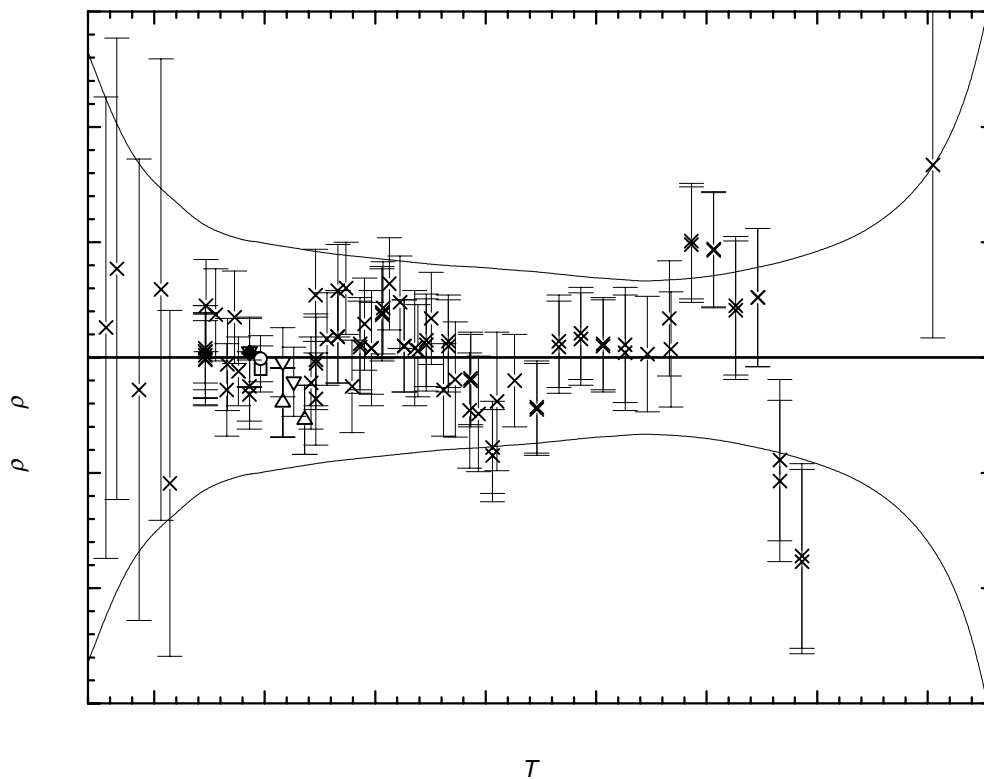


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the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

(Chloromethyl)benzene

[100-44-7]

 $\text{C}_7\text{H}_7\text{Cl}$

MW = 126.59

897

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{c,w} = 6.6497 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 2.0117 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

Coefficient	$T = 273.15 \text{ to } 448.15 \text{ K}$ $\rho = A + BT + CT^2 + DT^3 + \dots$
A	$1.38824 \cdot 10^3$
B	$-9.88760 \cdot 10^{-1}$

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

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	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)
448.15	945.30 ± 1.00	0.18	1883-sch-3(Δ)	298.15	1093.47 ± 0.60	0.03	1896-per(\square)
277.15	1113.50 ± 0.60	-0.70	1896-per(\square)	273.15	1118.73 ± 0.40	0.57	1935-tim/hen(∇)
278.15	1112.47 ± 0.60	-0.74	1896-per(\square)	288.15	1104.24 ± 0.40	0.91	1935-tim/hen(∇)
283.15	1107.71 ± 0.60	-0.56	1896-per(\square)	303.15	1089.75 ± 0.40	1.26	1935-tim/hen(∇)
288.15	1102.95 ± 0.60	-0.38	1896-per(\square)	293.15	1098.00 ± 1.00	-0.38	1944-sch(\circ)
293.15	1098.20 ± 0.60	-0.18	1896-per(\square)				

Further references: [1884-gla, 1894-jah/mol].

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	1121.27 ± 0.64	330.00	1061.95 ± 0.29	410.00	982.85 ± 0.60
280.00	1111.38 ± 0.64	340.00	1052.06 ± 0.25	420.00	972.96 ± 0.67
290.00	1101.50 ± 0.61	350.00	1042.17 ± 0.27	430.00	963.07 ± 0.81
293.15	1098.38 ± 0.59	360.00	1032.28 ± 0.32	440.00	953.18 ± 1.04
298.15	1093.44 ± 0.56	370.00	1022.40 ± 0.38	450.00	943.30 ± 1.38
300.00	1091.61 ± 0.54	380.00	1012.51 ± 0.43	460.00	933.41 ± 1.83
310.00	1081.72 ± 0.46	390.00	1002.62 ± 0.49		
320.00	1071.83 ± 0.37	400.00	992.73 ± 0.54		

cont.

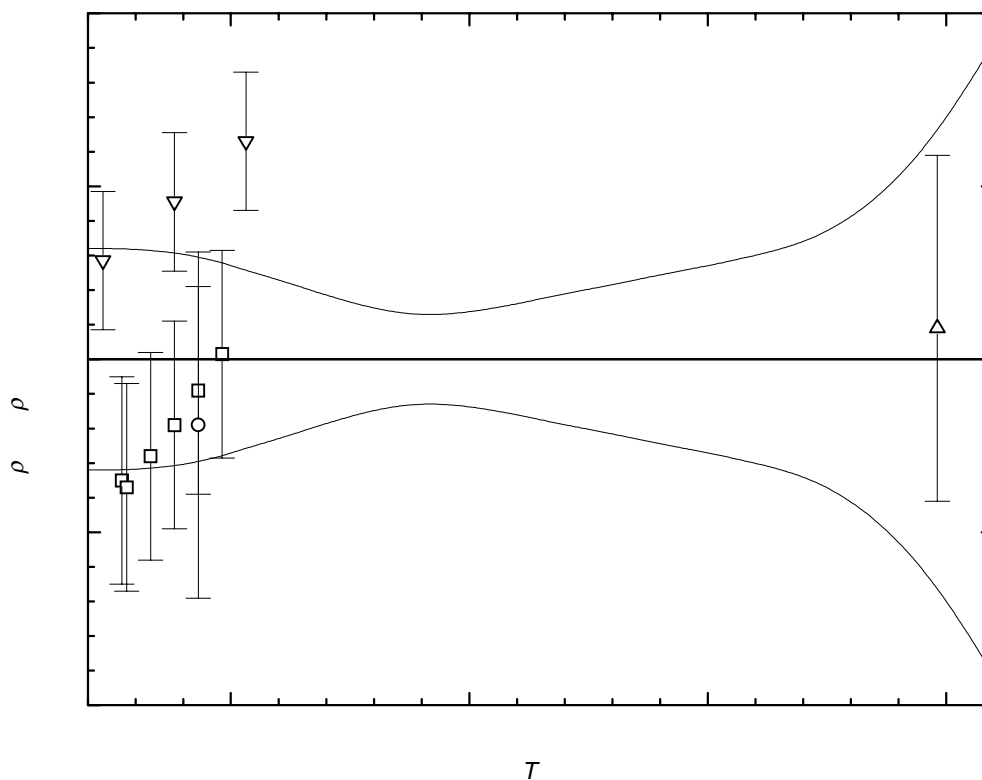


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the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

1-Chloro-2-methylbenzene

[95-49-8]

$\text{C}_7\text{H}_7\text{Cl}$

MW = 126.59

898

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{c,w} = 4.5808 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 7.8329 \cdot 10^{-2}$ (combined temperature ranges, unweighted).

Coefficient	$T = 273.15 \text{ to } 432.67 \text{ K}$
	$\rho = A + BT + CT^2 + DT^3 + \dots$
A	$1.32348 \cdot 10^3$
B	$-6.90228 \cdot 10^{-1}$
C	$-4.55230 \cdot 10^{-4}$

cont.

1-Chloro-2-methylbenzene (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)
366.35	1009.68 ± 0.60	0.16	1889-fei(×)	277.15	1097.30 ± 0.60	0.08	1896-per(×)
368.35	1007.40 ± 0.60	-0.07	1889-fei(×)	278.15	1096.30 ± 0.60	0.02	1896-per(×)
385.27	990.46 ± 0.60	0.47	1889-fei(×)	283.15	1091.50 ± 0.60	-0.05	1896-per(×)
385.98	989.89 ± 0.60	0.64	1889-fei(×)	288.15	1086.80 ± 0.60	0.00	1896-per(×)
396.47	978.72 ± 0.60	0.45	1889-fei(×)	293.15	1081.80 ± 0.60	-0.22	1896-per(×)
396.97	977.26 ± 0.60	-0.49	1889-fei(×)	298.15	1076.90 ± 0.60	-0.32	1896-per(×)
406.47	967.63 ± 0.60	-0.08	1889-fei(×)	331.15	1044.00 ± 1.50	-0.99	1927-ker(×)
407.36	966.18 ± 0.60	-0.59	1889-fei(×)	273.15	1101.75 ± 0.40	0.77	1930-tim/hen(∇)
415.02	958.71 ± 0.60	0.10	1889-fei(×)	288.15	1087.25 ± 0.40	0.45	1930-tim/hen(∇)
415.49	958.05 ± 0.60	-0.06	1889-fei(×)	303.15	1072.75 ± 0.40	0.35	1930-tim/hen(∇)
420.88	952.58 ± 0.60	0.24	1889-fei(×)	293.15	1082.60 ± 1.00	0.58	1948-lag/eva ¹⁾
421.93	951.34 ± 0.60	0.13	1889-fei(×)	293.15	1082.60 ± 0.40	0.58	1949-lag/mcm(Δ)
427.15	945.55 ± 0.60	-0.04	1889-fei(×)	303.15	1072.80 ± 0.40	0.40	1949-lag/mcm(Δ)
427.45	945.45 ± 0.60	0.18	1889-fei(×)	313.15	1063.30 ± 0.40	0.60	1949-lag/mcm(Δ)
432.53	939.50 ± 0.60	-0.27	1889-fei(×)	323.15	1053.20 ± 0.40	0.30	1949-lag/mcm(Δ)
432.63	939.46 ± 0.60	-0.20	1889-fei(×)	298.15	1076.41 ± 0.30	-0.81	1987-dah/dag(○)
432.67	939.50 ± 0.60	-0.12	1889-fei(×)	298.15	1076.44 ± 0.30	-0.78	1988-dah/sin-1(□)
293.15	1081.20 ± 0.50	-0.82	1889-seu(◆)				

¹⁾ Not included in Fig. 1.

Further references: [1884-gla, 1910-coh/daw, 1921-auw, 1922-wah/nor, 1926-mat, 1929-gin, 1953-con/li, 1953-par/cha, 1958-lev/nic].

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	1103.93 ± 0.55	320.00	1055.99 ± 0.57	390.00	985.05 ± 0.64
280.00	1094.53 ± 0.53	330.00	1046.13 ± 0.59	400.00	974.55 ± 0.65
290.00	1085.03 ± 0.53	340.00	1036.18 ± 0.60	410.00	963.96 ± 0.66
293.15	1082.02 ± 0.53	350.00	1026.14 ± 0.61	420.00	953.28 ± 0.67
298.15	1077.22 ± 0.54	360.00	1016.00 ± 0.62	430.00	942.51 ± 0.69
300.00	1075.44 ± 0.54	370.00	1005.78 ± 0.63	440.00	931.65 ± 0.73
310.00	1065.76 ± 0.55	380.00	995.46 ± 0.64		

cont.

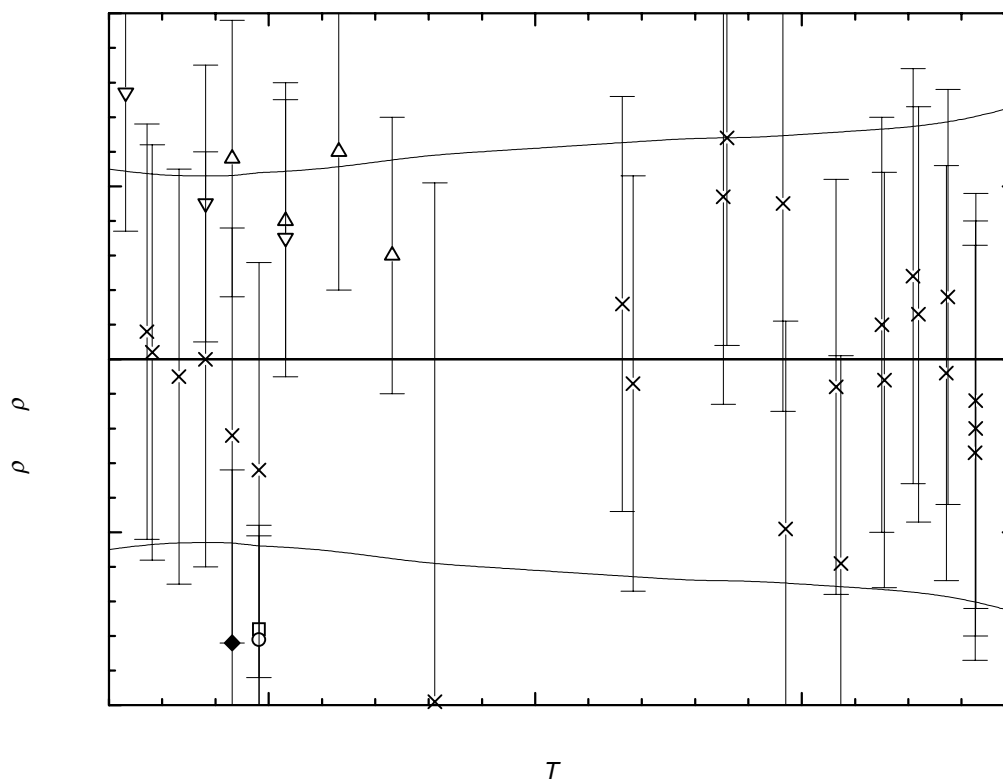


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the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

1-Chloro-3-methylbenzene

[108-41-8]

C_7H_7Cl

MW = 126.59

899

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{c,w} = 3.3298 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 9.3355 \cdot 10^{-2}$ (combined temperature ranges, unweighted).

Coefficient	$T = 283.15 \text{ to } 435.74 \text{ K}$
	$\rho = A + BT + CT^2 + DT^3 + \dots$
A	$1.31088 \cdot 10^3$
B	$-6.70337 \cdot 10^{-1}$
C	$-4.86871 \cdot 10^{-4}$

cont.

1-Chloro-3-methylbenzene (cont.)

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

T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$	$\rho_{\text{exp}} - \rho_{\text{calc}}$ $\text{kg} \cdot \text{m}^{-3}$	Ref. (Symbol in Fig. 1)	T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$	$\rho_{\text{exp}} - \rho_{\text{calc}}$ $\text{kg} \cdot \text{m}^{-3}$	Ref. (Symbol in Fig. 1)
372.79	994.02 ± 0.60	0.70	1889-fei(□)	429.65	935.57 ± 0.60	2.58	1889-fei ¹⁾
373.70	992.52 ± 0.60	0.14	1889-fei(□)	435.35	927.21 ± 0.60	0.44	1889-fei(□)
390.24	975.62 ± 0.60	0.48	1889-fei(□)	435.74	926.50 ± 0.60	0.16	1889-fei(□)
400.87	964.00 ± 0.60	0.08	1889-fei(□)	293.15	1071.64 ± 1.00	-0.89	1889-seu(Δ)
401.07	963.96 ± 0.60	0.25	1889-fei(□)	331.15	1035.00 ± 0.60	-0.51	1927-ker(O)
409.39	954.98 ± 0.60	0.13	1889-fei(□)	283.15	1082.40 ± 0.50	0.36	1949-lag/mcm(∇)
410.44	953.08 ± 0.60	-0.65	1889-fei(□)	293.15	1072.80 ± 0.50	0.27	1949-lag/mcm(∇)
417.64	946.26 ± 0.60	0.26	1889-fei(□)	303.15	1062.80 ± 0.50	-0.12	1949-lag/mcm(∇)
424.32	938.68 ± 0.60	-0.10	1889-fei(□)	313.15	1053.10 ± 0.50	-0.12	1949-lag/mcm(∇)
424.43	938.20 ± 0.60	-0.46	1889-fei(□)	323.15	1043.30 ± 0.50	-0.12	1949-lag/mcm(∇)
429.24	933.13 ± 0.60	-0.31	1889-fei(□)				

¹⁾ Not included in Fig. 1.

Further references: [1921-auw].

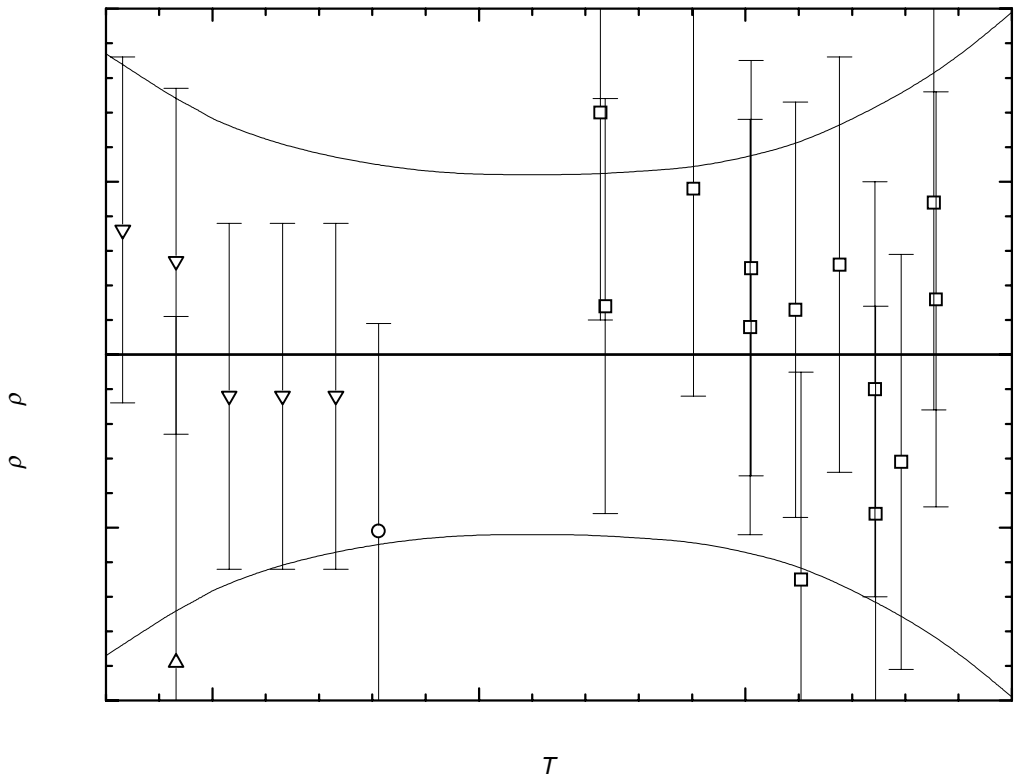


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the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

Table 3. Recommended values (fit to the reliable experimental values according to the equations

$$\rho = A + BT + CT^2 + DT^3 + \dots \text{ or } \rho = [1 + 1.75(1 - T/T_c)^{1/3} + 0.75(1 - T/T_c)][\rho_c + A(T_c - T) + B(T_c - T)^2 + C(T_c - T)^3 + D(T_c - T)^4]$$

$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$
280.00	1085.01 \pm 0.87	330.00	1036.65 \pm 0.55	400.00	964.84 \pm 0.57
290.00	1075.53 \pm 0.77	340.00	1026.68 \pm 0.53	410.00	954.20 \pm 0.61
293.15	1072.53 \pm 0.74	350.00	1016.62 \pm 0.52	420.00	943.45 \pm 0.68
298.15	1067.74 \pm 0.70	360.00	1006.46 \pm 0.52	430.00	932.61 \pm 0.76
300.00	1065.96 \pm 0.68	370.00	996.20 \pm 0.52	440.00	921.67 \pm 0.86
310.00	1056.29 \pm 0.62	380.00	985.85 \pm 0.53	450.00	910.64 \pm 0.99
320.00	1046.51 \pm 0.58	390.00	975.39 \pm 0.54		

1-Chloro-4-methylbenzene

[106-43-4]

Cc1ccc(Cl)cc1

MW = 126.59

900

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction):

$\sigma_{c,w} = 3.3995 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 7.2722 \cdot 10^{-2}$ (combined temperature ranges, unweighted).

Coefficient	$T = 277.15 \text{ to } 435.64 \text{ K}$ $\rho = A + BT + CT^2 + DT^3 + \dots$
A	$1.31178 \cdot 10^3$
B	$-6.93894 \cdot 10^{-1}$
C	$-4.55336 \cdot 10^{-4}$

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)
361.35	1000.06 \pm 0.60	-1.53	1889-fei ¹⁾	288.15	1074.00 \pm 0.60	-0.03	1896-per(O)
367.75	995.50 \pm 0.60	0.48	1889-fei(□)	293.15	1069.10 \pm 0.60	-0.14	1896-per(O)
385.27	976.95 \pm 0.60	0.09	1889-fei(□)	423.91	935.70 \pm 0.60	-0.11	1889-fei(□)
388.01	973.86 \pm 0.60	-0.13	1889-fei(□)	430.07	928.95 \pm 0.60	-0.19	1889-fei(□)
399.37	961.72 \pm 0.60	-0.32	1889-fei(□)	430.38	929.13 \pm 0.60	0.33	1889-fei(□)
401.07	960.98 \pm 0.60	0.74	1889-fei(□)	435.45	923.58 \pm 0.60	0.29	1889-fei(□)
409.08	952.33 \pm 0.60	0.60	1889-fei(□)	435.64	922.88 \pm 0.60	-0.20	1889-fei(□)
409.19	951.67 \pm 0.60	0.06	1889-fei(□)	293.15	1069.23 \pm 1.00	-0.01	1889-seu(V)
415.97	944.05 \pm 0.60	-0.31	1889-fei(□)	277.15	1084.70 \pm 0.60	0.21	1896-per(O)
416.39	943.71 \pm 0.60	-0.20	1889-fei(□)	278.15	1083.60 \pm 0.60	0.05	1896-per(O)
423.18	936.83 \pm 0.60	0.23	1889-fei(□)	283.15	1078.80 \pm 0.60	-0.00	1896-per(O)

¹⁾ Not included in Fig. 1.

cont.

1-Chloro-4-methylbenzene (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)
298.15	1064.10 ± 0.60	-0.32	1896-per(O)	297.50	1065.10 ± 1.00	0.05	1921-auw(Δ)
291.15	1070.50 ± 1.00	-0.66	1910-coh/daw(X)	293.15	1069.50 ± 1.00	0.26	1922-wah/nor(\blacklozenge)
298.15	1065.00 ± 1.50	0.58	1917-jae ¹⁾	293.15	1070.00 ± 1.00	0.76	1926-mat(X)
317.85	1045.00 ± 1.50	-0.23	1917-jae(X)	331.15	1031.00 ± 1.00	-1.07	1927-ker(X)
344.15	1018.00 ± 1.50	-1.05	1917-jae(X)	293.15	1069.70 ± 0.50	0.46	1949-lag/mcm(X)
363.35	999.00 ± 1.50	-0.54	1917-jae(X)	303.15	1059.60 ± 0.50	0.02	1949-lag/mcm(X)
389.25	973.00 ± 1.50	0.31	1917-jae(X)	313.15	1050.30 ± 0.50	0.46	1949-lag/mcm(X)
408.85	953.00 ± 1.50	1.03	1917-jae ¹⁾	323.15	1040.10 ± 0.50	0.10	1949-lag/mcm(X)
433.15	928.00 ± 1.50	2.21	1917-jae ¹⁾				

¹⁾ Not included in Fig. 1.

Further references: [1929-gin, 1953-con/li, 1953-par/cha].

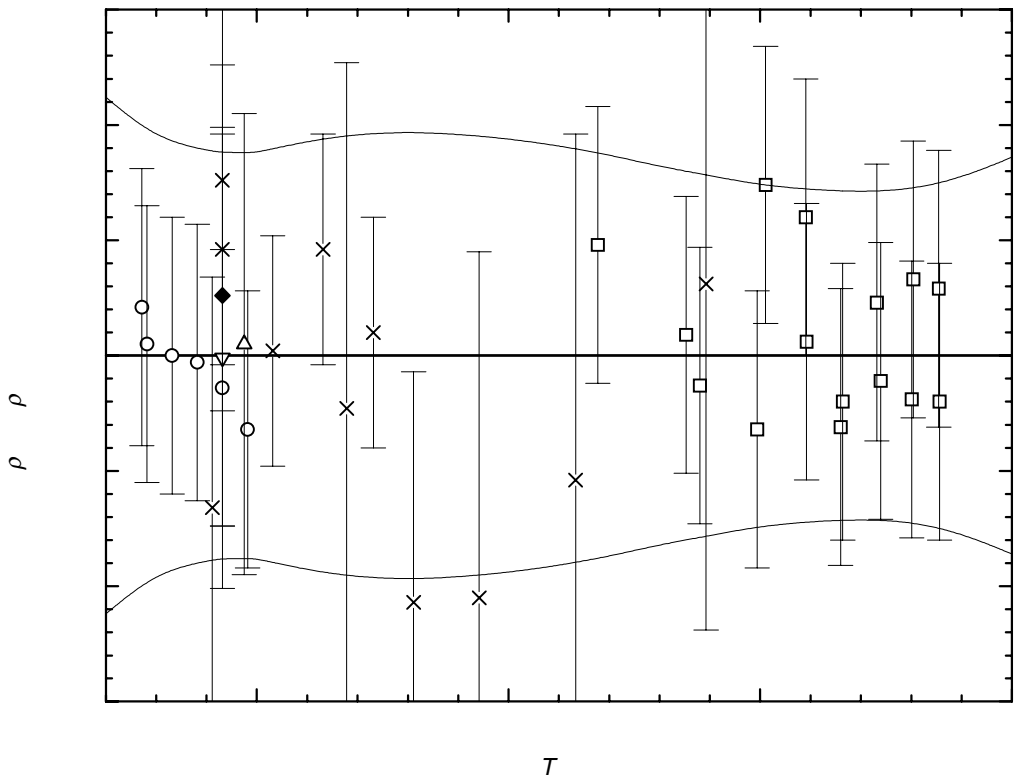


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the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

$\frac{T}{K}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{K}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{K}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$
270.00	1091.24 \pm 1.12	320.00	1043.11 \pm 0.96	390.00	971.91 \pm 0.78
280.00	1081.79 \pm 0.94	330.00	1033.21 \pm 0.97	400.00	961.37 \pm 0.74
290.00	1072.26 \pm 0.89	340.00	1023.22 \pm 0.96	410.00	950.74 \pm 0.72
293.15	1069.24 \pm 0.88	350.00	1013.14 \pm 0.94	420.00	940.03 \pm 0.71
298.15	1064.42 \pm 0.88	360.00	1002.97 \pm 0.91	430.00	929.22 \pm 0.72
300.00	1062.63 \pm 0.88	370.00	992.71 \pm 0.87	440.00	918.32 \pm 0.77
310.00	1052.92 \pm 0.93	380.00	982.35 \pm 0.82	450.00	907.33 \pm 0.86

(1,2,2,2-Tetrachloroethyl)benzene [4714-28-7] $\text{C}_8\text{H}_6\text{Cl}_4$ MW = 243.95 901

Table 1. Experimental value with uncertainty.

$\frac{T}{K}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
288.15	1453.00 \pm 1.50	1897-bil-1

(2-Chloroethyl)benzene [622-24-2] $\text{C}_8\text{H}_9\text{Cl}$ MW = 140.61 902

Table 1. Experimental value with uncertainty.

$\frac{T}{K}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
298.15	1068.51 \pm 0.30	1993-com/fra

1-Chloro-2-ethylbenzene [89-96-3] $\text{C}_8\text{H}_9\text{Cl}$ MW = 140.61 903

Table 1. Fit with estimated B coefficient for 2 accepted points. Deviation $\sigma_w = 0.110$.

Coefficient	$\rho = A + BT$
A	1314.74
B	-0.880

cont.

1-Chloro-2-ethylbenzene (cont.)**Table 2.** Experimental values with uncertainties and deviation from calculated values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
293.15	1056.90 ± 0.50	0.11	1949-dre/mar
298.15	1052.30 ± 0.50	-0.11	1949-dre/mar
298.15	1055.00 ± 2.00	2.63	1954-hub/kno ¹⁾
293.15	1065.00 ± 1.50	8.23	1958-lev/nic ¹⁾

¹⁾ Not included in calculation of linear coefficients.**Table 3.** Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	1059.5 ± 0.5
293.15	1056.8 ± 0.3
298.15	1052.4 ± 0.3

1-Chloro-3-ethylbenzene

[620-16-6]

C8H9Cl

MW = 140.61

904

Table 1. Fit with estimated B coefficient for 2 accepted points. Deviation $\sigma_w = 0.040$.

Coefficient	$\rho = A + BT$
A	1322.58
B	-0.920

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

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
293.15	1052.90 ± 0.50	0.04	1949-dre/mar
298.15	1048.20 ± 0.50	-0.04	1949-dre/mar
293.15	1058.00 ± 1.50	5.12	1958-lev/nic ¹⁾

¹⁾ Not included in calculation of linear coefficients.**Table 3.** Recommended values.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$
290.00	1055.8 ± 0.5
293.15	1052.9 ± 0.3
298.15	1048.3 ± 0.3

1-Chloro-4-ethylbenzene

[622-98-0]

 $\text{C}_8\text{H}_9\text{Cl}$

MW = 140.61

905

Table 1. Fit with estimated B coefficient for 2 accepted points. Deviation $\sigma_w = 0.000$.

Coefficient	$\rho = A + BT$
A	1321.07
B	-0.940

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

T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$	$\rho_{\text{exp}} - \rho_{\text{calc}}$ $\text{kg} \cdot \text{m}^{-3}$	Ref.
293.15	1045.50 ± 0.50	0.00	1949-dre/mar
298.15	1040.80 ± 0.50	0.00	1949-dre/mar
298.15	1050.00 ± 2.00	9.19	1954-hub/kno ¹⁾
293.15	1057.00 ± 1.50	11.49	1958-lev/nic ¹⁾

¹⁾ Not included in calculation of linear coefficients.**Table 3.** Recommended values.

T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$
290.00	1048.5 ± 0.4
293.15	1045.5 ± 0.3
298.15	1040.8 ± 0.3

1-Chloro-4-(2-chloro-1-methylethyl)benzene

[500010-77-5]

 $\text{C}_9\text{H}_{10}\text{Cl}_2$

MW = 189.08

906

Table 1. Experimental value with uncertainty.

T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$	Ref.
298.15	1178.00 ± 2.00	1948-bac/hel

1-Chloro-2-(1-methylethyl)benzene

[2077-13-6]

 $\text{C}_9\text{H}_{11}\text{Cl}$

MW = 154.64

907

Table 1. Fit with estimated B coefficient for 2 accepted points. Deviation $\sigma_w = 0.020$.

Coefficient	$\rho = A + BT$
A	1303.80
B	-0.920

cont.

1-Chloro-2-(1-methylethyl)benzene (cont.)**Table 2.** Experimental values with uncertainties and deviation from calculated values.

T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$	$\rho_{\text{exp}} - \rho_{\text{calc}}$ $\text{kg} \cdot \text{m}^{-3}$	Ref.
293.15	1034.10 ± 0.50	0.02	1949-dre/mar
298.15	1029.50 ± 0.50	-0.02	1949-dre/mar

Table 3. Recommended values.

T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$
290.00	1037.0 ± 0.6
293.15	1034.1 ± 0.5
298.15	1029.5 ± 0.5

1-Chloro-4-(1-methylethyl)benzene

[2621-46-7]

 $\text{C}_9\text{H}_{11}\text{Cl}$

MW = 154.64

908

Table 1. Fit with estimated B coefficient for 2 accepted points. Deviation $\sigma_w = 0.020$.

Coefficient	$\rho = A + BT$
A	1290.48
B	-0.920

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

T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$	$\rho_{\text{exp}} - \rho_{\text{calc}}$ $\text{kg} \cdot \text{m}^{-3}$	Ref.
293.15	1014.10 ± 1.50	-6.68	1946-ver/hil ¹⁾
293.15	1020.80 ± 0.50	-0.02	1949-dre/mar
298.15	1016.20 ± 0.50	0.02	1949-dre/mar
293.15	1028.60 ± 2.00	7.82	1951-rob/goo ¹⁾

¹⁾ Not included in calculation of linear coefficients.**Table 3.** Recommended values.

T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$
290.00	1023.7 ± 0.4
293.15	1020.8 ± 0.3
298.15	1016.2 ± 0.3

(2-Chloro-1-methylethyl)benzene [824-47-5] $\text{C}_9\text{H}_{11}\text{Cl}$ MW = 154.64 909

Table 1. Experimental value with uncertainty.

T	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$	Ref.
K	$\text{kg} \cdot \text{m}^{-3}$	
298.15	1044.00 ± 2.00	1948-bac/hel

(2-Chloropropyl)benzene [10304-81-1] $\text{C}_9\text{H}_{11}\text{Cl}$ MW = 154.64 910

Table 1. Experimental value with uncertainty.

T	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$	Ref.
K	$\text{kg} \cdot \text{m}^{-3}$	
293.15	1024.90 ± 1.00	1944-naz/tsu

1-(2-Chloro-1-methylethyl)-4-methylbenzene [826-00-6] $\text{C}_{10}\text{H}_{13}\text{Cl}$ MW = 168.67 911

Table 1. Experimental value with uncertainty.

T	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$	Ref.
K	$\text{kg} \cdot \text{m}^{-3}$	
298.15	1025.00 ± 2.00	1948-bac/hel

(3-Chloropropyl-1-methyl)benzene [13556-61-1] $\text{C}_{10}\text{H}_{13}\text{Cl}$ MW = 168.67 912

Table 1. Experimental value with uncertainty.

T	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$	Ref.
K	$\text{kg} \cdot \text{m}^{-3}$	
293.15	1008.70 ± 2.00	1952-ter/tsu