

3.1.2 Chloroalkenes

Tetrachloroethene

[127-18-4]

 C_2Cl_4

MW = 165.83

675

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{\text{c,w}} = 1.4323 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{\text{c,uw}} = 2.5674 \cdot 10^{-2}$ (combined temperature ranges, unweighted).

Coefficient	$T = 253.12 \text{ to } 363.15 \text{ K}$ $\rho = A + BT + CT^2 + DT^3 + \dots$
A	$2.06289 \cdot 10^3$
B	-1.33681
C	$-5.61290 \cdot 10^{-4}$

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	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$	$\rho_{\text{exp}} - \rho_{\text{c}}$ $\text{kg} \cdot \text{m}^{-3}$	Ref. (Symbol in Fig. 1)
293.15	1622.70 ± 0.30	-0.07	1949-dre/mar(Δ)	301.15	1609.20 ± 0.50	-0.20	1991-com/fra ¹⁾
298.15	1614.44 ± 0.30	0.02	1949-dre/mar(Δ)	304.25	1602.80 ± 0.50	-1.40	1991-com/fra ¹⁾
273.15	1654.97 ± 0.40	-0.89	1958-afe ¹⁾	306.95	1599.60 ± 0.50	-0.07	1991-com/fra(\times)
283.15	1639.08 ± 0.40	-0.29	1958-afe(\times)	310.05	1594.40 ± 0.50	-0.05	1991-com/fra(\times)
293.15	1622.68 ± 0.30	-0.09	1958-afe(\times)	313.95	1588.10 ± 0.50	0.23	1991-com/fra(\times)
293.15	1622.72 ± 0.40	-0.05	1958-afe(\times)	315.35	1585.70 ± 0.50	0.19	1991-com/fra(\times)
303.15	1606.17 ± 0.40	0.12	1958-afe(\times)	253.12	1688.82 ± 0.30	0.27	1992-ano-3(\square)
313.15	1589.42 ± 0.40	0.20	1958-afe(\times)	258.10	1680.59 ± 0.30	0.12	1992-ano-3(\square)
323.15	1572.48 ± 0.40	0.20	1958-afe(\times)	263.14	1672.27 ± 0.30	0.02	1992-ano-3(\square)
333.15	1555.45 ± 0.40	0.22	1958-afe(\times)	268.12	1664.03 ± 0.30	-0.08	1992-ano-3(\square)
343.15	1538.08 ± 0.40	0.01	1958-afe(\times)	273.15	1655.73 ± 0.30	-0.13	1992-ano-3(\square)
353.15	1520.75 ± 0.40	-0.04	1958-afe(\times)	278.15	1647.46 ± 0.30	-0.17	1992-ano-3(\square)
363.15	1503.04 ± 0.40	-0.36	1958-afe(\times)	283.16	1639.17 ± 0.30	-0.18	1992-ano-3(\square)
373.15	1485.53 ± 0.40	-0.37	1958-afe ¹⁾	288.15	1630.91 ± 0.30	-0.17	1992-ano-3(\square)
298.15	1614.40 ± 0.40	-0.02	1964-loi/mer(\times)	293.17	1622.58 ± 0.30	-0.15	1992-ano-3(\square)
303.15	1606.36 ± 0.30	0.31	1967-fri/gal(\blacklozenge)	298.16	1614.30 ± 0.30	-0.11	1992-ano-3(\square)
293.15	1622.79 ± 0.40	0.02	1967-loi/mer(\times)	303.14	1605.99 ± 0.30	-0.08	1992-ano-3(\square)
298.15	1614.32 ± 0.40	-0.10	1970-pol/mur-2(\times)	308.07	1597.76 ± 0.30	-0.03	1992-ano-3(\square)
293.15	1622.61 ± 0.30	-0.16	1972-bou/aim(∇)	313.14	1589.26 ± 0.30	0.02	1992-ano-3(\square)
293.15	1622.80 ± 0.30	0.03	1984-bau/mee(\circ)	318.21	1580.74 ± 0.30	0.07	1992-ano-3(\square)
298.15	1614.40 ± 0.30	-0.02	1984-bau/mee(\circ)	293.15	1622.99 ± 0.40	0.22	1995-dej/cru(\times)
297.15	1615.60 ± 0.50	-0.49	1991-com/fra ¹⁾	298.15	1614.26 ± 0.40	-0.16	1996-dej/gon-2(\times)
300.45	1610.70 ± 0.50	0.13	1991-com/fra ¹⁾	298.15	1614.70 ± 0.40	0.28	1998-pal/sha-1(\times)

¹⁾ Not included in Fig. 1.

Further references: [1883-sch-3, 1918-her-2, 1926-mat, 1943-mcg, 1980-coc/dia, 1982-nat/nar, 1988-sur/ram-1, 1992-zur/gar, 1995-com/fra-5, 1995-kum/rao, 1996-kri/sur].

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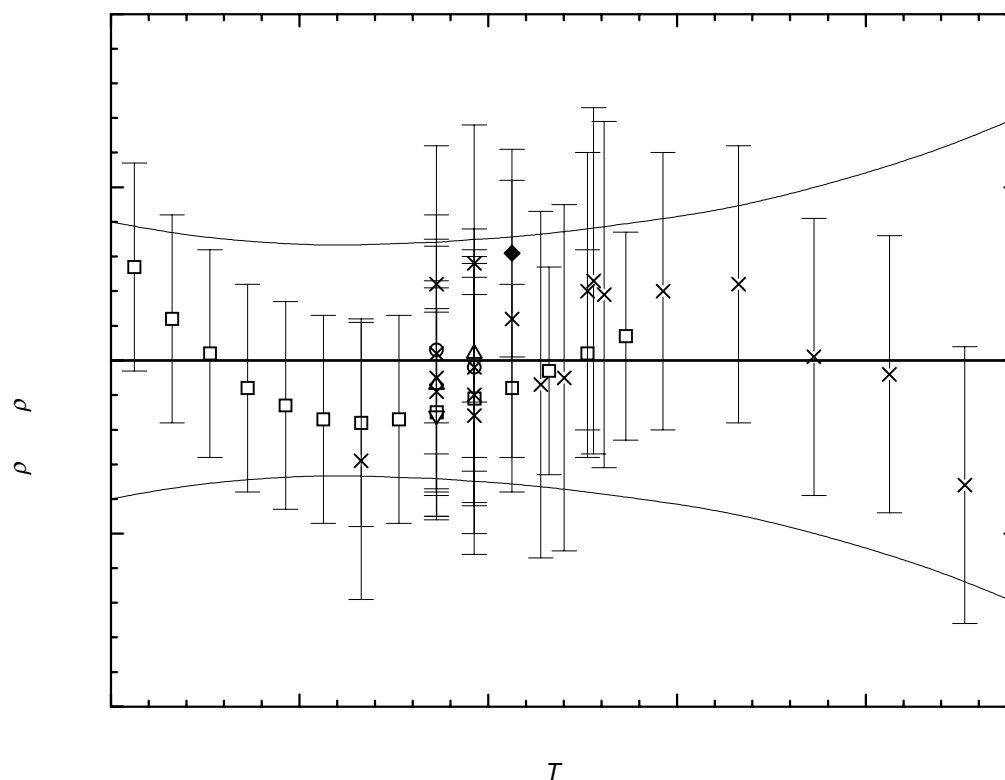
Tetrachloroethene (cont.)

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

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

$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$
250.00	1693.60 ± 0.40	293.15	1622.77 ± 0.34	330.00	1560.61 ± 0.43
260.00	1677.37 ± 0.36	298.15	1614.42 ± 0.35	340.00	1543.49 ± 0.48
270.00	1661.03 ± 0.34	300.00	1611.33 ± 0.35	350.00	1526.25 ± 0.54
280.00	1644.57 ± 0.33	310.00	1594.54 ± 0.37	360.00	1508.89 ± 0.61
290.00	1628.01 ± 0.34	320.00	1577.63 ± 0.40	370.00	1491.43 ± 0.70

Trichloroethene**[79-01-6]****MW = 131.39****676****Table 1.** Coefficients of the polynomial expansion equation. Standard deviations (see introduction):
 $\sigma_{c,w} = 7.5081 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 1.2841 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

Coefficient	$T = 273.15 \text{ to } 353.15 \text{ K}$ $\rho = A + BT + CT^2 + DT^3 + \dots$
<i>A</i>	$1.77214 \cdot 10^3$
<i>B</i>	$-4.54549 \cdot 10^{-1}$
<i>C</i>	$-2.03466 \cdot 10^{-3}$

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

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref. (Symbol in Fig. 1)	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{\rho_{\text{exp}} - \rho_{\text{calc}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref. (Symbol in Fig. 1)
288.15	1472.60 ± 0.40	0.37	1931-tre/spe(×)	292.15	1466.03 ± 0.30	0.35	1990-fra/com-1(□)
273.15	1497.27 ± 0.30	1.10	1955-tim/hen(○)	293.55	1463.87 ± 0.30	0.49	1990-fra/com-1(□)
288.15	1472.36 ± 0.30	0.13	1955-tim/hen(○)	295.25	1461.21 ± 0.30	0.64	1990-fra/com-1(□)
303.15	1447.41 ± 0.30	0.05	1955-tim/hen(○)	296.75	1458.52 ± 0.30	0.44	1990-fra/com-1(□)
273.15	1495.26 ± 0.40	-0.91	1958-afe(∇)	298.55	1455.57 ± 0.30	0.49	1990-fra/com-1(□)
283.15	1479.22 ± 0.40	-1.09	1958-afe(∇)	299.65	1453.72 ± 0.30	0.48	1990-fra/com-1(□)
293.15	1462.71 ± 0.30	-1.33	1958-afe(∇)	301.35	1450.86 ± 0.30	0.47	1990-fra/com-1(□)
293.15	1462.69 ± 0.40	-1.35	1958-afe(∇)	303.35	1447.66 ± 0.30	0.64	1990-fra/com-1(□)
303.15	1446.01 ± 0.40	-1.35	1958-afe(∇)	304.95	1444.70 ± 0.30	0.38	1990-fra/com-1(□)
313.15	1428.90 ± 0.40	-1.38	1958-afe(∇)	307.15	1441.14 ± 0.30	0.56	1990-fra/com-1(□)
323.15	1411.75 ± 0.40	-1.03	1958-afe(∇)	310.35	1435.50 ± 0.30	0.40	1990-fra/com-1(□)
333.15	1394.19 ± 0.40	-0.70	1958-afe(∇)	312.65	1431.71 ± 0.30	0.57	1990-fra/com-1(□)
343.15	1376.48 ± 0.40	-0.10	1958-afe(∇)	315.45	1427.19 ± 0.30	0.90	1990-fra/com-1(□)
353.15	1358.60 ± 0.40	0.73	1958-afe(∇)	298.15	1455.72 ± 0.40	-0.03	1995-com/fra-5(◆)
293.15	1463.90 ± 0.30	-0.14	1984-bau/mee(Δ)	293.15	1464.04 ± 0.40	0.00	1996-dej/gon-1(×)
298.15	1455.50 ± 0.30	-0.25	1984-bau/mee(Δ)	298.15	1455.80 ± 0.40	0.05	1998-pal/sha-1(×)
291.25	1467.59 ± 0.30	0.43	1990-fra/com-1(□)				

Further references: [1912-her/rat, 1926-mat, 1933-tre/wat, 1943-mcg, 1967-mat/san, 1980-coc/dia, 1988-rao/red, 1988-sur/ram-1, 1989-pic/pla, 1989-ram/sur, 1995-kum/rao, 1995-kum/rao-1, 1996-kri/sur, 2001-vit/red].

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

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

$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$
270.00	1501.09 ± 0.47	298.15	1455.75 ± 0.33	330.00	1400.57 ± 0.37
280.00	1485.35 ± 0.40	300.00	1452.66 ± 0.32	340.00	1382.39 ± 0.45
290.00	1469.21 ± 0.35	310.00	1435.70 ± 0.31	350.00	1363.80 ± 0.59
293.15	1464.04 ± 0.34	320.00	1418.34 ± 0.33	360.00	1344.81 ± 0.79

cont.

Trichloroethene (cont.)

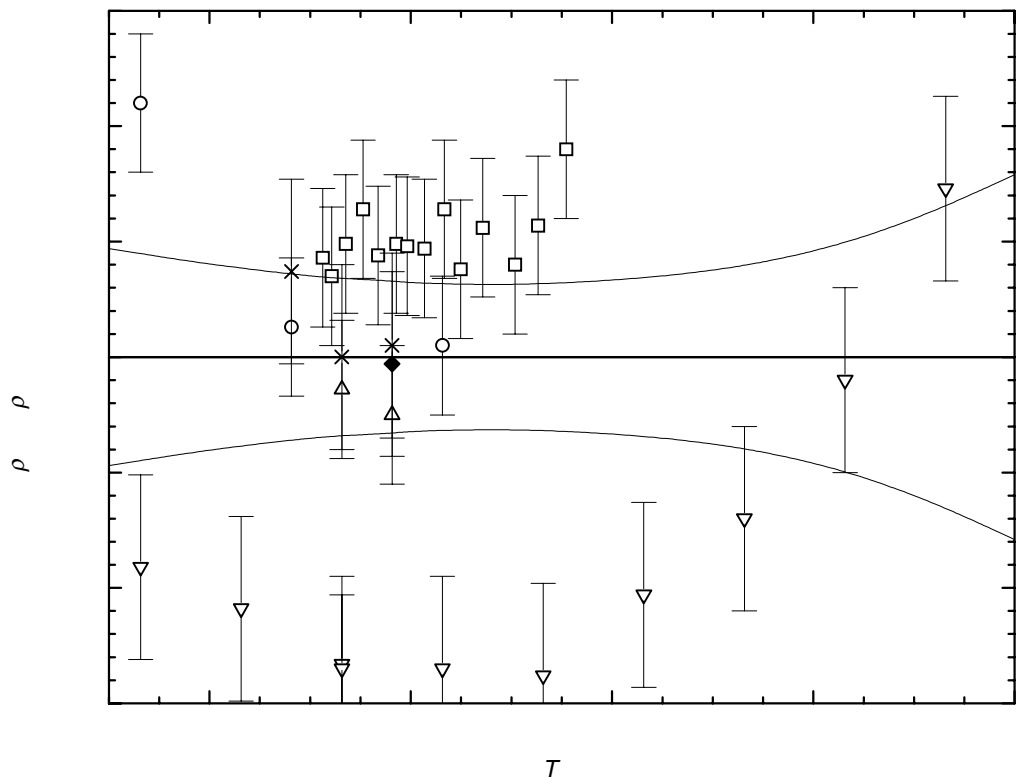


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the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

1,1-Dichloroethene [75-35-4] C2H2Cl2 MW = 96.94 677

Table 1. Experimental values with uncertainties.

T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$	Ref.
298.15	1214.90 ± 0.80	1947-rog
293.15	1212.90 ± 0.40	1985-kov/svo

(E)-1,2-Dichloroethene [156-60-5] C2H2Cl2 MW = 96.94 678

Table 1. Fit with estimated B coefficient for 13 accepted points. Deviation $\sigma_w = 1.700$.

Coefficient	$\rho = A + BT$
A	1766.71
B	-1.740

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.	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.
288.65	1265.20 ± 1.50	0.75	1936-awb/gri	296.35	1253.60 ± 0.60	2.54	1991-com/fra
293.15	1257.00 ± 1.00	0.38	1943-mcg	299.85	1247.50 ± 0.60	2.53	1991-com/fra
298.15	1246.51 ± 0.30	-1.41	1950-cur/est	302.45	1242.30 ± 0.60	1.86	1991-com/fra
298.15	1246.58 ± 0.30	-1.34	1950-cur/est	306.15	1236.50 ± 0.60	2.50	1991-com/fra
293.15	1256.70 ± 0.40	0.08	1985-kov/svo	293.15	1256.80 ± 0.50	0.18	1996-hah/sve
290.35	1263.70 ± 0.60	2.20	1991-com/fra	313.15	1219.40 ± 0.50	-2.46	1996-hah/sve
292.75	1259.60 ± 0.60	2.28	1991-com/fra				

Table 3. Recommended values.

T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$
280.00	1279.5 ± 1.9
290.00	1262.1 ± 1.8
293.15	1256.6 ± 1.8
298.15	1247.9 ± 1.8
310.00	1227.3 ± 1.9
320.00	1209.9 ± 2.0

(Z)-1,2-Dichloroethene

[156-59-2]

 $\text{C}_2\text{H}_2\text{Cl}_2$

MW = 96.94

679

Table 1. Fit with estimated B coefficient for 2 accepted points. Deviation $\sigma_w = 0.060$.

Coefficient	$\rho = A + BT$
A	1771.72
B	-1.650

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	1273.60 ± 2.00	-6.17	1929-wal/glo ¹⁾
288.65	1290.70 ± 2.00	-4.75	1936-awb/gri ¹⁾
293.15	1282.00 ± 2.00	-6.02	1943-mcg ¹⁾
313.15	1255.00 ± 0.60	-0.06	1996-hah/sve
293.15	1288.10 ± 0.60	0.06	1996-hah/sve

¹⁾ Not included in calculation of linear coefficients.

cont.

(Z)-1,2-Dichloroethene (cont.)**Table 3.** Recommended values.

T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$
290.00	1293.2 ± 0.8
293.15	1288.0 ± 0.6
298.15	1279.8 ± 0.4
310.00	1260.2 ± 0.5
320.00	1243.7 ± 1.0

Chloroethene

[75-01-4]



MW = 62.50

680

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

$\sigma_{\text{c,w}} = 1.0309$ (combined temperature ranges, weighted), $\sigma_{\text{c,uw}} = 2.5852 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

Coefficient	$T = 213.15 \text{ to } 332.76 \text{ K}$ $\rho = A + BT + CT^2 + DT^3 + \dots$
A	$1.29443 \cdot 10^3$
B	$-7.31415 \cdot 10^{-1}$
C	$-1.97364 \cdot 10^{-3}$

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)
260.19	969.20 ± 0.50	-1.31	1927-dan/bur(Δ)	255.15	980.00 ± 2.00	0.67	1950-miz/yam(\circ)
274.47	944.30 ± 0.50	-0.70	1927-dan/bur(Δ)	256.65	978.00 ± 2.00	1.29	1950-miz/yam(\circ)
286.64	922.30 ± 0.50	-0.32	1927-dan/bur(Δ)	257.65	976.00 ± 2.00	1.03	1950-miz/yam(\circ)
301.26	895.50 ± 0.50	0.53	1927-dan/bur(Δ)	258.65	974.00 ± 2.00	0.78	1950-miz/yam(\circ)
312.72	873.30 ± 0.60	0.60	1927-dan/bur(Δ)	213.15	1048.50 ± 1.00	-0.36	1967-han/hac(\square)
321.35	855.50 ± 0.60	-0.08	1927-dan/bur(Δ)	233.15	1016.00 ± 2.00	-0.62	1967-han/hac(\square)
332.76	831.00 ± 0.70	-1.51	1927-dan/bur(Δ)				

Further references: [1968-ano].

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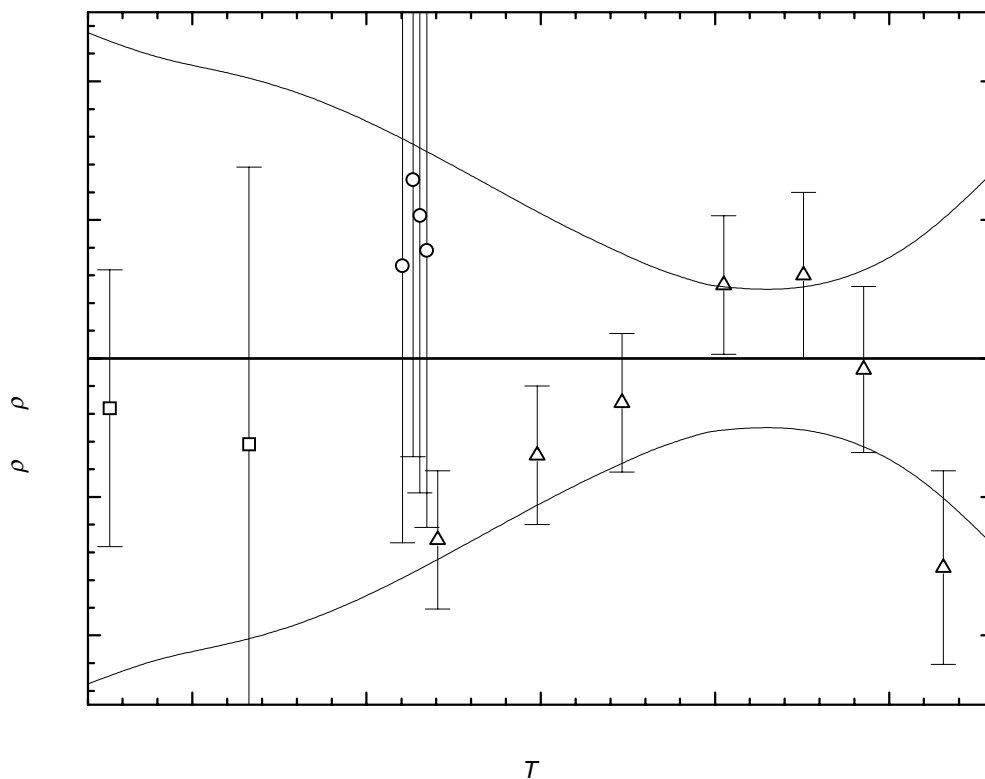


Fig. 1. The symbols show the deviation of the calculated from the experimental values from Table 2. The curves above and below the zero line indicate the calculated error region of the recommended values given in Table 3. The error bars represent the experimental errors. (Error bars smaller than the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

$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{\text{K}}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$
210.00	1053.80 ± 2.35	270.00	953.07 ± 1.18	310.00	878.03 ± 0.48
220.00	1038.00 ± 2.16	280.00	934.90 ± 0.91	320.00	858.28 ± 0.58
230.00	1021.80 ± 2.07	290.00	916.34 ± 0.68	330.00	838.14 ± 0.86
240.00	1005.21 ± 1.93	293.15	910.41 ± 0.62	340.00	817.60 ± 1.35
250.00	988.23 ± 1.72	298.15	900.92 ± 0.54		
260.00	970.85 ± 1.46	300.00	897.38 ± 0.52		

Hexachloropropene [1888-71-7] C_3Cl_6 MW = 248.75 681

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	1766.00 ± 2.00	1954-pro
298.15	1757.00 ± 35.00	1997-ste/chi-2

1,2,3-Trichloro-1-propene [96-19-5] $\text{C}_3\text{H}_3\text{Cl}_3$ MW = 145.41 682

Table 1. Experimental value with uncertainty.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
299.15	1793.00 ± 4.00	1948-kir/kre

1,1-Dichloro-1-propene [563-58-6] $\text{C}_3\text{H}_4\text{Cl}_2$ MW = 110.97 683

Table 1. Experimental value with uncertainty.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
298.15	1186.40 ± 0.80	1947-rog

1-Chloro-1-propene [590-21-6] $\text{C}_3\text{H}_5\text{Cl}$ MW = 76.53 684

Table 1. Experimental value with uncertainty.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
347.55	835.24 ± 1.00	1952-ael/sme

(E)-1-Chloro-1-propene [16136-85-9] $\text{C}_3\text{H}_5\text{Cl}$ MW = 76.53 685

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.
288.15	930.00 ± 2.00	1939-gro/hea
288.15	930.00 ± 2.00	1941-wil-1

(Z)-1-Chloro-1-propene**[16136-84-8]****C₃H₅Cl****MW = 76.53****686****Table 1.** Experimental value with uncertainty.

T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ kg·m ⁻³	Ref.
298.15	934.60 ± 0.70	1947-rog

2-Chloro-1-propene**[557-98-2]****C₃H₅Cl****MW = 76.53****687****Table 1.** Experimental values with uncertainties.

T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ kg·m ⁻³	Ref.
282.15	917.17 ± 2.00	1866-lin
288.15	909.30 ± 1.00	1939-gro/hea
288.15	909.30 ± 1.00	1941-wil-1
293.15	898.80 ± 1.00	1947-rog
347.55	818.61 ± 1.00	1952-ael/sme

3-Chloro-1-propene**[107-05-1]****C₃H₅Cl****MW = 76.53****688****Table 1.** Coefficients of the polynomial expansion equation. Standard deviations (see introduction):

$\sigma_{\text{c,w}} = 3.9862 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{\text{c,uw}} = 2.1016 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

Coefficient	$T = 273.15 \text{ to } 317.95 \text{ K}$ $\rho = A + BT + CT^2 + DT^3 + \dots$
<i>A</i>	$1.31847 \cdot 10^3$
<i>B</i>	-1.29869

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)
293.15	937.90 ± 1.00	0.14	1879-bru(×)	293.15	937.40 ± 1.00	-0.36	1939-gro/hea(◆)
317.95	905.80 ± 0.00	0.25	1883-sch-3 ¹⁾	293.15	937.40 ± 1.00	-0.36	1941-wil-1(∇)
317.95	905.50 ± 1.00	-0.05	1883-sch-3(×)	285.45	946.90 ± 1.00	-0.86	1948-jef/vog(Δ)
273.15	963.71 ± 0.50	-0.03	1932-tim/hen(×)	293.15	939.70 ± 1.00	1.94	1948-jef/vog(Δ)
288.15	944.17 ± 0.50	-0.09	1932-tim/hen(×)	273.15	963.70 ± 0.50	-0.04	1960-wri(□)
303.15	924.52 ± 0.50	-0.25	1932-tim/hen(×)	273.15	963.70 ± 0.50	-0.04	1961-wri(○)

¹⁾ Not included in Fig. 1.**Further references:** [1880-bru-2, 1880-bru-3, 1882-zan, 1883-sch-4, 1930-juv, 1948-fav/fri].

cont.

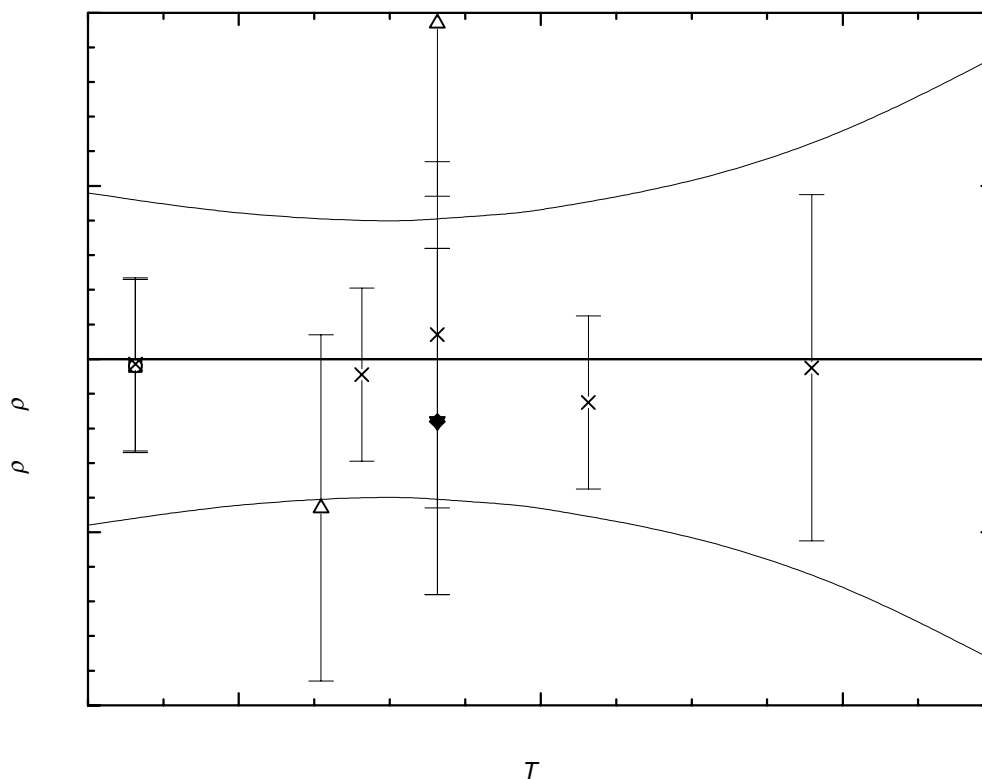
3-Chloro-1-propene (cont.)

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

$\frac{T}{K}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{K}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$	$\frac{T}{K}$	$\frac{\rho \pm \sigma_{\text{fit}}}{\text{kg} \cdot \text{m}^{-3}}$
270.00	967.83 ± 0.96	293.15	937.76 ± 0.81	310.00	915.88 ± 1.01
280.00	954.84 ± 0.83	298.15	931.27 ± 0.84	320.00	902.89 ± 1.29
290.00	941.85 ± 0.79	300.00	928.87 ± 0.86	330.00	889.91 ± 1.74

1,1,1,2,3,4-Hexachloro-2-butene

[920-80-9]



MW = 262.78

689

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.
293.15	1689.40 ± 2.00	1963-ako/saa

1,1,2,3,4-Pentachloro-1-butene [52704-84-4] $\text{C}_4\text{H}_3\text{Cl}_5$ MW = 228.33 690

Table 1. Experimental value with uncertainty.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
293.15	1572.30 ± 2.00	1963-ako/saa

1,2,3,4-Tetrachloro-2-butene [1573-56-4] $\text{C}_4\text{H}_4\text{Cl}_4$ MW = 193.89 691

Table 1. Experimental value with uncertainty.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
293.15	1472.40 ± 2.00	1965-bab/pet

1,3,3,3-Tetrachloro-2-methyl-1-propene [90567-28-5] $\text{C}_4\text{H}_4\text{Cl}_4$ MW = 193.89 692

Table 1. Experimental value with uncertainty.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
293.15	1452.80 ± 2.00	1950-hen/she

1,3-Dichloro-2-butene [926-57-8] $\text{C}_4\text{H}_6\text{Cl}_2$ MW = 125.00 693

Table 1. Experimental value with uncertainty.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
293.15	1195.20 ± 1.50	1937-tis

(Z)-1,4-Dichloro-2-butene [1476-11-5] $\text{C}_4\text{H}_6\text{Cl}_2$ MW = 125.00 694

Table 1. Experimental value with uncertainty.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
298.15	1191.00 ± 2.00	1951-amu/may

(E)-1,4-Dichloro-2-butene [110-57-6] $\text{C}_4\text{H}_6\text{Cl}_2$ MW = 125.00 695

Table 1. Experimental value with uncertainty.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
293.15	1185.80 ± 2.00	1968-ano-4

2,3-Dichloro-1-butene [7013-11-8] $\text{C}_4\text{H}_6\text{Cl}_2$ MW = 125.00 696

Table 1. Experimental value with uncertainty.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
293.15	1134.00 ± 2.00	1961-fre/kos

3,4-Dichloro-1-butene [760-23-6] $\text{C}_4\text{H}_6\text{Cl}_2$ MW = 125.00 697

Table 1. Experimental value with uncertainty.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
293.15	1150.20 ± 2.00	1968-ano-4

1-Chloro-2-butene [591-97-9] $\text{C}_4\text{H}_7\text{Cl}$ MW = 90.55 698

Table 1. Experimental and recommended values with uncertainties.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
273.15	948.95 ± 5.00	1899-cha ¹⁾	293.15	934.00 ± 2.00	1941-tam/ott
293.15	925.10 ± 2.00	1938-dyk	293.15	936.06 ± 3.00	1947-sme ¹⁾
293.15	931.60 ± 2.00	1941-hen/cha	293.15	928.20 ± 1.50	1950-tat/tre
293.15	928.00 ± 2.00	1941-hen/cha	293.15	929.20 ± 1.60	Recommended

¹⁾ Not included in calculation of recommended value.

(E)-1-Chloro-2-butene [4894-61-5] $\text{C}_4\text{H}_7\text{Cl}$ MW = 90.55 699

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	929.50 ± 2.00	1950-hat/nes
293.15	929.50 ± 2.00	1951-hat/nes

(Z)-1-Chloro-2-butene [4628-21-1] $\text{C}_4\text{H}_7\text{Cl}$ MW = 90.55 700

Table 1. Experimental value with uncertainty.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
293.15	942.60 ± 2.00	1951-hat/nes

2-Chloro-1-butene [2211-70-3] $\text{C}_4\text{H}_7\text{Cl}$ MW = 90.55 701

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.
288.15	910.70 ± 2.00	1930-nav
294.15	895.00 ± 2.00	1936-kro/saw

(E)-2-Chloro-2-butene [2211-68-9] $\text{C}_4\text{H}_7\text{Cl}$ MW = 90.55 702

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	936.10 ± 3.00	1930-nav
288.15	918.50 ± 3.00	1930-nav
273.15	938.85 ± 4.00	1934-cha
292.15	917.85 ± 4.00	1934-cha

(Z)-2-Chloro-2-butene [2211-69-0] $\text{C}_4\text{H}_7\text{Cl}$ MW = 90.55 703

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	942.00 ± 3.00	1930-nav
288.15	924.60 ± 3.00	1930-nav
273.15	930.85 ± 4.00	1934-cha
292.15	907.85 ± 4.00	1934-cha

3-Chloro-1-butene [563-52-0] $\text{C}_4\text{H}_7\text{Cl}$ MW = 90.55 704

Table 1. Experimental and recommended values with uncertainties.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
293.15	900.10 ± 2.00	1941-hen/cha
293.15	897.60 ± 2.00	1941-hen/cha
293.15	899.00 ± 1.50	1950-tat/tre
293.15	898.90 ± 1.50	Recommended

4-Chloro-1-butene [927-73-1] $\text{C}_4\text{H}_7\text{Cl}$ MW = 90.55 705

Table 1. Experimental value with uncertainty.

T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$	Ref.
293.15	921.00 ± 2.00	1950-bul/han

1-Chloro-2-methyl-1-propene [513-37-1] $\text{C}_4\text{H}_7\text{Cl}$ MW = 90.55 706

Table 1. Experimental values with uncertainties.

T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$	Ref.
293.15	918.60 ± 3.00	1941-bur/hea
283.15	917.70 ± 4.00	1948-kir

3-Chloro-2-methyl-1-propene [563-47-3] $\text{C}_4\text{H}_7\text{Cl}$ MW = 90.55 707

Table 1. Experimental and recommended values with uncertainties.

T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$	Ref.
293.15	925.00 ± 2.00	1941-bur/hea
293.15	926.90 ± 2.00	1951-kaz/luk
293.15	925.80 ± 2.00	1952-kaz/pop
293.15	925.90 ± 2.00	Recommended

1,1-Dichloro-1-pentene [500060-57-1] $\text{C}_5\text{H}_8\text{Cl}_2$ MW = 139.02 708

Table 1. Experimental value with uncertainty.

T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$	Ref.
293.15	1089.90 ± 1.00	1953-nes/zak

1-Chloro-2-methyl-2-butene [13417-43-1] $\text{C}_5\text{H}_9\text{Cl}$ MW = 104.58 709

Table 1. Experimental values with uncertainties.

T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$	Ref.
293.15	917.00 ± 8.00	1928-cha
292.15	916.40 ± 8.00	1951-lau/sch

(E)-1-Chloro-2-methyl-2-butene [23009-73-6] $\text{C}_5\text{H}_9\text{Cl}$ MW = 104.58 710

Table 1. Fit with estimated B coefficient for 3 accepted points. Deviation $\sigma_w = 0.047$.

Coefficient	$\rho = A + BT$
A	1239.17
B	-1.060

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	928.40 ± 0.80	-0.03	1957-hat/noy
298.15	923.20 ± 0.80	0.07	1957-hat/noy
303.15	917.80 ± 0.80	-0.03	1957-hat/noy

Table 3. Recommended values.

T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$
290.00	931.8 ± 0.9
293.15	928.4 ± 0.8
298.15	923.1 ± 0.7
310.00	910.6 ± 1.0

(Z)-1-Chloro-2-methyl-2-butene [23009-74-7] $\text{C}_5\text{H}_9\text{Cl}$ MW = 104.58 711

Table 1. Fit with estimated B coefficient for 3 accepted points. Deviation $\sigma_w = 0.024$.

Coefficient	$\rho = A + BT$
A	1240.62
B	-1.050

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	923.70 ± 3.00	-9.12	1939-bur/eng ¹⁾
293.15	932.80 ± 0.70	-0.02	1957-hat/noy
298.15	927.60 ± 0.70	0.03	1957-hat/noy
303.15	922.30 ± 0.70	-0.02	1957-hat/noy

¹⁾ Not included in calculation of linear coefficients.

cont.

(Z)-1-Chloro-2-methyl-2-butene (cont.)**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	936.1 \pm 0.7
293.15	932.8 \pm 0.6
298.15	927.6 \pm 0.5
310.00	915.1 \pm 1.0

1-Chloro-3-methyl-2-butene

[503-60-6]

 $\text{C}_5\text{H}_9\text{Cl}$

MW = 104.58

712

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.
287.15	938.00 \pm 2.00	1946-jon/cho
293.15	933.10 \pm 2.00	1946-jon/cho
298.15	926.40 \pm 2.00	1949-hat/ger
293.15	929.00 \pm 2.00	1958-pet/bal

2-Chloro-3-methyl-2-butene

[17773-65-8]

 $\text{C}_5\text{H}_9\text{Cl}$

MW = 104.58

713

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.
291.15	920.03 \pm 3.00	1901-kra
293.15	925.00 \pm 3.00	1935-gre-3
293.15	908.06 \pm 3.00	1941-irw/hen

3-Chloro-2-methyl-1-butene

[5166-35-8]

 $\text{C}_5\text{H}_9\text{Cl}$

MW = 104.58

714

Table 1. Experimental and recommended values with uncertainties.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
293.15	908.80 \pm 2.00	1939-bur/eng
293.15	906.30 \pm 2.00	1960-isa/bal
293.15	907.50 \pm 2.20	Recommended

3-Chloro-3-methyl-1-butene**[2190-48-9]****C₅H₉Cl****MW = 104.58****715****Table 1.** Experimental and recommended values with uncertainties.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
293.15	879.50 ± 2.00	1948-naz/aze-1
293.15	884.00 ± 1.50	1948-ult
293.15	884.00 ± 1.50	1949-ult
293.15	884.50 ± 2.00	1958-pet/bal
293.15	883.30 ± 1.60	Recommended

(E)-1-Chloro-2-pentene**[6261-25-2]****C₅H₉Cl****MW = 104.58****716****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	921.73 ± 2.00	1947-sme
293.15	892.00 ± 4.00	1948-sem/jen

(Z)-1-Chloro-2-pentene**[6261-19-4]****C₅H₉Cl****MW = 104.58****717****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.
296.15	909.50 ± 2.00	1928-pre-2
293.15	904.82 ± 2.00	1947-sme

2-Chloro-1-pentene**[42131-85-1]****C₅H₉Cl****MW = 104.58****718****Table 1.** Experimental value with uncertainty.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
297.15	903.00 ± 3.00	1923-bou

3-Chloro-1-pentene**[24356-00-1]****C₅H₉Cl****MW = 104.58****719****Table 1.** Experimental value with uncertainty.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
296.15	896.60 ± 2.00	1928-pre-2

3-Chloro-2-pentene [34238-52-3] $\text{C}_5\text{H}_9\text{Cl}$ MW = 104.58 720
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	930.35 ± 2.00	1922-fav/fav
293.15	910.95 ± 2.00	1922-fav/fav
293.15	898.80 ± 2.00	1947-sme

4-Chloro-1-pentene [10524-08-0] $\text{C}_5\text{H}_9\text{Cl}$ MW = 104.58 721
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.
288.15	934.00 ± 3.00	1912-par
298.15	879.40 ± 1.00	1937-lev/rot-1

4-Chloro-2-pentene [1458-99-7] $\text{C}_5\text{H}_9\text{Cl}$ MW = 104.58 722
Table 2. 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.	$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
293.15	898.00 ± 2.00	1929-bau ¹⁾	293.15	899.40 ± 1.00	1958-pet/raz
298.15	885.50 ± 2.00	1937-lev/rot-1 ¹⁾	293.15	900.10 ± 1.00	1961-vdo
293.15	900.20 ± 0.60	1941-hen/cha	293.15	900.80 ± 1.00	1975-lee/che
298.15	896.55 ± 2.00	1955-goe/nev ¹⁾	293.15	900.10 ± 0.70	Recommended
293.15	900.10 ± 1.00	1955-pud/sha			

¹⁾ Not included in calculation of recommended value.
5-Chloro-1-pentene [928-50-7] $\text{C}_5\text{H}_9\text{Cl}$ MW = 104.58 723
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	912.50 ± 2.00	1930-juv
292.15	914.50 ± 2.00	1932-pau
293.15	901.00 ± 2.00	1950-bul/han

(Z)-5-Chloro-2-pentene [53543-44-5] $\text{C}_5\text{H}_9\text{Cl}$ MW = 104.58 724
Table 1. Experimental value with uncertainty.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
293.15	904.30 ± 2.00	1937-goe

4-(Chloromethyl)-1,1,5,5,5-pentachloro-1-pentene [89380-48-3] $\text{C}_6\text{H}_6\text{Cl}_6$ MW = 290.83 725

Table 1. Experimental value with uncertainty.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
293.15	1541.70 ± 2.00	1963-kos/vas

(E)-1,2-Dichloro-1-hexene [59697-51-7] $\text{C}_6\text{H}_8\text{Cl}_2$ MW = 151.03 726

Table 1. Experimental value with uncertainty.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
298.15	1116.70 ± 2.00	1940-hen/wel

(Z)-1,2-Dichloro-1-hexene [59697-55-1] $\text{C}_6\text{H}_8\text{Cl}_2$ MW = 151.03 727

Table 1. Experimental value with uncertainty.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
298.15	1081.20 ± 2.00	1940-hen/wel

1-Chloro-3,3-dimethyl-1-butene [6130-97-8] $\text{C}_6\text{H}_{11}\text{Cl}$ MW = 118.61 728

Table 1. Experimental value with uncertainty.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
293.15	881.50 ± 1.00	1948-sch-3

3-Chloro-2,3-dimethyl-1-butene [37866-05-0] $\text{C}_6\text{H}_{11}\text{Cl}$ MW = 118.61 729

Table 1. Fit with estimated B coefficient for 3 accepted points. Deviation $\sigma_w = 0.000$.

Coefficient	$\rho = A + BT$
A	1192.59
B	-0.980

cont.

3-Chloro-2,3-dimethyl-1-butene (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	905.30 ± 0.80	0.00	1953-hat/jou
298.15	900.40 ± 0.80	0.00	1953-hat/jou
303.15	895.50 ± 0.80	0.00	1953-hat/jou

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	908.4 ± 0.8
293.15	905.3 ± 0.8
298.15	900.4 ± 0.7
310.00	888.8 ± 0.9

3-Chloro-2,3-dimethyl-2-butene

[500060-47-9]

C6H11Cl

MW = 118.61

730

Table 1. Fit with estimated B coefficient for 3 accepted points. Deviation $\sigma_w = 0.024$.

Coefficient	$\rho = A + BT$
A	1190.52
B	-0.870

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	935.50 ± 0.80	0.02	1953-hat/jou
298.15	931.10 ± 0.80	-0.03	1953-hat/jou
303.15	926.80 ± 0.80	0.02	1953-hat/jou

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	938.2 ± 0.8
293.15	935.5 ± 0.8
298.15	931.1 ± 0.7
310.00	920.8 ± 0.9

1-Chloro-1-hexene

[22922-67-4]



MW = 118.61

731

Table 1. Experimental value with uncertainty.

T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$	Ref.
295.15	887.20 ± 1.50	1930-kir/gra

(E)-1-Chloro-2-hexene

[37658-00-7]



MW = 118.61

732

Table 1. Fit with estimated B coefficient for 3 accepted points. Deviation $\sigma_w = 0.047$.

Coefficient	$\rho = A + BT$
A	1147.58
B	-0.860

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

T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$	$\rho_{\text{exp}} - \rho_{\text{calc}}$ $\text{kg} \cdot \text{m}^{-3}$	Ref.
293.15	895.50 ± 0.70	0.03	1961-hat/wei
298.15	891.10 ± 0.70	-0.07	1961-hat/wei
303.15	886.90 ± 0.70	0.03	1961-hat/wei

Table 3. Recommended values.

T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$
290.00	898.2 ± 0.7
293.15	895.5 ± 0.7
298.15	891.2 ± 0.6
310.00	881.0 ± 0.9

(Z)-1-Chloro-2-hexene

[37658-01-8]



MW = 118.61

733

Table 1. Fit with estimated B coefficient for 3 accepted points. Deviation $\sigma_w = 0.000$.

Coefficient	$\rho = A + BT$
A	1128.86
B	-0.780

cont.

(Z)-1-Chloro-2-hexene (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	900.20 ± 0.70	0.00	1961-hat/wei
298.15	896.30 ± 0.70	0.00	1961-hat/wei
303.15	892.40 ± 0.70	0.00	1961-hat/wei

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	902.7 ± 0.7
293.15	900.2 ± 0.7
298.15	896.3 ± 0.6
310.00	887.1 ± 0.9

2-Chloro-1-hexene

[10124-73-9]

 $\text{C}_6\text{H}_{11}\text{Cl}$

MW = 118.61

734

Table 1. Experimental value with uncertainty.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
298.15	888.60 ± 1.00	1940-hen/wel

(E)-3-Chloro-2-hexene

[51687-81-1]

 $\text{C}_6\text{H}_{11}\text{Cl}$

MW = 118.61

735

Table 1. Experimental value with uncertainty.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
293.15	898.20 ± 0.60	1951-hof/gre

(E)-3-Chloro-3-hexene

[17226-35-6]

 $\text{C}_6\text{H}_{11}\text{Cl}$

MW = 118.61

736

Table 1. Experimental value with uncertainty.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
293.15	898.20 ± 1.00	1951-hof/gre

(Z)-3-Chloro-3-hexene [17226-34-5] $\text{C}_6\text{H}_{11}\text{Cl}$ MW = 118.61 737

Table 1. Experimental value with uncertainty.

T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$	Ref.
293.15	900.90 ± 0.60	1951-hof/gre

1,1,7-Trichloro-1-heptene [3993-94-0] $\text{C}_7\text{H}_{11}\text{Cl}_3$ MW = 201.52 738

Table 1. Experimental value with uncertainty.

T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$	Ref.
293.15	1190.20 ± 1.50	1953-nes/zak

(E)-1-Chloro-4,4-dimethyl-2-pentene [19146-05-5] $\text{C}_7\text{H}_{13}\text{Cl}$ MW = 132.63 739

Table 1. Fit with estimated B coefficient for 3 accepted points. Deviation $\sigma_w = 0.071$.

Coefficient	$\rho = A + BT$
A	1143.55
B	-0.890

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	882.60 ± 0.70	-0.05	1961-hat/wei
298.15	878.30 ± 0.70	0.10	1961-hat/wei
303.15	873.70 ± 0.70	-0.05	1961-hat/wei

Table 3. Recommended values.

T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$
290.00	885.5 ± 0.8
293.15	882.6 ± 0.7
298.15	878.2 ± 0.6
310.00	867.7 ± 0.9

(Z)-1-Chloro-4,4-dimethyl-2-pentene [19146-06-6] $\text{C}_7\text{H}_{13}\text{Cl}$ MW = 132.63 740

Table 1. Fit with estimated B coefficient for 3 accepted points. Deviation $\sigma_w = 0.024$.

Coefficient	$\rho = A + BT$
A	1146.92
B	-0.890

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	886.00 ± 0.70	-0.02	1961-hat/wei
298.15	881.60 ± 0.70	0.03	1961-hat/wei
303.15	877.10 ± 0.70	-0.02	1961-hat/wei

Table 3. Recommended values.

T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$
290.00	888.8 ± 0.7
293.15	886.0 ± 0.7
298.15	881.6 ± 0.6
310.00	871.0 ± 0.9

2-Chloro-4,4-dimethyl-1-pentene [91524-25-3] $\text{C}_7\text{H}_{13}\text{Cl}$ MW = 132.63 741

Table 1. Experimental value with uncertainty.

T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$	Ref.
293.15	881.40 ± 1.00	1946-sch

5-Chloro-5-methyl-1-hexene [116911-84-3] $\text{C}_7\text{H}_{13}\text{Cl}$ MW = 132.63 742

Table 1. Experimental value with uncertainty.

T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$	Ref.
293.15	884.20 ± 0.70	1955-che/che

4-(3-Chloropropyl)-1,1,5,5,5-pentachloro-1-pentene [90555-82-1] $\text{C}_8\text{H}_{10}\text{Cl}_6$ MW = 318.88 743

Table 1. Experimental value with uncertainty.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
293.15	1451.10 ± 2.00	1963-kos/vas

6-Chloro-4-methyl-2-heptene [90435-44-2] $\text{C}_8\text{H}_{15}\text{Cl}$ MW = 146.66 744

Table 1. Experimental value with uncertainty.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
293.15	896.90 ± 1.00	1963-gen/pet

(Z)-4-Chloro-4-octene [7321-48-4] $\text{C}_8\text{H}_{15}\text{Cl}$ MW = 146.66 745

Table 1. Experimental value with uncertainty.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
293.15	891.20 ± 0.50	1951-hof/gre

2-Chloro-3,3,4-trimethyl-1-pentene [90792-41-9] $\text{C}_8\text{H}_{15}\text{Cl}$ MW = 146.66 746

Table 1. Experimental value with uncertainty.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
293.15	915.60 ± 2.00	1961-mes/pet

1,1,9-Trichloro-1-nonene [3930-10-7] $\text{C}_9\text{H}_{15}\text{Cl}_3$ MW = 229.58 747

Table 1. Experimental value with uncertainty.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
293.15	1134.20 ± 2.00	1953-nes/zak

6-Chloro-4,5-dimethyl-2-heptene [90676-07-6] $\text{C}_9\text{H}_{17}\text{Cl}$ MW = 160.69 748

Table 1. Experimental value with uncertainty.

$\frac{T}{\text{K}}$	$\frac{\rho_{\text{exp}} \pm 2\sigma_{\text{est}}}{\text{kg} \cdot \text{m}^{-3}}$	Ref.
293.15	901.30 ± 1.00	1963-gen/pet

6-Chloro-4,6-dimethyl-2-heptene [90676-08-7] $\text{C}_9\text{H}_{17}\text{Cl}$ MW = 160.69 749

Table 1. Experimental value with uncertainty.

T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$	Ref.
293.15	881.00 ± 1.00	1963-gen/pet

6-Chloro-4-methyl-2-octene [90676-10-1] $\text{C}_9\text{H}_{17}\text{Cl}$ MW = 160.69 750

Table 1. Experimental value with uncertainty.

T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$	Ref.
293.15	895.70 ± 1.00	1963-gen/pet

1,5,6,10-Tetrachloro-5-decene [63616-36-4] $\text{C}_{10}\text{H}_{16}\text{Cl}_4$ MW = 278.05 751

Table 1. Experimental value with uncertainty.

T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$	Ref.
293.15	1220.20 ± 2.00	1955-nes/zak-1

1-Chloro-5-ethyl-5-methyl-2-heptene [91138-80-6] $\text{C}_{10}\text{H}_{19}\text{Cl}$ MW = 174.71 752

Table 1. Experimental values with uncertainties.

T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$	Ref.
293.15	905.80 ± 1.00	1961-kol/pet
293.15	905.80 ± 1.00	1962-kol/pet

6-Chloro-4,5,6-trimethyl-2-heptene [57785-02-1] $\text{C}_{10}\text{H}_{19}\text{Cl}$ MW = 174.71 753

Table 1. Experimental value with uncertainty.

T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$	Ref.
293.15	902.80 ± 1.00	1963-gen/pet

1-Chloro-5,5-diethyl-2-heptene [92368-36-0] $\text{C}_{11}\text{H}_{21}\text{Cl}$ MW = 188.74 754

Table 1. Experimental values with uncertainties.

T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$	Ref.
293.15	918.50 ± 1.00	1961-kol/pet
293.15	918.50 ± 1.00	1962-kol/pet

6-Chloro-4,5,5,6-tetramethyl-2-heptene [92368-37-1] $\text{C}_{11}\text{H}_{21}\text{Cl}$ MW = 188.74 755

Table 1. Experimental value with uncertainty.

T K	$\rho_{\text{exp}} \pm 2\sigma_{\text{est}}$ $\text{kg} \cdot \text{m}^{-3}$	Ref.
293.15	903.50 ± 1.00	1963-gen/pet