

3.2.3 Fluoroalkadienes and Iodoalkadienes

1,1,2,3,4,4-Hexafluoro-1,3-butadiene [685-63-2] C_4F_6 MW = 162.03 814

Table 1. Coefficients of the polynomial expansion equation. Standard deviations (see introduction): $\sigma_{c,w} = 6.0740 \cdot 10^{-1}$ (combined temperature ranges, weighted), $\sigma_{c,uw} = 1.6881 \cdot 10^{-1}$ (combined temperature ranges, unweighted).

Coefficient	$T = 263.72 \text{ to } 342.98 \text{ K}$ $\rho = A + BT + CT^2 + DT^3 + \dots$
A	$1.62786 \cdot 10^3$
B	1.98263
C	$-9.11210 \cdot 10^{-3}$

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)
263.72	1517.80 ± 1.00	0.81	2002-bob/fed(□)	313.29	1354.40 ± 1.00	-0.24	2002-bob/fed(□)
273.55	1488.40 ± 1.00	0.05	2002-bob/fed(□)	323.18	1317.10 ± 1.00	0.21	2002-bob/fed(□)
283.49	1457.10 ± 1.00	-0.51	2002-bob/fed(□)	333.07	1277.60 ± 1.00	0.24	2002-bob/fed(□)
293.40	1424.60 ± 1.00	-0.56	2002-bob/fed(□)	342.98	1235.50 ± 1.00	-0.46	2002-bob/fed(□)
303.30	1391.40 ± 1.00	0.44	2002-bob/fed(□)				

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	1527.36 ± 1.36	293.15	1426.00 ± 0.94	320.00	1329.22 ± 0.91
270.00	1498.90 ± 1.21	298.15	1408.97 ± 0.90	330.00	1289.82 ± 1.05
280.00	1468.61 ± 1.07	300.00	1402.56 ± 0.89	340.00	1248.59 ± 1.34
290.00	1436.49 ± 0.96	310.00	1366.80 ± 0.86	350.00	1205.55 ± 1.80

cont.

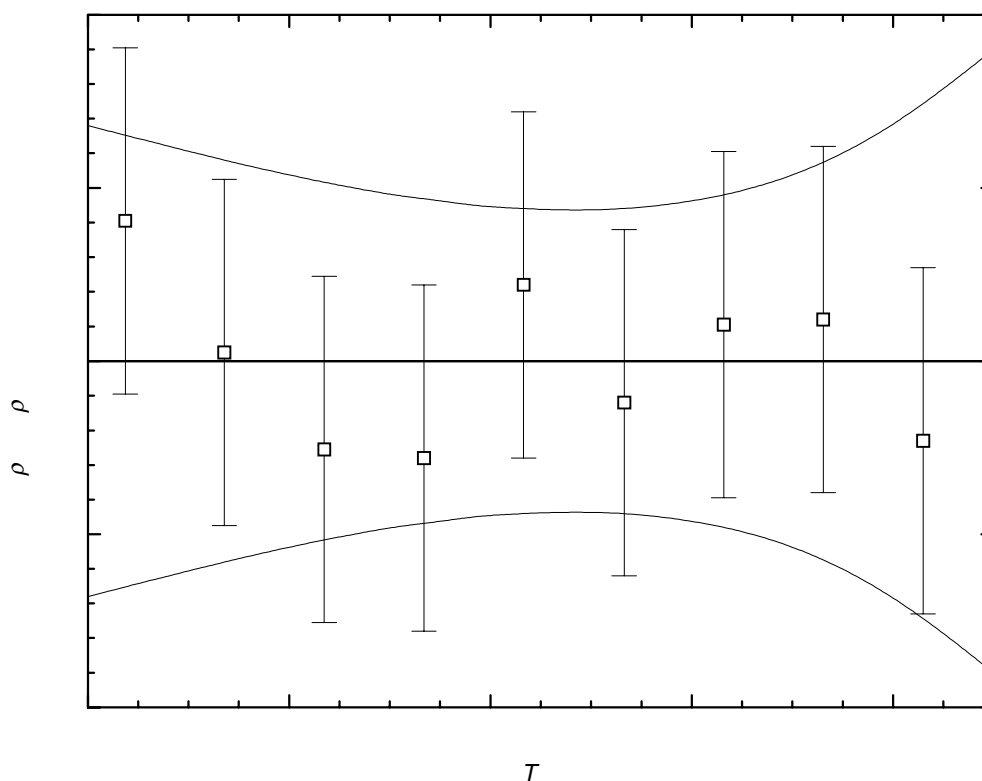
1,1,2,3,4,4-Hexafluoro-1,3-butadiene (cont.)

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.)

3,3-Difluoro-1,4-pentadiene

[380-55-2]



MW = 104.10

815

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	936.80 ± 0.70	1948-hen/dew

1,1,2,7,8,8-Hexafluoro-1,7-octadiene

[4004-98-2]



MW = 218.14

816

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	1245.80 ± 2.00	1965-tal/pet

1,1,2,8,9,9-Hexafluoro-1,8-nonadiene [4004-99-3] $\text{C}_9\text{H}_{10}\text{F}_6$ MW = 232.17 817

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	1210.00 ± 2.00	1965-tal/pet

3-Iodo-5,5-dimethyl-1,3-hexadiene [98560-10-2] $\text{C}_8\text{H}_{13}\text{I}$ MW = 236.10 818

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	1418.50 ± 2.00	1959-mar/pet

3-Iodo-5,5-dimethyl-1,3-heptadiene [99062-28-9] $\text{C}_9\text{H}_{15}\text{I}$ MW = 250.12 819

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	1396.30 ± 2.00	1959-mar/pet