

95002

Issued January 1995

Vapour pressures and critical points of liquids

Glycols and cyclic diols

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ESDU DATA ITEM No. 95002

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KEEPING UP TO DATE

We are constantly striving to develop new work and review data already issued. Any comments arising out of your use of our data, or any suggestions for new topics or information that might lead to improvements, will help us to provide a better service.

(Continued on inside back cover)

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VAPOUR PRESSURES AND CRITICAL POINTS OF LIQUIDS
GLYCOLS AND CYCLIC DIOLS

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COMPOUND TABLES in the following order

Sheet	Name	Alternative Names	
1.1	C ₂ H ₆ O ₂ Ethylene glycol	Ethane-1,2-diol	1,2-Dihydroxyethane
1.2	C ₄ H ₁₀ O ₃ Diethylene glycol	Diglycol	Digol
1.3	C ₆ H ₁₄ O ₄ Triethylene glycol	Triglycol	Trigol
3.1a	C ₃ H ₈ O ₂ Propane-1,2-diol	1,2-Dihydroxypropane	Propylene glycol
3.1b	,, Propane-1,3-diol	1,3-Dihydroxypropane	Trimethylene glycol
4.1a	C ₄ H ₁₀ O ₂ Butane-1,2-diol	1,2-Dihydroxybutane	
4.1b	,, Butane-1,3-diol	1,3-Dihydroxybutane	
4.1c	,, Butane-1,4-diol	1,4-Dihydroxybutane	Tetramethylene glycol
4.1d	,, Butane-2,3-diol	2,3-Dihydroxybutane	
4.1e	,, 2-Methylpropane-1,2-diol	1,2-Dihydroxy-2-methylpropane	
4.1f	,, 2-Methylpropane-1,3-diol	1,3-Dihydroxy-2-methylpropane	
4.3c	C ₄ H ₈ O ₂ But-2-ene-1,4-diol	1,4-Dihydroxybut-2-ene	
4.5a	C ₄ H ₆ O ₂ But-2-yne-1,4-diol	1,4-Dihydroxybut-2-yne	
5.1a	C ₅ H ₁₂ O ₂ Pentane-1,2-diol	1,2-Dihydroxypentane	
5.1c	,, Pentane-1,4-diol	1,4-Dihydroxypentane	
5.1d	,, Pentane-1,5-diol	1,5-Dihydroxypentane	Pentamethylene glycol
5.1f	,, Pentane-2,4-diol	2,4-Dihydroxypentane	
6.1a	C ₆ H ₁₄ O ₂ Hexane-1,2-diol	1,2-Dihydroxyhexane	
6.1e	,, Hexane-1,6-diol	1,6-Dihydroxyhexane	Hexamethylene glycol
6.1h	,, Hexane-2,5-diol	2,5-Dihydroxyhexane	
6.1m	,, 2-Methylpentane-2,4-diol	2,4-Dihydroxy-2-methylpentane	Hexylene glycol
6.1z	,, 2,3-Dimethylbutane-2,3-diol	2,3-Dihydroxy-2,3-dimethylbutane	Pinacol
A6.1a	C ₆ H ₁₂ O ₂ Cyclohexane-1,2,-diol	1,2,-Dihydroxycyclohexane	
A6.1b	,, Cyclohexane-1,3,-diol	1,3,-Dihydroxycyclohexane	
A6.1c	,, Cyclohexane-1,4,-diol	1,4,-Dihydroxycyclohexane	
B6.1a	C ₆ H ₆ O ₂ Benzene-1,2,-diol	1,2,-Dihydroxybenzene	Pyrocatechol
B6.1b	,, Benzene-1,3,-diol	1,3,-Dihydroxybenzene	Resorcinol
B6.1c	,, Benzene-1,4,-diol	1,4,-Dihydroxybenzene	Hydroquinone

NB. Other alternative names for some compounds are given on the relevant Sheets.

Note. To allow for the future issue of omitted compounds sheet numbers are not always consecutive.

VAPOUR PRESSURES AND CRITICAL POINTS OF LIQUIDS:
GLYCOLS AND CYCLIC DIOLS

1. INTRODUCTION

This Data Item presents saturated vapour pressures of the glycols and cyclic diols shown in the order of arrangement on the Contents page.

Table 1, page 5, gives the constants in the Wagner vapour pressure equation for all the compounds. On the following Sheets, the values of vapour pressure for each compound have been obtained by calculation from the Wagner vapour pressure equation given at the top of each Sheet. Using the critical temperature and the critical pressure given, the numerical values of the coefficients were derived by fitting the equation to the data that had been selected and weighted in accordance with a critical assessment of all the data. Note that estimated values of critical temperature are rounded to the nearest kelvin and that values in other units are obtained by exact conversion.

The Sheets also give the acentric factor, the normal boiling point, the value of dT/dp at the normal boiling point and the approximate normal melting point. Brackets enclose data at those temperatures which are outside the range of supporting experimental data.

The table of Data at Specified Pressures for each compound gives, at each pressure, the temperature and the derivative of pressure with respect to temperature. This table also gives an assessment of the data quality indicated, in decreasing order, by one of the letters 'A', 'B' or 'C'. Except at very low pressures, the estimated uncertainties in temperature and pressure which are dependent upon the data quality are shown below each letter rounded to 1, 2, or 5 times a power of 10. Uncertainties are discussed at greater length in Section 5.

Tabulated values of vapour pressure are presented in two sets of units, namely, (i) pressures in kPa at temperatures in K, (ii) pressures in mmHg or atm at temperatures in degrees C. The table providing pressures in kPa also gives the uncertainties in pressure and temperature. Pressures are given at temperatures from just above the melting point to a temperature as high as possible in the space available.

The sources of information which give vapour pressure and/or critical point data for the compound considered are listed on the reverse side of each sheet. Those sources that were used to derive the critical properties and the coefficients of the vapour pressure equation are shown in bold type together with the pressure ranges of their data. These arbitrary pressure ranges are described in Section 3.

For most of the compounds considered here saturated liquid density data were available, see Item 95003, and for these compounds the critical temperature and pressure were adjusted to be optimum values for the correlation of both properties.

2. NOTATION AND UNITS

All temperatures are based on the International Temperature Scale (ITS-90).

N_1, N_2, N_3, N_4	non-dimensional coefficients of the Wagner vapour-pressure equation
p	vapour pressure
q	$(1-T/T_c)$
T	kelvin temperature
t	Celsius temperature $(T-273.15)$

Note. The UNITS of temperature and vapour pressure are shown in each table.

Subscripts

b	denotes value at normal boiling point
c	denotes value at critical point
m	denotes value at normal melting point

3. SOURCES OF DATA

Experimental vapour pressure data are, according to the apparatus and technique applied, usually reported for different pressure regions which may loosely be defined as:-

- low pressure, below say 1 kPa (approximately 7.5 mmHg),
- medium pressure, say 1 kPa to 200 kPa (approximately 2 atm),
- high pressure, say 200 kPa to the critical point,
- the critical point.

In general the experimental data reported for the low and high pressure ranges are usually less accurate than, and not always compatible with, data for the medium pressure range, which may be of a very high degree of precision, possibly with an uncertainty in pressure less than 0.01 per cent near the normal boiling point. In the high pressure range the uncertainties increase progressively with temperature up to the critical point where the uncertainty in pressure is seldom lower than 0.1 per cent and frequently higher than 1 per cent.

For the compounds considered here reliable low pressure range measurements have been reported for ethylene glycol and very reliable medium pressure range measurements for ethylene and diethylene glycols. In the published literature data for the remaining glycols are usually highly scattered single points reported by a variety of authors although for some compounds a few authors give a simple equation representing their data over a range of temperature. However, unpublished vapour pressure measurements over a range of temperature for many of the glycols and cyclic diols considered here have been provided by Dr Brunner, and Dr Ambrose has provided unpublished vapour pressure measurements on butane-1,4-diol.

All the compounds included in this Item are unstable at elevated temperatures and until recently no experimental values of their critical properties were available except for a value of the critical temperature of ethylene glycol reported in an unpublished thesis. Recently, however, Nikitin et al., Reference 5, have developed a new method for the study of the critical temperature

and the critical pressure of unstable compounds and have published values of these properties for several polyethylene glycols. Brunner, Reference 4, has estimated the critical temperature and the critical pressure of butane-1,4-diol by an extrapolation of mixture property data. Uncertainties of all these values are large because of the instability of these compounds.

4. EVALUATION AND CORRELATION

When the reported critical pressures of the polyethylene glycols and butane-1,4-diol were plotted against their critical temperatures it was found that the point for butane-1,4-diol was over 2 MPa higher than the line through the polyethylene glycols. As this was considered excessive a single mean line just outside the uncertainties of each point was selected to represent both the polyethylene glycols and the alkane-1,n-diols.

In References 1 and 2 Ambrose and Ghiassee have examined the differences, in the high pressure range, between the shapes of well-established vapour pressure curves for a variety of compounds. They have shown that for compounds in different classes of chemical substances these differences in shape are characterised by different ranges of numerical relationships between the coefficients of their Wagner equations. In Reference 3 Ambrose and Walton have demonstrated this phenomenon for the two homologous series of normal alkanes and alkan-1-ols. Thus, for certain classes of compounds it is possible to establish criteria that should be met by vapour pressure curves based on less extensive or less reliable data.

One of the above relationships is the ratio of the third coefficient to the second coefficient. This ratio, r_{32} say, determines the reduced temperature at which the value of $(\Delta H/\Delta Z)$ is a minimum, H being the enthalpy of vaporization and Z being the compression factor. For the lower alkanes r_{32} is around -1 giving minimum values of $(\Delta H/\Delta Z)$ at reduced temperatures of 0.80 to 0.85, while for the lower alkanols r_{32} is -2 to -4 giving minimum values of $(\Delta H/\Delta Z)$ at reduced temperatures greater than 0.9. It has been assumed that for the glycols considered here the values of r_{32} are lower than for the homomorphic alcohols and consequently that the minimum values of $(\Delta H/\Delta Z)$ occur at higher reduced temperatures.

The data for triethylene glycol were fitted using ethylene and diethylene glycols as reference compounds and the data for the remaining alkanediols were fitted using ethylene glycol and butane-1,4-diol as reference compounds.

Of the glycols considered here ethylene glycol is the only one for which reliable low pressure data exist and the extrapolation of the Wagner equation, fitted to medium pressure data, represent these low pressure data better than might be expected. It is therefore thought that the Wagner equations of the other glycols provide reasonably reliable values of vapour pressure at low temperatures.

5. DISCUSSION OF UNCERTAINTIES

At any temperature, the estimated uncertainties in the tabulated values of temperature and pressure are dependent upon the reliability of the experimental and estimated data on which they are based and thus may vary considerably over the entire liquid range of a compound. Except at very low pressures values dependent on estimated data are usually much less certain than values dependent upon measured data.

The term 'data quality' is used here to express the assessed reliability of the fitted data and hence also the reliability of the tabulated values. In the table of Data at Specified Pressures the data quality at each pressure is denoted by one of the letters 'A', 'B' or 'C'. Up to the normal boiling point average quality data, denoted by the letter 'B', have uncertainties in pressure varying, approximately, from 0.1 to 1 per cent, increasing to between 1 and 10 per cent at the critical point. Data with uncertainties lower or higher than these bands are graded 'A' or 'C' respectively.

The uncertainties in temperature and pressure are not thought to be more than the values shown below each letter. However when the data quality is 'C' it will be appreciated that the uncertainties are necessarily rather speculative and that for some compounds they may be underestimated. If the data quality is 'C' at the critical point the values of critical temperature and critical pressure given in the Tables should, in general, be regarded only as correlating parameters. Furthermore, since the acentric factor, ω , is dependent upon the value of the critical pressure selected, the uncertainty in ω for these compounds is high, possibly greater than 0.05.

6. REFERENCES

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TABLE 1

Summary of Constants in the Wagner vapour pressure equation

$$\ln p = \ln p_c + (N_1q + N_2q^{1.5} + N_3q^{2.5} + N_4q^5)/(T/T_c) \quad \text{where } q = 1 - T/T_c$$

Sheet	Name	T_c K	p_c kPa	N_1	N_2	N_3	N_4
1.1	Ethylene glycol	725	8600	-7.69177	0.59553	-3.97589	-3.47437
1.2	Diethylene glycol	760	5150	-8.22803	1.53771	-5.86879	-3.79265
1.3	Triethylene glycol	795	3500	-8.42769	1.88851	-6.57357	-3.91115
3.1a	Propane-1,2-diol	670	5000	-8.55604	2.55911	-7.49816	-4.69612
3.1b	Propane-1,3-diol	735	7500	-8.15026	1.63718	-5.84437	-4.12248
4.1a	Butane-1,2-diol	675	5000	-8.70996	2.90882	-8.12547	-4.91371
4.1b	Butane-1,3-diol	700	5500	-8.92930	3.40717	-9.01942	-5.22379
4.1c	Butane-1,4-diol	745	6500	-8.77897	3.06568	-8.40689	-5.01132
4.1d	Butane-2,3-diol	650	4000	-8.61194	2.68613	-7.72599	-4.77515
4.1e	2-Methylpropane-1,2-diol	650	4700	-9.04874	3.67855	-9.50623	-5.39264
4.1f	2-Methylpropane-1,3-diol	710	5000	-8.63581	2.74036	-7.82328	-4.80889
4.3c	But-2-ene-1,4-diol	755	6300	-8.84028	3.20493	-8.65663	-5.09795
4.5a	But-2-yne-1,4-diol	780	6100	-8.66362	2.80353	-7.93660	-4.84820
5.1a	Pentane-1,2-diol	700	4700	-8.67268	2.82413	-7.97354	-4.86101
5.1c	Pentane-1,4-diol	730	5300	-8.87248	3.27808	-8.78786	-5.14347
5.1d	Pentane-1,5-diol	750	5600	-9.18473	3.98751	-10.06044	-5.58488
5.1f	Pentane-2,4-diol	680	4100	-8.60472	2.66972	-7.69657	-4.76494
6.1a	Hexane-1,2-diol	710	4500	-9.48004	4.65847	-11.26402	-6.00235
6.1e	Hexane-1,6-diol	755	4800	-9.44377	4.57607	-11.11621	-5.95109
6.1h	Hexane-2,5-diol	705	4300	-9.38912	4.45190	-10.89347	-5.87382
6.1m	2-Methylpentane-2,4-diol	675	4100	-8.82357	3.16696	-8.58853	-5.07433
6.1z	2,3-Dimethylbutane-2,3-diol	635	4000	-9.01229	3.59572	-9.35764	-5.34110
A6.1a	Cyclohexane-1,2-diol	740	5500	-8.37865	2.15608	-6.77520	-4.44535
A6.1b	Cyclohexane-1,3-diol	755	4600	-9.05737	3.69816	-9.54139	-5.40484
A6.1c	Cyclohexane-1,4-diol	755	4600	-9.20535	4.03437	-10.14450	-5.61404
B6.1a	Benzene-1,2-diol	755	4500	-8.02415	1.35065	-5.33040	-3.94420
B6.1b	Benzene-1,3-diol	790	4500	-9.04481	3.66963	-9.49021	-5.38709
B6.1c	Benzene-1,4-diol	805	4600	-9.03187	3.64021	-9.43745	-5.36879



Sheet 1.1

Ethylene glycol; Monoethylene glycol; Ethane-1,2-diol; 1,2-Dihydroxyethane

CAS Reg. No. 107-21-1

Mol. Wt. 62.07

Vapour Pressure $\ln p = \ln p_c + (N_1q + N_2q^{1.5} + N_3q^{2.5} + N_4q^5)/(T/T_c)$

where T is the kelvin temperature on the International Temperature Scale of 1990 (ITS-90), p is the vapour pressure, T_c , p_c are the critical temperature and the critical pressure respectively and $q = 1 - T/T_c$.

Critical Temperature	$T_c = 725 \text{ K}$	($t_c = 451.85 \text{ }^\circ\text{C}$)
Critical Pressure	$p_c = 8600 \text{ kPa}$	($p_c = 84.88 \text{ atm}$)
	$N_1 = -7.69177$	
	$N_2 = 0.59553$	
	$N_3 = -3.97589$	
	$N_4 = -3.47437$	
Acentric Factor	$= 0.498$	
Normal Boiling Point	$= 470.648 \text{ K}$	($= 197.498 \text{ }^\circ\text{C}$)
dT/dp at N.B.P.	$= 0.333 \text{ K/kPa}$	($= 0.044 \text{ }^\circ\text{C/mmHg}$)
Normal Melting Point	$= 260 \text{ K}$	($= -13 \text{ }^\circ\text{C}$)

Data at Specified Pressures

p/kPa	0.001	0.01	0.1	1	10	101.325	1000	8600
T/K	(273.886)	296.644	324.485	359.601	405.774	470.648	(568.573)	725.000
$(dp/dT)/(\text{kPa/K})$	($1.E-4$)	$9.E-4$	0.007	0.058	0.429	3.000	(18.401)	91.241
Data Quality	(C)	C	C	A	A	A	(B)	C
Uncert. in T (K)	(2)	1	0.5	0.002	0.005	0.005	(0.2)	10
Uncert. in p (kPa)	(0.0002)	0.001	0.005	0.0002	0.002	0.02	(5)	1E3
Uncert. in p (%)	(20)	10	5	0.02	0.02	0.02	(0.5)	10

Vapour Pressure of Ethylene glycol

Units: kPa v. K

Uncertainty in				Uncertainty in				Uncertainty in			
T	p	T	p	T	p	T	p	T	p	T	p
K	kPa	K	%	K	kPa	K	%	K	kPa	K	%
275	(0.001)	2	20	400	7.771	0.005	0.02	525	(412.1)	0.05	0.1
280	(0.002)	2	20	405	9.673	0.005	0.02	530	(460.5)	0.1	0.2
285	0.003	1	10	410	11.96	0.005	0.02	535	(513.3)	0.1	0.2
290	0.005	1	10	415	14.70	0.005	0.02	540	(570.7)	0.1	0.2
295	0.009	1	10	420	17.95	0.005	0.02	545	(632.9)	0.1	0.2
300	0.014	1	10	425	21.79	0.005	0.02	550	(700.3)	0.2	0.2
305	0.021	1	10	430	26.31	0.005	0.02	555	(773.0)	0.2	0.5
310	0.032	1	5	435	31.59	0.005	0.02	560	(851.5)	0.2	0.5
315	0.048	1	5	440	37.74	0.005	0.02	565	(935.9)	0.2	0.5
320	0.071	0.5	5	445	44.86	0.005	0.02	570	(1027.)	0.2	0.5
325	0.104	0.5	5	450	53.07	0.005	0.02	575	(1124.)	0.2	0.5
330	0.149	0.2	2	455	62.49	0.005	0.02	580	(1228.)	0.5	0.5
335	0.212	0.1	1	460	73.25	0.005	0.02	585	(1339.)	0.5	1
340	0.297	0.05	0.5	465	85.51	0.005	0.02	590	(1457.)	0.5	1
345	0.411	0.02	0.2	470	99.40	0.005	0.02	595	(1583.)	0.5	1
350	0.563	0.01	0.1	475	115.1	0.01	0.02	600	(1718.)	0.5	1
355	0.763	0.005	0.05	480	132.7	0.01	0.02	605	(1860.)	1	1
360	1.023	0.002	0.02	485	152.5	0.01	0.05	610	(2011.)	1	1
365	1.359	0.005	0.02	490	174.7	0.02	0.05	615	(2171.)	1	1
370	1.787	0.005	0.02	495	(199.3)	0.02	0.05	620	(2340.)	1	2
375	2.330	0.005	0.02	500	(226.7)	0.02	0.05	625	(2519.)	1	2
380	3.012	0.005	0.02	505	(257.0)	0.02	0.1	630	(2707.)	1	2
385	3.861	0.005	0.02	510	(290.5)	0.05	0.1	635	(2905.)	2	2
390	4.911	0.005	0.02	515	(327.4)	0.05	0.1	640	(3114.)	2	2
395	6.200	0.005	0.02	520	(367.8)	0.05	0.1	645	(3334.)	2	2

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Vapour Pressure of Ethylene glycol continued

Units: mmHg or atm v. °C

t °C	p mmHg	t °C	p mmHg	t °C	p atm	t °C	p atm	t °C	p atm
0	(0.007)	100	15.86	200	1.076	300	(10.73)	400	(47.23)
5	(0.012)	105	20.56	205	1.243	305	(11.73)	405	(50.19)
10	0.020	110	26.44	210	1.431	310	(12.80)	410	(53.27)
15	0.033	115	33.73	215	1.640	315	(13.94)	415	(56.49)
20	0.054	120	42.70	220	1.874	320	(15.16)	420	(59.85)
25	0.086	125	53.66	225	(2.134)	325	(16.45)	425	(63.35)
30	0.134	130	66.96	230	(2.422)	330	(17.83)	430	(67.00)
35	0.206	135	83.00	235	(2.741)	335	(19.29)	435	(70.81)
40	0.312	140	102.2	240	(3.092)	340	(20.83)	440	(74.78)
45	0.463	145	125.1	245	(3.478)	345	(22.47)	445	(78.91)
50	0.679	150	152.2	250	(3.901)	350	(24.19)	450	(83.23)
55	0.981	155	184.2	255	(4.364)	355	(26.02)		
60	1.399	160	221.6	260	(4.868)	360	(27.94)		
65	1.969	165	265.2	265	(5.417)	365	(29.96)		
70	2.739	170	315.8	270	(6.013)	370	(32.09)		
75	3.766	175	374.3	275	(6.659)	375	(34.32)		
80	5.122	180	441.4	280	(7.357)	380	(36.67)		
85	6.894	185	518.3	285	(8.110)	385	(39.13)		
90	9.187	190	606.0	290	(8.921)	390	(41.71)		
95	12.13	195	705.5	295	(9.793)	395	(44.41)		

The following Sources give vapour pressure and/or critical point data for this compound. Those Sources used to derive the critical properties and coefficients of the vapour pressure equation are shown in bold type together with the pressure range (low 'L', medium 'M', normal boiling point only 'N', high 'H' or critical 'C') of the data. An asterisk (*) indicates that the Source is not a primary source of experimental data for this compound.

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Diethylene glycol; Diglycol; Digol; 3-Oxapentane-1,5-diol;
Bis(2-hydroxyethyl) ether; 2,2'-Oxydiethanol

CAS Reg. No. 111-46-6

Mol. Wt. 106.12

Vapour Pressure $\ln p = \ln p_c + (N_1q + N_2q^{1.5} + N_3q^{2.5} + N_4q^5)/(T/T_c)$

where T is the kelvin temperature on the International Temperature Scale of 1990 (ITS-90), p is the vapour pressure, T_c , p_c are the critical temperature and the critical pressure respectively and $q = 1 - T/T_c$.

Critical Temperature	$T_c = 760 \text{ K}$	($t_c = 486.85 \text{ }^\circ\text{C}$)
Critical Pressure	$p_c = 5150 \text{ kPa}$	($p_c = 50.83 \text{ atm}$)
	$N_1 = -8.22803$	
	$N_2 = 1.53771$	
	$N_3 = -5.86879$	
	$N_4 = -3.79265$	

Acentric Factor	$= 0.560$	
Normal Boiling Point	$= 518.797 \text{ K}$	($= 245.647 \text{ }^\circ\text{C}$)
dT/dp at N.B.P.	$= 0.374 \text{ K/kPa}$	($= 0.050 \text{ }^\circ\text{C/mmHg}$)
Normal Melting Point	$= 263 \text{ K}$	($= -10 \text{ }^\circ\text{C}$)

Data at Specified Pressures

p/kPa	0.001	0.01	0.1	1	10	101.325	1000	5150
T/K	(303.313)	327.907	358.040	396.183	446.713	518.797	(630.883)	760.000
$(dp/dT)/(\text{kPa/K})$	($1.E-4$)	$9.E-4$	0.007	0.053	0.390	2.670	(15.787)	55.756
Data Quality				A	A	A	(B)	C
Uncert. in T (K)				0.005	0.005	0.01	(0.2)	10
Uncert. in p (kPa)				0.0002	0.002	0.02	(5)	500
Uncert. in p (%)				0.02	0.02	0.02	(0.5)	10

Vapour Pressure of Diethylene glycol

Units: kPa v. K

Uncertainty in				Uncertainty in				Uncertainty in			
T	p	T	p	T	p	T	p	T	p	T	p
K	kPa	K	%	K	kPa	K	%	K	kPa	K	%
		425	4.052	0.005	0.02	550	(217.0)	0.02	0.05		
305	(0.001)	430	5.041	0.005	0.02	555	(242.6)	0.02	0.05		
310	(0.002)	435	6.232	0.005	0.02	560	(270.5)	0.05	0.1		
315	(0.003)	440	7.657	0.005	0.02	565	(300.9)	0.05	0.1		
320	(0.005)	445	9.351	0.005	0.02	570	(333.9)	0.05	0.1		
325	0.008	450	11.35	0.005	0.02	575	(369.6)	0.05	0.1		
330	0.012	455	13.71	0.005	0.02	580	(408.2)	0.05	0.1		
335	0.018	460	16.47	0.005	0.02	585	(449.9)	0.1	0.2		
340	0.027	465	19.68	0.005	0.02	590	(494.7)	0.1	0.2		
345	0.039	470	23.40	0.005	0.02	595	(542.8)	0.1	0.2		
350	0.057	475	27.70	0.005	0.02	600	(594.4)	0.1	0.2		
355	0.081	480	32.63	0.005	0.02	605	(649.7)	0.2	0.2		
360	0.114	485	38.27	0.005	0.02	610	(708.7)	0.2	0.2		
365	0.159	490	44.70	0.005	0.02	615	(771.8)	0.2	0.2		
370	0.220	495	51.99	0.005	0.02	620	(838.9)	0.2	0.5		
375	0.299	500	60.23	0.005	0.02	625	(910.3)	0.2	0.5		
380	0.404	505	69.52	0.005	0.02	630	(986.1)	0.2	0.5		
385	0.540	510	79.93	0.01	0.02	635	(1067.)	0.5	0.5		
390	0.715	515	91.59	0.01	0.02	640	(1152.)	0.5	0.5		
395	0.939	520	(104.6)	0.01	0.02	645	(1242.)	0.5	0.5		
400	1.222	525	(119.0)	0.01	0.02	650	(1337.)	0.5	1		
405	1.576	530	(135.0)	0.01	0.02	655	(1438.)	0.5	1		
410	2.018	535	(152.7)	0.01	0.05	660	(1544.)	1	1		
415	2.565	540	(172.2)	0.02	0.05	665	(1655.)	1	1		
420	3.235	545	(193.6)	0.02	0.05	670	(1773.)	1	1		

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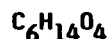
Vapour Pressure of Diethylene glycol continued

Units: mmHg or atm v. °C

$\frac{t}{^{\circ}\text{C}}$	$\frac{p}{\text{mmHg}}$	$\frac{t}{^{\circ}\text{C}}$	$\frac{p}{\text{mmHg}}$	$\frac{t}{^{\circ}\text{C}}$	$\frac{p}{\text{atm}}$	$\frac{t}{^{\circ}\text{C}}$	$\frac{p}{\text{atm}}$	$\frac{t}{^{\circ}\text{C}}$	$\frac{p}{\text{atm}}$
25	(0.004)	150	27.98	250	(1.120)	350	(8.718)	450	(33.89)
30	(0.007)	155	34.90	255	(1.272)	355	(9.450)	455	(35.88)
35	(0.012)	160	43.25	260	(1.440)	360	(10.23)	460	(37.95)
40	(0.020)	165	53.26	265	(1.626)	365	(11.05)	465	(40.11)
45	(0.032)	170	65.18	270	(1.830)	370	(11.92)	470	(42.38)
50	0.050	175	79.31	275	(2.053)	375	(12.84)	475	(44.74)
55	0.077	180	95.97	280	(2.298)	380	(13.82)	480	(47.22)
60	0.116	185	115.5	285	(2.565)	385	(14.84)	485	(49.83)
65	0.174	190	138.3	290	(2.856)	390	(15.92)		
70	0.256	195	164.7	295	(3.172)	395	(17.06)		
75	0.372	200	195.3	300	(3.514)	400	(18.26)		
80	0.533	205	230.5	305	(3.885)	405	(19.51)		
85	0.756	210	270.7	310	(4.284)	410	(20.83)		
90	1.058	215	316.7	315	(4.715)	415	(22.22)		
95	1.464	220	368.9	320	(5.177)	420	(23.67)		
100	2.005	225	428.0	325	(5.674)	425	(25.19)		
105	2.716	230	494.7	330	(6.206)	430	(26.77)		
110	3.644	235	569.6	335	(6.775)	435	(28.44)		
115	4.842	240	653.5	340	(7.382)	440	(30.18)		
120	6.375	245	747.1	345	(8.029)	445	(31.99)		
125	8.321								
130	10.77								
135	13.83								
140	17.62								
145	22.28								

The following Sources give vapour pressure and/or critical point data for this compound. Those Sources used to derive the critical properties and coefficients of the vapour pressure equation are shown in bold type together with the pressure range (low 'L', medium 'M', normal boiling point only 'N', high 'H' or critical 'C') of the data. An asterisk (*) indicates that the Source is not a primary source of experimental data for this compound.

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Sheet 1.3

Triethylene glycol; Triglycol; Trigol; 3,6-Dioxaoctane-1,8-diol;
1,2-Bis(2-hydroxyethoxy)ethane

CAS Reg. No. 112-27-6

Mol. Wt. 150.17

Vapour Pressure $\ln p = \ln p_c + (N_1q + N_2q^{1.5} + N_3q^{2.5} + N_4q^5)/(T/T_c)$

where T is the kelvin temperature on the International Temperature Scale of 1990 (ITS-90), p is the vapour pressure, T_c , p_c are the critical temperature and the critical pressure respectively and $q = 1 - T/T_c$.

Critical Temperature	$T_c = 795 \text{ K}$	($t_c = 521.85 \text{ }^\circ\text{C}$)
Critical Pressure	$p_c = 3500 \text{ kPa}$	($p_c = 34.54 \text{ atm}$)
	$N_1 = -8.42769$	
	$N_2 = 1.88851$	
	$N_3 = -6.57357$	
	$N_4 = -3.91115$	

Acentric Factor	$= 0.583$	
Normal Boiling Point	$= 560.823 \text{ K}$	($= 287.673 \text{ }^\circ\text{C}$)
dT/dp at N.B.P.	$= 0.419 \text{ K/kPa}$	($= 0.056 \text{ }^\circ\text{C/mmHg}$)
Normal Melting Point	$= 266 \text{ K}$	($= -7 \text{ }^\circ\text{C}$)

Data at Specified Pressures

p/kPa	0.001	0.01	0.1	1	10	101.325	1000	3500
T/K	325.331	351.777	384.286	425.648	480.895	560.823	(688.063)	795.000
$(dp/dT)/(\text{kPa/K})$	1.E-4	8.E-4	0.006	0.049	0.355	2.386	(13.747)	37.103
Data Quality				C	C	C	(C)	C
Uncert. in T (K)				1	1	2	(5)	10
Uncert. in p (kPa)				0.05	0.5	5	(50)	200
Uncert. in p (%)				5	5	5	(5)	10

Vapour Pressure of Triethylene glycol

Units: kPa v. K

		Uncertainty in				Uncertainty in				Uncertainty in	
T	p	T	p	T	p	T	p	T	p	T	p
K	kPa	K	%	K	kPa	K	%	K	kPa	K	%
325	0.001			450	3.022	1	5	575	139.9	2	5
330	0.002			455	3.722	1	5	580	156.0	2	5
335	0.002			460	4.556	1	5	585	173.5	2	5
340	0.004			465	5.546	1	5	590	192.6	2	5
345	0.006			470	6.714	1	5	595	213.2	2	5
350	0.009			475	8.085	1	5	600	235.4	2	5
355	0.013			480	9.687	1	5	605	259.4	2	5
360	0.019			485	11.55	1	5	610	285.3	2	5
365	0.027			490	13.70	1	5	615	313.1	2	5
370	0.039			495	16.19	2	5	620	(343.0)	2	5
375	0.055			500	19.04	2	5	625	(374.9)	2	5
380	0.076			505	22.30	2	5	630	(409.1)	2	5
385	0.105			510	26.00	2	5	635	(445.6)	2	5
390	0.143			515	30.21	2	5	640	(484.4)	2	5
395	0.193			520	34.96	2	5	645	(525.8)	2	5
400	0.258			525	40.30	2	5	650	(569.8)	2	5
405	0.341			530	46.30	2	5	655	(616.4)	2	5
410	0.449			535	53.01	2	5	660	(665.9)	2	5
415	0.585			540	60.48	2	5	665	(718.2)	2	5
420	0.755			545	68.79	2	5	670	(773.5)	2	5
425	0.969			550	78.00	2	5	675	(832.0)	2	5
430	1.233	1	5	555	88.17	2	5	680	(893.6)	5	5
435	1.559	1	5	560	99.38	2	5	685	(958.5)	5	5
440	1.956	1	5	565	111.7	2	5	690	(1027.)	5	5
445	2.439	1	5	570	125.2	2	5	695	(1099.)	5	5

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Vapour Pressure of Triethylene glycol continued

Units: mmHg or atm v. °C

$\frac{t}{^{\circ}\text{C}}$	$\frac{p}{\text{mmHg}}$	$\frac{t}{^{\circ}\text{C}}$	$\frac{p}{\text{mmHg}}$	$\frac{t}{^{\circ}\text{C}}$	$\frac{p}{\text{atm}}$	$\frac{t}{^{\circ}\text{C}}$	$\frac{p}{\text{atm}}$	$\frac{t}{^{\circ}\text{C}}$	$\frac{p}{\text{atm}}$
50	0.006	175	20.96	300	1.326	400	(7.994)	500	(27.44)
55	0.010	180	25.86	305	1.480	405	(8.590)	505	(28.94)
60	0.016	185	31.73	310	1.647	410	(9.219)	510	(30.51)
65	0.024	190	38.70	315	1.829	415	(9.881)	515	(32.15)
70	0.037	195	46.95	320	2.027	420	(10.58)	520	(33.88)
75	0.056	200	56.65	325	2.240	425	(11.31)		
80	0.084	205	68.00	330	2.471	430	(12.08)		
85	0.123	210	81.22	335	2.719	435	(12.88)		
90	0.178	215	96.54	340	2.986	440	(13.73)		
95	0.255	220	114.2	345	3.273	445	(14.61)		
100	0.361	225	134.6	350	(3.581)	450	(15.54)		
105	0.504	230	157.8	355	(3.910)	455	(16.51)		
110	0.698	235	184.3	360	(4.261)	460	(17.52)		
115	0.955	240	214.4	365	(4.636)	465	(18.58)		
120	1.294	245	248.5	370	(5.035)	470	(19.69)		
125	1.737	250	286.9	375	(5.460)	475	(20.85)		
130	2.310	255	330.0	380	(5.910)	480	(22.06)		
135	3.045	260	378.3	385	(6.388)	485	(23.32)		
140	3.979	265	432.2	390	(6.894)	490	(24.63)		
145	5.158	270	492.2	395	(7.429)	495	(26.01)		
150	6.633	275	558.7						
155	8.467	280	632.2						
160	10.73	285	713.3						
165	13.50	290	802.6						
170	16.87	295	900.4						

The following Sources give vapour pressure and/or critical point data for this compound. Those Sources used to derive the critical properties and coefficients of the vapour pressure equation are shown in bold type together with the pressure range (low 'L', medium 'M', normal boiling point only 'N', high 'H' or critical 'C') of the data. An asterisk (*) indicates that the Source is not a primary source of experimental data for this compound.

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- 12 BRUNNER, E., J. Chem. Thermodynamics, Vol. 12, p. 993, 1980.
- 13 GRENIER-LOUSTALOT, M.F., et al., Anal. Lett., Vol. 14, p. 1335, 1981.
- 14 LYONS, R.L., M.S. Thesis, Penn. State Univ., Pa., USA, 1985. **M, H**
- 15 NIKITIN, E.D., PAVLOV, A.P., POPOV, A.P., J. Chem. Thermodynamics, To be published. **C**



Sheet 3.1a

Propane-1,2-diol; 1,2-Dihydroxypropane; Propylene glycol

CAS Reg. No. 57-55-6

Mol. Wt. 76.10

Vapour Pressure $\ln p = \ln p_c + (N_1q + N_2q^{1.5} + N_3q^{2.5} + N_4q^5)/(T/T_c)$

where T is the kelvin temperature on the International Temperature Scale of 1990 (ITS-90), p is the vapour pressure, T_c , p_c are the critical temperature and the critical pressure respectively and $q = 1 - T/T_c$.

Critical Temperature	$T_c = 670 \text{ K}$	($t_c = 396.85 \text{ }^\circ\text{C}$)
Critical Pressure	$p_c = 5000 \text{ kPa}$	($p_c = 49.35 \text{ atm}$)
	$N_1 = -8.55604$	
	$N_2 = 2.55911$	
	$N_3 = -7.49816$	
	$N_4 = -4.69612$	

Acentric Factor	$= 0.568$	
Normal Boiling Point	$= 459.150 \text{ K}$	($= 186.000 \text{ }^\circ\text{C}$)
dT/dp at N.B.P.	$= 0.327 \text{ K/kPa}$	($= 0.044 \text{ }^\circ\text{C/mmHg}$)
Normal Melting Point	$= 213 \text{ K}$	($= -60 \text{ }^\circ\text{C}$)

Data at Specified Pressures

p/kPa	0.001	0.01	0.1	1	10	101.325	1000	5000
T/K	(272.731)	293.954	319.928	352.808	396.462	459.150	(558.084)	(670.000)
$(dp/dT)/(\text{kPa/K})$	($1.E-4$)	$1.E-3$	0.008	0.062	0.450	3.054	(17.730)	(63.852)
Data Quality			C	C	C	C	(C)	(C)
Uncert. in T (K)			1	1	1	2	(2)	(10)
Uncert. in p (kPa)			0.01	0.05	0.5	5	(50)	(500)
Uncert. in p (%)			10	5	5	5	(5)	(10)

Vapour Pressure of Propane-1,2-diol

Units: kPa v. K

Uncertainty in				Uncertainty in				Uncertainty in			
T	p	T	p	T	p	T	p	T	p	T	p
K	kPa	K	%	K	kPa	K	%	K	kPa	K	%
225		350	0.840	1	5	475	(159.9)	2	5		
230	($2.E-6$)	355	1.143	1	5	480	(183.0)	2	5		
235	($5.E-6$)	360	1.539	1	5	485	(208.7)	2	5		
240	($1.E-5$)	365	2.049	1	5	490	(237.2)	2	5		
245	($2.E-5$)	370	2.701	1	5	495	(268.6)	2	5		
250	($5.E-5$)	375	3.526	1	5	500	(303.1)	2	5		
255	($1.E-4$)	380	4.559	1	5	505	(340.9)	2	5		
260	($2.E-4$)	385	5.843	1	5	510	(382.2)	2	5		
265	($4.E-4$)	390	7.426	1	5	515	(427.3)	2	5		
270	($7.E-4$)	395	9.360	1	5	520	(476.2)	2	5		
275	(0.001)	400	11.71	1	5	525	(529.3)	2	5		
280	(0.002)	405	14.53	1	5	530	(586.7)	2	5		
285	(0.004)	410	17.91	1	5	535	(648.7)	2	5		
290	(0.007)	415	21.92	1	5	540	(715.4)	2	5		
295	0.011	420	26.66	1	5	545	(787.2)	2	5		
300	0.018	425	32.23	1	5	550	(864.1)	2	5		
305	0.028	430	38.71	1	5	555	(946.4)	2	5		
310	0.044	435	46.24	1	5	560	(1034.)	2	5		
315	0.067	440	54.93	1	5	565	(1128.)	2	5		
320	0.101	445	64.91	2	5	570	(1228.)	2	5		
325	0.148	450	76.30	2	5	575	(1335.)	5	5		
330	0.216	455	89.27	2	5	580	(1447.)	5	5		
335	0.309	460	(103.9)	2	5	585	(1567.)	5	5		
340	0.437	465	(120.5)	2	5	590	(1694.)	5	5		
345	0.610	470	(139.1)	2	5	595	(1828.)	5	5		

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Vapour Pressure of Propane-1,2-diol continued

Units: mmHg or atm v. °C

t °C	p mmHg	t °C	p mmHg	t °C	p mmHg	t °C	p atm	t °C	p atm
-50		50	0.966	150	225.5	200	(1.499)	300	(12.78)
-45	(1.E-5)	55	1.412	155	271.5	205	(1.719)	305	(13.87)
-40	(2.E-5)	60	2.034	160	325.0	210	(1.963)	310	(15.02)
-35	(6.E-5)	65	2.888	165	386.8	215	(2.234)	315	(16.25)
-30	(1.E-4)	70	4.048	170	458.0	220	(2.533)	320	(17.54)
-25	(3.E-4)	75	5.602	175	539.4	225	(2.861)	325	(18.92)
-20	(6.E-4)	80	7.660	180	632.2	230	(3.222)	330	(20.37)
-15	(0.001)	85	10.35	185	737.4	235	(3.617)	335	(21.90)
-10	(0.002)	90	13.84	190	(856.2)	240	(4.048)	340	(23.51)
-5	(0.004)	95	18.31	195	(989.8)	245	(4.516)	345	(25.21)
0	(0.008)	100	23.99			250	(5.025)	350	(27.01)
5	(0.014)	105	31.13			255	(5.576)	355	(28.89)
10	(0.025)	110	40.03			260	(6.171)	360	(30.88)
15	(0.042)	115	51.02			265	(6.812)	365	(32.98)
20	0.069	120	64.50			270	(7.501)	370	(35.18)
25	0.113	125	80.90			275	(8.241)	375	(37.51)
30	0.180	130	100.7			280	(9.033)	380	(39.96)
35	0.281	135	124.4			285	(9.881)	385	(42.55)
40	0.431	140	152.7			290	(10.79)	390	(45.29)
45	0.651	145	186.2			295	(11.75)	395	(48.21)

The following Sources give vapour pressure and/or critical point data for this compound. Those Sources used to derive the critical properties and coefficients of the vapour pressure equation are shown in bold type together with the pressure range (low 'L', medium 'M', normal boiling point only 'N', high 'H' or critical 'C') of the data. An asterisk (*) indicates that the Source is not a primary source of experimental data for this compound.

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Sheet 3.1b

Propane-1,3-diol; 1,3-Dihydroxypropane; Trimethylene glycol

CAS Reg. No. 504-63-2

Mol. Wt. 76.10

Vapour Pressure $\ln p = \ln p_c + (N_1q + N_2q^{1.5} + N_3q^{2.5} + N_4q^5)/(T/T_c)$

where T is the kelvin temperature on the International Temperature Scale of 1990 (ITS-90), p is the vapour pressure, T_c , p_c are the critical temperature and the critical pressure respectively and $q = 1 - T/T_c$.

Critical Temperature $T_c = 735$ K ($t_c = 461.85$ °C)
 Critical Pressure $p_c = 7500$ kPa ($p_c = 74.02$ atm)
 $N_1 = -8.15026$
 $N_2 = 1.63718$
 $N_3 = -5.84437$
 $N_4 = -4.12248$

Acentric Factor = 0.535
 Normal Boiling Point = 486.050 K (= 212.900 °C)
 dT/dp at N.B.P. = 0.338 K/kPa (= 0.045 °C/mmHg)
 Normal Melting Point = 246 K (= -27 °C)

Data at Specified Pressures

p/kPa	0.001	0.01	0.1	1	10	101.325	1000	7500
T/K	(288.138)	311.022	338.964	374.176	420.536	486.050	(586.417)	(735.000)
(dp/dT)/(kPa/K)	(1.E-4)	9.E-4	0.007	0.058	0.427	2.955	(17.775)	(83.168)
Data Quality			C	C	C	C	(C)	(C)
Uncert. in T (K)			1	1	1	2	(2)	(10)
Uncert. in p (kPa)			0.01	0.05	0.5	5	(50)	(1E3)
Uncert. in p (%)			10	5	5	5	(5)	(10)

Vapour Pressure of Propane-1,3-diol

Units: kPa v. K

Uncertainty in				Uncertainty in				Uncertainty in			
T	p	T	p	T	p	T	p	T	p	T	p
K	kPa	K	%	K	kPa	K	%	K	kPa	K	%
250	(7.E-6)	375	1.049	1	5	500	(149.9)	2	5		
255	(1.E-5)	380	1.390	1	5	505	(171.4)	2	5		
260	(3.E-5)	385	1.825	1	5	510	(195.2)	2	5		
265	(6.E-5)	390	2.376	1	5	515	(221.5)	2	5		
270	(1.E-4)	395	3.066	1	5	520	(250.7)	2	5		
275	(2.E-4)	400	3.925	1	5	525	(282.8)	2	5		
280	(4.E-4)	405	4.985	1	5	530	(318.0)	2	5		
285	(7.E-4)	410	6.284	1	5	535	(356.6)	2	5		
290	(0.001)	415	7.864	1	5	540	(398.7)	2	5		
295	(0.002)	420	9.774	1	5	545	(444.6)	2	5		
300	0.003	425	12.07	1	5	550	(494.6)	2	5		
305	0.006	430	14.80	1	5	555	(548.7)	2	5		
310	0.009	435	18.05	1	5	560	(607.3)	2	5		
315	0.014	440	21.88	1	5	565	(670.6)	2	5		
320	0.022	445	26.37	1	5	570	(738.7)	2	5		
325	0.034	450	31.62	1	5	575	(812.1)	2	5		
330	0.050	455	37.71	1	5	580	(890.7)	2	5		
335	0.074	460	44.75	1	5	585	(975.1)	2	5		
340	0.108	465	52.84	2	5	590	(1065.)	2	5		
345	0.155	470	62.11	2	5	595	(1162.)	2	5		
350	0.219	475	72.68	2	5	600	(1264.)	2	5		
355	0.307	480	84.68	2	5	605	(1373.)	2	5		
360	0.424	485	98.26	2	5	610	(1489.)	5	5		
365	0.579	490	(113.6)	2	5	615	(1613.)	5	5		
370	0.783	495	(130.7)	2	5	620	(1743.)	5	5		

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Vapour Pressure of Propane-1,3-diol continued

Units: mmHg or atm v. °C

t °C	p mmHg	t °C	p mmHg	t °C	p atm	t °C	p atm	t °C	p atm
-25	(4.E-5)	100	7.068	225	(1.407)	325	(12.09)	425	(48.91)
-20	(8.E-5)	105	9.403	230	(1.610)	330	(13.15)	430	(51.84)
-15	(2.E-4)	110	12.39	235	(1.836)	335	(14.27)	435	(54.91)
-10	(3.E-4)	115	16.18	240	(2.087)	340	(15.46)	440	(58.11)
-5	(7.E-4)	120	20.95	245	(2.364)	345	(16.72)	445	(61.46)
0	(0.001)	125	26.90	250	(2.670)	350	(18.05)	450	(64.97)
5	(0.002)	130	34.26	255	(3.006)	355	(19.47)	455	(68.65)
10	(0.004)	135	43.30	260	(3.374)	360	(20.96)	460	(72.53)
15	(0.008)	140	54.33	265	(3.777)	365	(22.53)		
20	(0.013)	145	67.70	270	(4.216)	370	(24.19)		
25	0.022	150	83.78	275	(4.694)	375	(25.94)		
30	0.036	155	103.0	280	(5.213)	380	(27.78)		
35	0.057	160	125.9	285	(5.774)	385	(29.71)		
40	0.091	165	152.9	290	(6.381)	390	(31.73)		
45	0.142	170	184.7	295	(7.036)	395	(33.86)		
50	0.217	175	221.9	300	(7.741)	400	(36.09)		
55	0.326	180	265.1	305	(8.497)	405	(38.42)		
60	0.483	185	315.2	310	(9.309)	410	(40.87)		
65	0.706	190	372.9	315	(10.18)	415	(43.43)		
70	1.018	195	439.1	320	(11.10)	420	(46.11)		
75	1.448	200	514.6						
80	2.034	205	600.5						
85	2.823	210	697.9						
90	3.875	215	(807.7)						
95	5.261	220	(931.2)						

The following Sources give vapour pressure and/or critical point data for this compound. Those Sources used to derive the critical properties and coefficients of the vapour pressure equation are shown in bold type together with the pressure range (low 'L', medium 'M', normal boiling point only 'N', high 'H' or critical 'C') of the data. An asterisk (*) indicates that the Source is not a primary source of experimental data for this compound.

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Butane-1,2-diol; 1,2-Dihydroxybutane

Sheet 4.1a

CAS Reg. No. 584-03-2

Mol. Wt. 90.12

Vapour Pressure $\ln p = \ln p_c + (N_1q + N_2q^{1.5} + N_3q^{2.5} + N_4q^5)/(T/T_c)$

where T is the kelvin temperature on the International Temperature Scale of 1990 (ITS-90), p is the vapour pressure, T_c , p_c are the critical temperature and the critical pressure respectively and $q = 1 - T/T_c$.

Critical Temperature $T_c = 675$ K ($t_c = 401.85$ °C)
 Critical Pressure $p_c = 5000$ kPa ($p_c = 49.35$ atm)
 $N_1 = -8.70996$
 $N_2 = 2.90882$
 $N_3 = -8.12547$
 $N_4 = -4.91371$

Acentric Factor = 0.581
 Normal Boiling Point = 463.650 K (= 190.500 °C)
 dT/dp at N.B.P. = 0.328 K/kPa (= 0.044 °C/mmHg)
 Normal Melting Point = -

Data at Specified Pressures

p/kPa	0.001	0.01	0.1	1	10	101.325	1000	5000
T/K	(277.166)	(298.426)	(324.422)	357.306	400.946	463.650	(562.861)	(675.000)
(dp/dT)/(kPa/K)	(1.E-4)	(1.E-3)	(0.008)	0.062	0.451	3.051	(17.651)	(64.519)
Data Quality				C	C	C	(C)	(C)
Uncert. in T (K)				2	1	2	(5)	(10)
Uncert. in p (kPa)				0.1	0.5	5	(100)	(500)
Uncert. in p (%)				10	5	5	(10)	(10)

Vapour Pressure of Butane-1,2-diol

Units: kPa v. K

Uncertainty in				Uncertainty in				Uncertainty in			
T	p	T	p	T	p	T	p	T	p	T	p
K	kPa	K	%	K	kPa	K	%	K	kPa	K	%
225		350	0.630			475	(141.0)	2	5		
230		355	0.867			480	(162.0)	2	5		
235	(2.E-6)	360	1.178	2	10	485	(185.3)	2	5		
240	(5.E-6)	365	1.585	2	10	490	(211.2)	2	5		
245	(1.E-5)	370	2.108	1	10	495	(239.9)	2	5		
250	(3.E-5)	375	2.776	1	5	500	(271.5)	2	5		
255	(5.E-5)	380	3.621	1	5	505	(306.2)	2	5		
260	(1.E-4)	385	4.678	1	5	510	(344.2)	2	5		
265	(2.E-4)	390	5.991	1	5	515	(385.7)	2	10		
270	(4.E-4)	395	7.607	1	5	520	(430.9)	5	10		
275	(8.E-4)	400	9.581	1	5	525	(480.0)	5	10		
280	(0.001)	405	11.97	1	5	530	(533.2)	5	10		
285	(0.002)	410	14.85	1	5	535	(590.7)	5	10		
290	(0.004)	415	18.30	1	5	540	(652.8)	5	10		
295	(0.007)	420	22.38	1	5	545	(719.6)	5	10		
300	(0.012)	425	27.20	1	5	550	(791.3)	5	10		
305	(0.019)	430	32.85	1	5	555	(868.2)	5	10		
310	(0.030)	435	39.44	1	5	560	(950.4)	5	10		
315	(0.046)	440	47.08	1	5	565	(1038.)	5	10		
320	(0.070)	445	55.89	1	5	570	(1132.)	5	10		
325	(0.105)	450	66.00	2	5	575	(1232.)	5	10		
330	(0.154)	455	77.55	2	5	580	(1338.)	5	10		
335	(0.224)	460	90.67	2	5	585	(1450.)	5	10		
340	(0.320)	465	(105.5)	2	5	590	(1570.)	5	10		
345	0.452	470	(122.2)	2	5	595	(1696.)	5	10		

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