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Melting points, boiling points and critical properties

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THE PREPARATION OF THIS DATA ITEM

The work on this particular Data Item was monitored and guided by the Physical Data and Reaction Kinetics Committee, which first met in 1966 and now has the following membership:

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The technical work involved in the assessment of the available information and the construction and subsequent development of the Data Item was undertaken for ESDU by

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The person with overall responsibility for the work in this subject area is Mr G.H.Walter, Head of Heat Transfer, Internal Flow and Physical Data.

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(Continued on inside back cover)

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MELTING POINTS, BOILING POINTS AND CRITICAL PROPERTIES

1. INTRODUCTION

This Data Item is a collected list of melting points, normal boiling points, critical properties and acentric factors. The source of the values is the Data Item listed against each compound. The first two digits of the Data Item number indicate the year of issue, and the values are those selected as the most reliable at that date.

All molecules breakdown if the temperature is raised sufficiently, and for some compounds the temperature of breakdown may be less than the critical temperature. Consequent decomposition may make the critical properties unmeasurable. This is true for some simple reactive compounds, such as formic acid and acetaldehyde, and for many compounds containing -OH groups, but for most compounds containing up to 5 carbon atoms good measurements are possible. Aliphatic molecules containing more carbon atoms (the number depending on the chemical type) are liable to decomposition sufficient to hinder and, as the carbon number increases, to prevent measurement of the critical properties. Most unsubstituted aromatic compounds and those with alkyl substituents only are relatively stable at their critical temperatures, but aromatics with other types of substituent are often unstable at elevated temperatures. Values of the critical properties of the higher carbon numbers of all series and of many aromatics with substituents other than alkyl groups can only be obtained by empirical correlations and must be considered as correlating parameters, not experimentally determined quantities.

For hydrocarbons the critical molar volume and, calculated from the critical molar volume, the critical density and critical compression factor are also given. For C_1 to C_{18} alkanes and C_2 to C_{16} alkenes the critical molar volumes are from Data Items 87010 and 87017; for other hydrocarbons values have been estimated by the method described in Appendix A.

The relation between critical density and critical molar volume is

$$d_c = M/V_c, \quad (1)$$

and the critical compression factor is given by

$$Z_c = p_c V_c / RT_c. \quad (2)$$

As a general rule for the avoidance of error, it is recommended that the quantities in equations be expressed in the coherent SI units and not in their multiples or submultiples, i.e. mass in kg, volume in m^3 and pressure in Pa. However, the multipliers of the units tabulated in this Item cancel out in Equation (2).

2. NOTATION

d_c	critical density	kg m^{-3}
M	molar mass	g mol^{-1}
p_c	critical pressure	MPa
R	gas constant, $8.314\ 510\ \text{J mol}^{-1}\ \text{K}^{-1}$	
T_b	normal boiling point (at 101.325 kPa), IPTS-68	K
T_c	critical temperature, IPTS-68	K
T_m	freezing, melting point, IPTS-68	K
V_c	critical molar volume	$\text{cm}^3\ \text{mol}^{-1}$
Z_c	critical compression factor	

Name	Formula	M g mol	T _m K	T _b K	T _c K	P _c MPa	d _c kg m ³	V _c cm ³ mol	Z _c	Omega	Item No.
Acetamide	C ₂ H ₅ NO	59.07	355.	495.16	750.	8.500				0.589	79030
Acetanilide	C ₈ H ₉ NO	135.17	387.	576.00	825.	4.700				0.651	78011
Acetic acid	C ₂ H ₄ O ₂	60.05	290.	391.04	592.71	5.786				0.459	80029
Acetic anhydride	C ₄ H ₆ O ₃	102.09	200.	411.79	610.	4.200				0.433	80029
Acetone	C ₃ H ₆ O	58.08	178.	329.22	508.10	4.696				0.307	75025
Acetonitrile	C ₂ H ₃ N	41.05	227.	354.80	545.5	4.550				0.313	80001
Acetylene	C ₂ H ₂	26.04	192.35	188.45	308.32	6.139	236	110	0.264	0.192	86001
Acrylic acid	C ₃ H ₄ O ₂	72.06	287.	414.41	615.	5.550				0.531	80029
Acrylonitrile	C ₃ H _{3.5} N	53.06	190.	351.68	540.	3.500				0.225	80001
Adipic acid	C ₆ H ₁₀ O ₄	146.14	426.	606.47	795.	3.175				1.102	80029
Adiponitrile	C ₆ H ₈ N ₂	108.14	310.	579.16	790.	2.700				0.680	80001
Allylacetonitrile	C ₅ H ₇ N	81.12	217.	415.53	610.	3.300				0.383	80001
Allylamine	C ₃ H ₇ N	57.10	180.	331.15	515.	5.000				0.289	76025
Allyl ethyl ether	C ₅ H ₁₀ O	86.13		340.8	510.	3.350				0.286	76024
Allyl propyl ether	C ₆ H ₁₂ O	100.16		363.6	532.	2.950				0.352	76024
Allyl isopropyl ether	C ₆ H ₁₂ O	100.16		352.6	519.	3.050				0.340	76024
4-Amino-2,6-lutidine	C ₇ H ₁₀ N ₂	122.17	459.	519.15	749.	4.000				0.544	77019
2-(Aminoethyl)ethanolamine	C ₄ H ₁₂ N ₂ O	104.15	302.	516.95	734.	5.100				0.739	79030
1-Aminopropan-2-ol	C ₃ H ₉ NO	75.11	275.	433.05	623.	5.200				0.669	79030
3-Aminopropan-1-ol	C ₃ H ₉ NO	75.11	285.	457.95	659.	5.500				0.690	79030
Angelic acid	C ₅ H ₈ O ₂	100.12	319.	458.15	668.	4.600				0.543	80029
Angelonitrile	C ₅ H ₇ N	81.12	215.	413.48	610.	3.250				0.356	80001
Aniline	C ₆ H ₇ N	93.13	267.	457.19	699.	5.400				0.390	78011
o-Anisidine	C ₇ H ₉ NO	123.15	278.	493.66	728.	5.850				0.586	78011
Anisole	C ₇ H ₈ O	108.14	236.	426.75	645.60	4.250				0.348	76024
Azelaic acid	C ₉ H ₁₆ O ₄	188.22	380.	633.36	810.	2.350				1.148	80029
Azetidine	C ₃ H ₇ N	57.10		333.25	546.	8.650				0.275	77019
Aziridine	C ₂ H ₅ N	43.07		328.55	524.	9.950				0.432	77019
Azobenzene	C ₁₂ H ₁₀ N ₂	182.22	343.	566.14	830.	4.100				0.476	78011
Benzene	C ₆ H ₆	78.11	278.68	353.24	562.16	4.898	298	262	0.275	0.209	86012
Benzenethiol	C ₆ H ₆ S	110.17	258.26	442.32	685.	4.600				0.284	78034
Benzonitrile	C ₇ H ₅ N	103.12	260.	463.81	699.4	4.215				0.361	78011
Benzylamine	C ₇ H ₉ N	107.15	216.	457.79	686.	4.800				0.437	78011
2-2'-Biphenol	C ₁₂ H ₁₀ O ₂	186.21	382.	597.28	845.	4.300				0.682	81042
Bromochlorodifluoromethane	CF ₂ ClBr	165.36	113.	269.14	426.9	4.254				0.180	75010
1-Bromo-1-chloroethane	C ₂ H ₄ ClBr	143.41	193.	355.78	567.	5.604				0.247	76006
1-Bromo-2-chloroethane	C ₂ H ₄ ClBr	143.41	256.	379.15	605.	5.494				0.236	76006
Bromochloromethane	CH ₂ BrCl	129.38	186.	341.21	558.	6.399				0.211	75010
2-Bromo-4,6-dichlorophenol	C ₆ H ₃ BrCl ₂ O	241.90	341.	542.94	800.	4.100				0.450	81042
Bromoethane	C ₂ H ₅ Br	108.97	154.	311.52	503.85	6.230				0.251	76006
Bromoform	CHBr ₃	252.73	281.	422.13	685.	5.648				0.230	75010
Bromomethane	CH ₃ Br	94.94	180.	276.72	464.	6.610				0.137	75010
3-Bromopyridine	C ₅ H ₄ BrN	158.00		446.74	699.	5.050				0.277	77019
Bromotrichloromethane	CCl ₃ Br	198.27	267.	377.86	603.	4.650				0.188	75010
3-Bromo-2,4,6-trichlorophenol	C ₆ H ₂ BrCl ₃ O	276.34		580.15	845.	3.700				0.461	81042
Bromotrifluoromethane	CF ₃ Br	148.91	105.	215.42	340.14	3.965				0.173	75010
Buta-1,2-diene	C ₄ H ₆	54.09	137.	284.05	452.15	4.523	245	220	0.265	0.187	86001
Buta-1,3-diene	C ₄ H ₆	54.09	164.	268.76	425.17	4.277	245	220	0.267	0.190	86001

Name	Formula	M g mol	T _m K	T _b K	T _c K	P _c MPa	d _c kg m ³	V _c cm ³ mol	Z _c	Omega	Item No.
Buta-1,3-diyne	C ₄ H ₂	50.06		282.46	453.15	5.200	277	180	0.249	0.204	86001
Butane	C ₄ H ₁₀	58.12	134.66	272.65	425.25	3.791	229	254	0.272	0.199	84022
isoButane	C ₄ H ₁₀	58.12	113.	261.42	407.85	3.634	227	256	0.274	0.184	84022
Butane-1-thiol	C ₄ H ₁₀ S	90.18	157.46	371.61	568.	3.875				0.276	78034
Butane-2-thiol	C ₄ H ₁₀ S	90.18	133.01	358.13	551.	3.850				0.250	78034
Butan-1-ol	C ₄ H ₁₀ O	74.12	184.51	390.88	563.05	4.423				0.590	74023
Butan-2-ol	C ₄ H ₁₀ O	74.12	158.	372.66	536.01	4.179				0.575	74023
Butanone	C ₄ H ₈ O	72.11	187.	352.73	536.78	4.207				0.322	75025
But-1-ene	C ₄ H ₈	56.11	87.8	266.90	419.95	4.043	236	238	0.276	0.190	85008
cis-But-2-ene	C ₄ H ₈	56.11	134.	276.86	435.58	4.243	242	232	0.272	0.201	85008
isoButene	C ₄ H ₈	56.11	133.	266.24	417.90	4.000	238	236	0.272	0.194	85008
trans-But-2-ene	C ₄ H ₈	56.11	168.	274.02	428.63	3.984	239	235	0.263	0.203	85008
But-1-en-3-yne	C ₄ H ₄	52.08		278.74	443.15	5.200	260	200	0.283	0.233	86001
Butyl acetate	C ₆ H ₁₂ O ₂	116.16	195.	399.12	576.	3.050				0.428	80019
isoButyl acetate	C ₆ H ₁₂ O ₂	116.16	175.	389.95	564.	3.000				0.411	80019
sec-Butyl acetate	C ₆ H ₁₂ O ₂	116.16		385.15	560.	3.125				0.403	80019
tert-Butyl acetate	C ₆ H ₁₂ O ₂	116.16		369.15	550.	3.575				0.347	80019
Butyl acetate	C ₈ H ₁₆ O ₃	160.21		458.46	620.	2.05				0.609	81003
Butyl acrylate	C ₇ H ₁₂ O ₂	128.17	209.	420.55	600.	2.90				0.463	81003
isoButylacrylate	C ₇ H ₁₂ O ₂	128.17		405.15	581.	2.90				0.438	81003
Butylamine	C ₄ H ₁₁ N	73.14	224.	349.46	530.	3.981				0.311	76025
isoButylamine	C ₄ H ₁₁ N	73.14	188.	340.64	519.	4.073				0.300	76025
sec-Butylamine	C ₄ H ₁₁ N	73.14	185.	336.15	511.	3.970				0.300	76025
tert-Butylamine	C ₄ H ₁₁ N	73.14	206.	317.18	483.9	3.850				0.275	76025
2-Butylaminoethanol	C ₆ H ₁₅ NO	117.19	271.	471.87	664.	5.00				0.789	79030
Butylbenzene	C ₁₀ H ₁₄	134.22	185.	456.46	660.53	2.887	278	482	0.254	0.393	86012
isoButylbenzene	C ₁₀ H ₁₄	134.22	222.	445.94	648.15	2.827	283	474	0.249	0.364	86012
sec-Butylbenzene	C ₁₀ H ₁₄	134.22	198.	446.49	650.15	2.906	283	474	0.255	0.367	86012
tert-Butylbenzene	C ₁₀ H ₁₄	134.22	215.	442.30	645.15	2.911	289	465	0.252	0.360	86012
Butyl butyrate	C ₈ H ₁₆ O ₂	144.21	181.	438.15	614.	2.50				0.490	80019
isoButyl butyrate	C ₈ H ₁₆ O ₂	144.21		430.03	603.	2.45				0.477	80019
isoButyl isobutyrate	C ₈ H ₁₆ O ₂	144.21	192.	421.75	594.	2.45				0.454	80019
4-tert-Butyl-o-cresol(-OH at 1)	C ₁₁ H ₁₆ O	164.25	300.	523.87	726.	2.75				0.593	81025
2-tert-Butyl-p-cresol(-OH at 1)	C ₁₁ H ₁₆ O	164.25	328.	515.56	721.	2.90				0.567	81025
Butylcyclohexane	C ₁₀ H ₂₀	140.27	198.	454.13	648.	2.50	266	527	0.245	0.398	82016
isoButylcyclohexane	C ₁₀ H ₂₀	140.27		444.50	638.	2.50	270	519	0.245	0.370	82016
sec-Butylcyclohexane	C ₁₀ H ₂₀	140.27		452.52	648.	2.50	270	519	0.241	0.381	82016
tert-Butylcyclohexane	C ₁₀ H ₂₀	140.27		444.77	641.	2.500	275	510	0.239	0.351	82016
Butylcyclopentane	C ₉ H ₁₈	126.24	165.	429.78	621.	2.70	261	483	0.253	0.372	82016
5-Butyldodecane	C ₁₆ H ₃₄	226.44	226.	543.31	705.15	1.483	248	914	0.231	0.703	85002
N-Butylethylamine	C ₆ H ₁₅ N	101.19	195.	381.15	554.	2.824				0.363	76025
N-sec-Butylethylamine	C ₆ H ₁₅ N	101.19	169.	371.29	543.	2.900				0.346	76025
Butyl ethyl ether	C ₆ H ₁₄ O	102.18	170.	365.43	531.	2.930				0.380	76024
tert-Butyl ethyl ether	C ₆ H ₁₄ O	102.18	179.	346.2	512.	3.149				0.331	76024
4-tert-Butyl-2-ethylphenol	C ₁₂ H ₁₈ O	178.27		531.35	730.	2.55				0.608	81025
2-tert-Butyl-4-ethylphenol	C ₁₂ H ₁₈ O	178.27	296.	527.03	728.	2.70				0.604	81025
Butyl ethyl sulphide	C ₆ H ₁₄ S	118.24	178.	417.41	609.	3.001				0.371	78034
isoButyl ethyl sulphide	C ₆ H ₁₄ S	118.24		407.39	597.	3.00				0.352	78034

Name	Formula	M g mol	T _m K	T _b K	T _c K	p _c MPa	d _c kg m ³	V _c cm ³ mol	Z _c	Omega	Item No.
sec-Butyl ethyl sulphide	C ₆ H ₁₄ S	118.24		406.81	599.	3.075				0.341	78034
tert-Butyl ethyl sulphide	C ₆ H ₁₄ S	118.24	184.	393.56	583.	3.000				0.306	78034
Butyl formate	C ₅ H ₁₀ O ₂	102.13	181.	379.25	565.	3.700				0.359	80019
isoButyl formate	C ₅ H ₁₀ O ₂	102.13	177.	371.22	554.	3.600				0.342	80019
sec-Butyl formate	C ₅ H ₁₀ O ₂	102.13		366.58	545.	3.575				0.355	80019
tert-Butyl formate	C ₅ H ₁₀ O ₂	102.13		355.95	540.	3.950				0.307	80019
Butyl methacrylate	C ₈ H ₁₄ O ₂	142.20		433.15	610.	2.575				0.477	81003
isoButyl methacrylate	C ₈ H ₁₄ O ₂	142.20		428.09	605.	2.60				0.463	81003
N-Butylmethylamine	C ₅ H ₁₃ N	87.16	198.	364.25	539.	3.319				0.347	76025
Butyl methyl ether	C ₅ H ₁₂ O	88.15	158.	343.31	512.78	3.371				0.317	76024
tert-Butyl methyl ether	C ₅ H ₁₂ O	88.15	165.	328.30	497.10	3.430				0.267	76024
Butyl methyl sulphide	C ₅ H ₁₂ S	104.21	175.3	396.58	591.	3.375				0.325	78034
isoButyl methyl sulphide	C ₅ H ₁₂ S	104.21	151.	385.65	578.	3.350				0.299	78034
tert-Butyl methyl sulphide	C ₅ H ₁₂ S	104.21	190.84	372.05	566.	3.450				0.252	78034
4-isoButylphenol	C ₁₀ H ₁₄ O	150.22	325.	510.13	720.	3.500				0.603	81025
2-sec-Butylphenol	C ₁₀ H ₁₄ O	150.22	289.	500.89	715.	3.475				0.539	81025
4-sec-Butylphenol	C ₁₀ H ₁₄ O	150.22	289.	514.12	725.	3.500				0.609	81025
2-tert-Butylphenol	C ₁₀ H ₁₄ O	150.22	268.	497.40	715.	3.450				0.501	81025
4-tert-Butylphenol	C ₁₀ H ₁₄ O	150.22	373.	513.04	730.	3.300				0.534	81025
Butyl propionate	C ₇ H ₁₄ O ₂	130.19	185.	419.75	595.	2.750				0.473	80019
isoButyl propionate	C ₇ H ₁₄ O ₂	130.19	202.	409.95	583.	2.800				0.464	80019
isoButyl isovalerate	C ₉ H ₁₈ O ₂	158.24		442.65	610.	2.150				0.511	81003
4-tert-Butyl-2,3-xyleneol	C ₁₂ H ₁₈ O	178.27		529.30	729.	2.600				0.603	81025
6-tert-Butyl-2,4-xyleneol	C ₁₂ H ₁₈ O	178.27	295.	520.83	724.	2.800				0.584	81025
4-tert-Butyl-2,5-xyleneol	C ₁₂ H ₁₈ O	178.27	345.	545.73	737.	2.200				0.637	81025
4-tert-Butyl-2,6-xyleneol	C ₁₂ H ₁₈ O	178.27	355.	524.97	726.	2.700				0.596	81025
6-tert-Butyl-3,4-xyleneol	C ₁₂ H ₁₈ O	178.27	319.	533.43	731.	2.500				0.614	81025
But-1-yne	C ₄ H ₆	54.09	147.	281.20	443.15	4.947	245	220	0.296	0.247	86001
But-2-yne	C ₄ H ₆	54.09	241.	300.11	473.15	4.874	245	220	0.273	0.241	86001
Butyric acid	C ₄ H ₈ O ₂	88.11	268.15	436.87	631.	4.800				0.612	80029
isoButyric acid	C ₄ H ₈ O ₂	88.11	226.	427.06	620.	4.850				0.588	80029
Butyric anhydride	C ₈ H ₁₄ O ₃	158.20	198.	471.15	650.	2.600				0.598	80029
Butyronitrile	C ₄ H ₇ N	69.11	161.	390.75	581.	3.600				0.361	80001
isoButyronitrile	C ₄ H ₇ N	69.11	202.	376.65	562.	4.050				0.391	80001
Carbon tetrachloride	CCl ₄	153.82	250.	349.84	556.40	4.548				0.191	75010
Carbon tetrafluoride	CF ₄	88.00	90.	145.10	227.50	3.742				0.176	75010
Carvacrol	C ₁₀ H ₁₄ O	150.22	274.	510.59	725.	3.400				0.558	81025
Chloroacetic acid	C ₂ H ₃ ClO ₂	94.50	334.	462.29	680.	5.650				0.579	80029
Chloroacetic anhydride	C ₄ H ₄ Cl ₂ O ₃	170.98	318.	502.64	710.	3.600				0.613	80029
2-Chloroaniline	C ₆ H ₆ ClN	127.57	259.	481.97	730.	4.600				0.373	78011
3-Chloroaniline	C ₆ H ₆ ClN	127.57	263.	501.69	753.	5.000				0.443	78011
4-Chloroaniline	C ₆ H ₆ ClN	127.57	344.	505.75	756.	4.450				0.417	78011
1-Chloro-1,1-difluoroethane	C ₂ H ₃ ClF ₂	100.50	142.	262.93	409.60	4.218				0.236	76004
Chloro-1,1-difluoroethylene	C ₂ HClF ₂	98.48	135.	254.55	400.50	4.465				0.220	76004
Chlorodifluoromethane	CHClF ₂	86.47	127.	232.33	369.30	4.980				0.220	75010
Chloroethane	C ₂ H ₅ Cl	64.51	137.	285.36	460.40	5.240				0.189	76004
1-Chloro-2-fluoroethane	C ₂ H ₄ ClF	82.51	197.	326.15	515.	4.800				0.230	76004
Chloroform	CHCl ₃	119.38	210.	334.33	536.40	5.345				0.212	75010

Name	Formula	M g mol	T _m K	T _b K	T _c K	P _c MPa	d _c kg m ³	V _c cm ³ mol	Z _c	Omega	Item No.
Chloromethane	CH ₃ Cl	50.49	175.	249.00	416.27	6.680				0.155	75010
Chloropentafluoroethane	C ₂ ClF ₅	154.47	174.	234.01	353.10	3.150				0.251	76004
2-Chlorophenol	C ₆ H ₅ ClO	128.56	282.	447.53	675.	5.000				0.435	81042
3-Chlorophenol	C ₆ H ₅ ClO	128.56	306.	487.00	720.	4.750				0.497	81042
4-Chlorophenol	C ₆ H ₅ ClO	128.56	316.	493.11	730.	4.750				0.490	81042
2-Chloropyridine	C ₅ H ₄ ClN	113.55		443.58	694.	5.200				0.287	77019
Chloro-1,1,2,2-tetrafluoroethane	C ₂ HC1F ₄	136.48	156.	263.00	399.85	3.716				0.283	76004
Chlorotrifluoroethylene	C ₂ ClF ₃	116.47	118.	244.79	379.	3.960				0.237	76004
Chlorotrifluoromethane	CClF ₃	104.46	92.	191.72	302.29	3.911				0.173	75010
2,4,6-Collidine	C ₈ H ₁₁ N	121.18	229.	443.55	645.	3.200				0.413	77019
m-Cresol	C ₇ H ₈ O	108.14	285.	464.19	705.75	4.560				0.451	81025
o-Cresol	C ₇ H ₈ O	108.14	304.	475.43	697.55	5.005				0.436	81025
p-Cresol	C ₇ H ₈ O	108.14	308.	475.14	704.55	5.150				0.509	81025
Crotonic acid	C ₄ H ₆ O ₂	86.09	345.	459.25	670.	5.350				0.602	80029
isoCrotonic acid	C ₄ H ₆ O ₂	86.09	288.	446.00	630.	5.100				0.588	80029
Cumene	C ₉ H ₁₂	120.19	177.	425.56	631.13	3.209	287	419	0.256	0.326	86012
pseudoCumene	C ₉ H ₁₂	120.19	229.	442.53	649.17	3.232	287	419	0.251	0.377	86012
4-Cumidine	C ₉ H ₁₃ N	135.21		498.15	718.	3.350				0.474	78011
isoCyanobenzene	C ₇ H ₅ N	103.12		438.74	660.	4.100				0.361	78011
Cyclobutane	C ₄ H ₈	56.11	182.	285.63	462.	5.000	257	218	0.284	0.169	82016
Cyclobutene	C ₄ H ₆	54.09		275.77	450.	5.150	266	203	0.279	0.150	82016
Cycloheptane	C ₇ H ₁₄	98.19	265.	391.95	604.3	3.813	279	352	0.267	0.239	82016
Cycloheptatriene	C ₇ H ₈	92.14	198.	388.99	608.	4.300	301	307	0.261	0.230	82016
Cyclohexa-1,3-diene	C ₆ H ₈	80.13		353.49	559.	4.450	289	277	0.265	0.200	82016
Cyclohexane	C ₆ H ₁₂	84.16	280.	353.88	553.5	4.075	274	307	0.272	0.210	82016
Cyclohexanethiol	C ₆ H ₁₂ S	116.22		431.98	664.	3.850				0.252	78034
Cyclohexanethione	C ₆ H ₁₀ S	114.21		465.00	710.	3.600				0.254	78034
Cyclohexene	C ₆ H ₁₀	82.15	170.	356.09	560.5	4.250	281	292	0.266	0.200	82016
Cyclo-octane	C ₈ H ₁₆	112.21	288.	424.31	647.2	3.557	283	396	0.262	0.252	82016
Cyclo-octatetraene	C ₈ H ₈	104.15	268.	414.28	642.	4.175	310	336	0.263	0.248	82016
Cyclopenta-1,3-diene	C ₅ H ₆	66.10		313.83	500.	4.700	284	233	0.263	0.195	82016
Cyclopentane	C ₅ H ₁₀	70.13	179.	322.40	511.7	4.510	267	263	0.278	0.195	82016
Cyclopentanethiol	C ₅ H ₁₀ S	102.19	155.39	405.33	629.	4.275				0.253	78034
Cyclopentanethione	C ₅ H ₈ S	100.18		447.09	685.	4.000				0.278	78034
Cyclopentene	C ₅ H ₈	68.12	138.	317.39	506.	4.600	275	248	0.271	0.186	82016
1-Cyclopentyl-1-thiaethane	C ₇ H ₁₄ S	130.25		429.41	652.	3.750				0.289	78034
Cyclopropane	C ₃ H ₆	42.08	146.	240.31	398.3	5.579	257	164	0.275	0.129	82016
m-Cymene	C ₁₀ H ₁₄	134.22	209.	448.33	648.15	2.894	283	474	0.255	0.396	86012
o-Cymene	C ₁₀ H ₁₄	134.22	201.	451.51	656.15	2.982	283	474	0.259	0.386	86012
p-Cymene	C ₁₀ H ₁₄	134.22	205.	450.30	651.15	2.854	283	474	0.250	0.391	86012
cis-Decahydronaphthalene	C ₁₀ H ₁₈	138.25	230.	468.97	702.3	3.200	285	485	0.266	0.285	82016
trans-Decahydronaphthalene	C ₁₀ H ₁₈	138.25	243.	460.46	687.1	3.100	285	485	0.263	0.289	82016
Decane	C ₁₀ H ₂₂	142.28	243.	447.30	617.65	2.103	241	591	0.242	0.489	85002
Decan-1-ol	C ₁₀ H ₂₂ O	158.28	280.	504.26	687.	2.400				0.644	74023
Dec-1-ene	C ₁₀ H ₂₀	140.27	207.	443.75	616.15	2.160	246	571	0.241	0.471	85016
Decylamine	C ₁₀ H ₂₃ N	157.30	290.	495.99	677.	2.152				0.567	76025
Decylbenzene	C ₁₆ H ₂₆	218.38	259.	571.11	756.15	1.715	269	813	0.222	0.646	86027
Decylcyclohexane	C ₁₆ H ₃₂	224.43	271.	570.80	749.	1.600	262	858	0.220	0.665	82016

Name	Formula	M g mol	T _m K	T _b K	T _c K	P _c MPa	d _c kg m ³	V _c cm ³ mol	Z _c	Omega	Item No.
Decylcyclopentane	C ₁₅ H ₃₀	210.40	251.	552.60	731.	1.700	259	814	0.228	0.644	82016
Decyl methyl ether	C ₁₁ H ₂₄ O	172.31	148.15	489.1	658.	2.050				0.629	76024
Diallylamine	C ₆ H ₁₁ N	97.16	173.	383.65	559.	3.162				0.397	76025
Diallyl disulphide	C ₆ H ₁₀ S ₂	146.27		463.28	675.	3.104				0.390	78034
Diallyl sulphide	C ₆ H ₁₀ S	114.21	190.	412.04	610.	3.350				0.350	78034
1,4-Diaminobutane	C ₄ H ₁₂ N ₂	88.15	300.	431.65	638.	4.100				0.437	80001
4,4'-Diaminodiphenylmethane	C ₁₃ H ₁₄ N ₂	198.27	365.	657.84	900.	3.800				0.837	78011
1,2-Diaminoethane	C ₂ H ₈ N ₂	60.10	284.	390.43	599.	5.500				0.373	80001
Di-(2-aminoethyl)amine	C ₄ H ₁₃ N ₃	103.17	234.	480.05	695.	4.250				0.551	80001
1,6-Diaminohexane	C ₆ H ₁₆ N ₂	116.21	315.	477.65	682.	3.250				0.509	80001
1,5-Diaminopentane	C ₅ H ₁₄ N ₂	102.18	308.	452.15	659.	3.650				0.455	80001
1,2-Diaminopropane	C ₃ H ₁₀ N ₂	74.13	236.	393.85	586.	3.400				0.337	80001
1,3-Diaminopropane	C ₃ H ₁₀ N ₂	74.13	261.	412.85	621.	4.700				0.412	80001
2,4-Diaminotoluene	C ₇ H ₁₀ N ₂	122.17	372.	565.15	818.	4.600				0.586	78011
Dibenzofuran	C ₁₂ H ₈ O	168.19		559.29	840.	3.500				0.315	81042
Dibenzylamine	C ₁₄ H ₁₅ N	197.28	247.	583.77	835.	4.050				0.595	78011
1,2-Dibromochlorotrifluoroethane	C ₂ Br ₂ ClF ₃	276.28	183.	365.84	560.65	3.520				0.234	76004
1,2-Dibromo-1,1-dichloroethane	C ₂ H ₂ Br ₂ Cl ₂	256.75	247.	462.75	690.	4.951				0.470	76006
Dibromodifluoromethane	CBr ₂ F ₂	209.82	132.	295.92	471.32	4.402				0.172	75010
1,1-Dibromoethane	C ₂ H ₄ Br ₂	187.86	210.	381.15	609.	6.569				0.287	76006
1,2-Dibromoethane	C ₂ H ₄ Br ₂	187.86	282.	404.54	646.	5.336				0.225	76006
cis-1,2-Dibromoethylene	C ₂ H ₂ Br ₂	185.85	220.	391.70	633.	5.580				0.198	76006
trans-1,2-Dibromoethylene	C ₂ H ₂ Br ₂	185.85	267.	381.61	613.	4.980				0.184	76006
Dibromomethane	CH ₂ Br ₂	173.83	221.	369.15	607.	6.500				0.166	75010
1,2-Dibromotetrafluoroethane	C ₂ Br ₂ F ₄	259.82		320.40	487.80	3.393				0.245	76004
Dibutylamine	C ₈ H ₁₉ N	129.24	211.	432.75	607.	2.481				0.482	76025
Dibutylaminoethanol	C ₁₀ H ₂₃ NO	173.30	198.	502.87	686.	4.000				0.899	79030
Diisobutylamine	C ₈ H ₁₉ N	129.24	203.	412.84	584.	2.553				0.451	76025
4,6-Di-tert-butyl-o-cresol(-OH at 1)	C ₁₅ H ₂₄ O	220.35	324.	543.90	736.	2.200				0.624	81025
4,6-Di-tert-butyl-m-cresol(-OH at 1)	C ₁₅ H ₂₄ O	220.35	335.	563.38	747.	1.950				0.694	81025
2,6-Di-tert-butyl-p-cresol(-OH at 1)	C ₁₅ H ₂₄ O	220.35	344.	542.06	735.	2.200				0.611	81025
Dibutyl ether	C ₈ H ₁₈ O	130.23	178.	413.43	580.	2.300				0.446	76024
Diisobutyl ether	C ₈ H ₁₈ O	130.23	173.	395.6	561.	2.450				0.420	76024
Di-sec-butyl ether	C ₈ H ₁₈ O	130.23	173.15	394.2	562.	2.550				0.410	76024
Di-tert-butyl ether	C ₈ H ₁₈ O	130.23	195.	380.36	550.	2.460				0.329	76024
4,6-Di-tert-butyl-2-ethylphenol	C ₁₆ H ₂₆ O	234.38		551.14	740.	2.100				0.651	81025
4,6-Di-tert-butyl-3-ethylphenol	C ₁₆ H ₂₆ O	234.38		570.38	751.	1.900				0.730	81025
2,6-Di-tert-butyl-4-ethylphenol	C ₁₆ H ₂₆ O	234.38	317.	549.15	739.	2.100				0.636	81025
2,4-Di-tert-butylphenol	C ₁₄ H ₂₂ O	206.33	330.	540.48	734.	2.300				0.624	81025
2,6-Di-tert-butylphenol	C ₁₄ H ₂₂ O	206.33	312.	526.11	726.	2.700				0.606	81025
Dibutyl sulphide	C ₈ H ₁₈ S	146.29	198.13	462.10	650.	2.500				0.470	78034
Di-sec-butyl sulphide	C ₈ H ₁₈ S	146.29		438.15	625.	2.600				0.416	78034
Dichloroacetic acid	C ₂ H ₂ Cl ₂ O ₂	128.94	283.	466.85	683.	5.350				0.589	80029
1,2-Dichloro-1,1-difluoroethane	C ₂ H ₂ Cl ₂ F ₂	134.94	197.	319.78	496.	4.452				0.268	76004
1,2-Dichlorodifluoroethylene	C ₂ Cl ₂ F ₂	132.92	161.	293.81	460.	4.581				0.245	76004
Dichlorodifluoromethane	CCl ₂ F ₂	120.91	115.	243.33	384.95	4.125				0.179	75010
1,1-Dichloroethane	C ₂ H ₄ Cl ₂	98.96	176.	330.52	525.	4.890				0.216	76004
1,2-Dichloroethane	C ₂ H ₄ Cl ₂	98.96	238.	356.63	566.	5.349				0.247	76004