2.15. TRANSPORT PROPERTIES

Introduction The tables and nomographs in this subsection are organized roughly with mass transport properties first (surface tension, viscosity, diffusion coefficient) followed by thermal transport properties.

Unit Conversions For this subsection, the following unit conversions are applicable:

Diffusivity: to convert square centimeters per second to square feet per hour, multiply by 3.8750; to convert square meters per second to square feet per hour, multiply by 38,750.

Pressure: to convert bars to pounds-force per square inch, multiply by 14.504.

Temperature: °F = 9/5°C + 32; °R = 9/5 K.

Thermal conductivity: to convert watts per meter-kelvin to British thermal unit–feet per hour–square foot–degree Fahrenheit, multiply by 0.57779; and to convert British thermal unit–feet per hour–square foot–degree Fahrenheit to watts per meter-kelvin, multiply by 1.7307.

Viscosity: to convert pascal-seconds to centipoise, multiply by 1000.

Additional References An extensive coverage of the general pressure and temperature variation of thermal conductivity is given in the monograph by Vargaftik, N. B., L. P. Filippov, A. A. Tarzimanov and E. E. Totskiy, *Thermal Conductivity of Liquids and Gases* (in Russian), Standards Press, Moscow, 1978, now published in English translation by CRC Press, Miami, Fla.

For a similar work on viscosity, see Stephan and Lucas, *Viscosity of Dense Fluids,* Plenum, New York and London, 1979. Tables and polynomial fits for refrigerants in both the gaseous and the liquid states are contained in *ASHRAE Handbook—Fundamentals,* SI ed., ASHRAE, Atlanta, 2005. Other sources for viscosity include Fischer & Porter Co. catalog 10-A-94, "Fluid Densities and Viscosities," 1953 (200 industrial fluids in 48 pp.) and D. van Velzen, R. L. Cardozo et al., EURATOM Ispra, Italy rept. 4735 e, 1972 (160 pp.). Liquid viscosity, 314 cpds, is summarized in *I&EC Fundtls.,* 11 (1972): 20–26. Five hundred forty-nine binary and ternary systems are discussed in Skubla, P., *Coll. Czech. Chem. Commun.,* **46** (1981): 303–339.

See also Duhne, C. R., *Chem. Eng.* (NY), **86:** 15 (July 16, 1979): 83–91 (equations and 326 liquids); and Rao, K. V. K., *Chem. Eng.* (NY), **90,** 11 (May 30, 1983): 90–91 (nomograph, 87 liquids). For rheology, non-Newtonian behavior, see, for instance, Barnes, H., *The Chem. Engr.* (UK), (June 24, 1993): 17–23; Hyman, W. A., *I&EC Fundtls.,* **16** (1976): 215–218; and Ferguson, J., and Z. Kemblowski, *Applied Fluid Rheology,* Elsevier, 1991 (325 pp.). Other sources for thermal conductivity include Ho, C. Y., R. W. Powell et al., *J. Phys. Chem. Ref. Data,* **1** (1972) and **3,** suppl. 1 (1974); Childs, Ericks et al., *N.B.S. Monogr.* 131, 1973; Jamieson, D. T., J. B. Irving et al., *Liquid Thermal Conductivity,* H.M.S.O., Edinburgh, Scotland, 1975 (220 pp.).

Other references include B. Poling, J. Prausnitz, and J. O'Connell, *The Properties of Gases and Liquids*, 5th ed., McGraw-Hill, New York, 2000; N.B. Vargaftik, Y.K. Vinogradov, and V.S. Yargin, *Handbook of Physical Properties of Liquids and Gases*, Begell House, New York, 1996; Carl Yaws, *Chemical Properties Handbook: Physical, Thermodynamics, Environmental Transport, Safety & Health Related Properties for Organic & Inorganic Chemicals*, McGraw-Hill, New York, 1998; and M.R. Riazi, *Characterization and Properties of Petroleum Fractions*, ASTM, West Conshohocken, Pa., 2005. Free web resources include the NIST Webbook at http://webbook.nist.gov and the KDB (Korea thermophysical properties) database at http://www.cheric.org/research/kdb/.

2.15.1. MASS TRANSPORT PROPERTIES

Table 2-137 Surface Tension r (dyn/cm) of Various Liquids

Compound	*T*, K	σ	Compound	*T*, K	σ	Compound	*T*, K	σ
Acetic acid	293	27.59	*p*-Cresol	313	34.88	Isobutyric acid	293	25.04
	333	23.62		373	29.32		313	23.2
Acetone	298	24.02	Cyclohexane	293	25.24		333	21.36
	308	22.34		313	22.87		363	18.6
	318	21.22		333	20.49	Methyl formate	293	24.62
Aniline	293	42.67	Cyclopentane	293	22.61		323	20.05
	313	40.5		313	19.68		373	12.9
	333	38.33	Diethyl ether	288	17.56		423	6.3
	353	36.15		303	16.2		473	0.87
Benzene	293	28.88	2,3-Dimethylbutane	293	17.38	Methyl alcohol	293	22.56
	313	26.25		313	15.38		313	20.96
	333	23.67	Ethyl acetate	293	23.97		333	19.41
	353	21.2		313	21.65	Phenol	313	39.27
Benzonitrile	293	39.37		333	19.32		333	37.13
	323	35.89		353	17		373	32.96
	363	31.26		373	14.68	*n*-Propyl alcohol	293	23.71
Bromobenzene	293	35.82	Ethyl benzoate	293	35.04		313	22.15
	323	32.34		313	32.92		333	20.6
	373	26.54		333	30.81		363	18.27
n-Butane	203	23.31	Ethyl bromide	283	25.36	*n*-Propyl benzene	293	29.98
	233	19.69		303	23.04		313	26.83
	293	12.46	Ethyl mercaptan	288	23.87		333	24.68
Carbon disulfide	293	32.32		303	22.68		353	22.53
	313	29.35	Formamide	298	57.02		373	20.38
Carbon tetrachloride	288	27.65		338	53.66	Pyridine	293	37.21
	308	25.21		373	50.71		313	34.6
	328	22.76	*n*-Heptane	293	20.14		333	31.98

Compound	T, K	σ	Compound	T, K	σ	Compound	T, K	σ
	348	20.31		313	18.18			
	368	17.86		333	16.22			
Chlorobenzene	293	33.59		353	14.26			
	323	30.01						
	373	24.06						

Methyl formate values from D. B. Macleod, *Trans. Faradaay Soc.* **19**:38, 1923. All others from J. J. Jasper, *J. Phys. Chem. Ref. Data* **1**:841, 1972.

Table 2-138 Vapor Viscosity of Inorganic and Organic Substances (Pa·s)

Cmpd. no.	Name	Formula	CAS	Mol. wt.	C_1	C_2	C_3	C_4	T_{min}, K	Viscosity at T_{min}	T_{max}, K	Viscosity at T_{max}
1	Acetaldehyde	C_2H_4O	75-07-0	44.05256	1.9703E-05	0.17646	1564.6		149.78	4.166E-06	1000	2.600E-05
2	Acetamide	C_2H_5NO	60-35-5	59.0672	1.4230E-07	0.7574	272.14		353.33	6.842E-06	1000	2.093E-05
3	Acetic acid	$C_2H_4O_2$	64-19-7	60.052	1.5640E-08	1.078			289.81	7.053E-06	1000	2.681E-05
4	Acetic anhydride	$C_4H_6O_3$	108-24-7	102.08864	1.0939E-05	0.23466	1209.5		200.15	5.386E-06	1000	2.504E-05
5	Acetone	C_3H_6O	67-64-1	58.07914	3.1005E-08	0.9762	23.139		178.45	4.329E-06	1000	2.571E-05
6	Acetonitrile	C_2H_3N	75-05-8	41.0519	4.7754E-07	0.60273	327.16		229.32	5.208E-06	1000	2.314E-05
7	Acetylene	C_2H_2	74-86-2	26.03728	1.2025E-06	0.4952	291.4		192.40	6.468E-06	600	1.923E-05

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , K	Viscosity at *T*	*T* , K	Viscosity at *T*
8	Acrolein	C_3H_4O	107-02-8	56.06326	6.5230E-07	0.579	410.8		185.45	4.174E-06	1000	2.523E-05
9	Acrylic acid	$C_3H_4O_2$	79-10-7	72.06266	1.7154E-07	0.7418	138.4		286.15	7.679E-06	1000	2.532E-05
10	Acrylonitrile	C_3H_3N	107-13-1	53.0626	2.4910E-08	0.98882			189.63	4.455E-06	1000	2.306E-05
11	Air	Mixture	132259-10-0	28.96	1.4250E-06	0.5039	108.3		80.00	5.508E-06	2000	6.227E-05
12	Ammonia	H_3N	7664-41-7	17.03052	4.1855E-08	0.9806	30.8		195.41	6.378E-06	1000	3.551E-05
13	Anisole	C_7H_8O	100-66-3	108.13782	1.7531E-07	0.72	176.17		235.65	5.122E-06	1000	2.154E-05
14	Argon	Ar	7440-37-1	39.948	9.2121E-07	0.60529	83.24		83.78	6.742E-06	3273.1	1.205E-04
15	Benzamide	C_7H_7NO	55-21-0	121.13658	2.5082E-08	0.96663			403.00	8.274E-06	1000	1.992E-05
16	Benzene	C_6H_6	71-43-2	78.11184	3.1340E-08	0.9676	7.9		278.68	7.077E-06	1000	2.486E-05
17	Benzenethiol	C_6H_6S	108-98-5	110.17684	1.1184E-07	0.8002	152.43		442.29	1.089E-05	1000	2.441E-05
18	Benzoic acid	$C_7H_6O_2$	65-85-0	122.12134	7.4266E-08	0.8289	91.197		395.45	8.578E-06	1000	2.087E-05
19	Benzonitrile	C_7H_5N	100-47-0	103.1213	3.4647E-05	0.12396	3260.2		260.28	5.104E-06	1000	1.915E-05
20	Benzophenone	$C_{13}H_{10}O$	119-61-9	182.2179	3.7790E-07	0.6005	409		321.35	5.324E-06	1000	1.698E-05
21	Benzyl alcohol	C_7H_8O	100-51-6	108.13782	6.9022E-08	0.840144	74.746		257.85	5.680E-06	1000	2.129E-05
22	Benzyl ethyl ether	$C_9H_{12}O$	539-30-0	136.19098	1.5600E-07	0.7181	180		458.15	9.122E-06	1000	1.886E-05
23	Benzyl mercaptan	C_7H_8S	100-53-8	124.20342	4.0138E-08	0.907335	34.714		243.95	5.151E-06	1000	2.045E-05
24	Biphenyl	$C_{12}H_{10}$	92-52-4	154.2078	1.3874E-06	0.4434	678.22		342.20	6.186E-06	1000	1.768E-05

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , K	Viscosity at *T*	*T* , K	Viscosity at *T*
25	Bromine	Br_2	7726-95-6	159.808	7.3534E-08	0.93798			265.85	1.383E-05	600	2.967E-05
26	Bromobenzene	C_6H_5Br	108-86-1	157.0079	2.2320E-07	0.7146	184.9		429.24	1.187E-05	1000	2.623E-05
27	Bromoethane	C_2H_5Br	74-96-4	108.965	6.2597E-08	0.9115			154.25	6.182E-06	1000	3.397E-05
28	Bromomethane	CH_3Br	74-83-9	94.93852	6.5411E-08	0.92914			179.44	8.126E-06	1000	4.009E-05
29	1,2-Butadiene	C_4H_6	590-19-2	54.09044	6.0259E-07	0.5309	199.64		136.95	3.340E-06	1000	1.966E-05
30	1,3-Butadiene	C_4H_6	106-99-0	54.09044	2.6960E-07	0.6715	134.7		164.25	4.553E-06	1000	2.457E-05
31	Butane	C_4H_{10}	106-97-8	58.1222	3.4387E-08	0.94604			134.86	3.559E-06	1000	2.369E-05
32	1,2-Butanediol	$C_4H_{10}O_2$	584-03-2	90.121	7.5626E-08	0.83521	71.798		220.00	5.157E-06	1000	2.260E-05
33	1,3-Butanediol	$C_4H_{10}O_2$	107-88-0	90.121	7.0728E-08	0.84383	64.391		196.15	4.580E-06	1000	2.259E-05
34	1-Butanol	$C_4H_{10}O$	71-36-3	74.1216	1.4031E-06	0.4611	537		183.85	3.961E-06	1000	2.207E-05
35	2-Butanol	$C_4H_{10}O$	78-92-2	74.1216	1.2114E-07	0.76972	92.661		158.45	3.772E-06	1000	2.259E-05
36	1-Butene	C_4H_8	106-98-9	56.10632	6.9744E-07	0.5462	305.25		87.80	1.795E-06	1000	2.325E-05
37	*cis*-2-Butene	C_4H_8	590-18-1	56.10632	4.2898E-08	0.91349			134.26	3.770E-06	1000	2.360E-05
38	*trans*-2-Butene	C_4H_8	624-64-6	56.10632	1.0500E-06	0.4867	358.7		167.62	4.044E-06	1000	2.229E-05
39	Butyl acetate	$C_6H_{12}O_2$	123-86-4	116.15828	1.0060E-07	0.77881	95.108		199.65	4.216E-06	1000	1.993E-05
40	Butylbenzene	$C_{10}H_{14}$	104-51-8	134.21816	3.4205E-07	0.59764	234.21		185.30	3.424E-06	1000	1.720E-05

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , K	Viscosity at *T*	*T* , K	Viscosity at *T*
41	Butyl mercaptan	$C_4H_{10}S$	109-79-5	90.1872	5.4539E-08	0.88896	43.687		157.46	3.833E-06	1000	2.427E-05
42	*sec*-Butyl mercaptan	$C_4H_{10}S$	513-53-1	90.1872	3.1378E-08	0.96513			133.02	3.520E-06	1000	2.466E-05
43	1-Butyne	C_4H_6	107-00-6	54.09044	2.7856E-06	0.377	663.14		147.43	3.329E-06	800	1.893E-05
44	Butyraldehyde	C_4H_8O	123-72-8	72.10572	4.2200E-05	0.10118	2840		176.80	4.175E-06	1000	2.211E-05
45	Butyric acid	$C_4H_8O_2$	107-92-6	88.1051	1.2566E-08	1.0939			267.95	5.692E-06	1000	2.404E-05
46	Butyronitrile	C_4H_7N	109-74-0	69.1051	1.8178E-05	0.17513	2110.6		161.30	3.144E-06	1000	1.959E-05
47	Carbon dioxide	CO_2	124-38-9	44.0095	2.1480E-06	0.46	290		194.67	9.749E-06	1500	5.203E-05
48	Carbon disulfide	CS_2	75-15-0	76.1407	5.8204E-08	0.9262	44.581		161.11	5.048E-06	800	2.693E-05
49	Carbon monoxide	CO	630-08-0	28.0101	1.1127E-06	0.5338	94.7		68.15	4.434E-06	1250	4.654E-05
50	Carbon tetrachloride	CCl_4	56-23-5	153.8227	3.1370E-06	0.3742	491.5		250.33	8.361E-06	1000	2.789E-05
51	Carbon tetrafluoride	CF_4	75-73-0	88.0043	2.1709E-06	0.45853	208		89.56	5.132E-06	1000	4.267E-05
52	Chlorine	Cl_2	7782-50-5	70.906	2.6000E-07	0.7423	98.3		200.00	8.900E-06	1000	3.992E-05
53	Chlorobenzene	C_6H_5Cl	108-90-7	112.5569	1.0650E-07	0.7942	94.7		227.95	5.611E-06	1000	2.348E-05
54	Chloroethane	C_2H_5Cl	75-00-3	64.5141	3.5554E-08	0.98455			136.75	4.506E-06	1000	3.195E-05
55	Chloroform	$CHCl_3$	67-66-3	119.37764	1.6960E-07	0.7693	96.6		209.63	7.091E-06	1000	3.143E-05
56	Chloromethane	CH_3Cl	74-87-3	50.4875	6.2860E-08	0.907			175.43	6.820E-06	1000	3.307E-05

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , K	Viscosity at *T*	*T* , K	Viscosity at *T*
57	1-Chloropropane	C_3H_7Cl	540-54-5	78.54068	4.7100E-08	0.911			150.35	4.533E-06	1000	2.547E-05
58	2-Chloropropane	C_3H_7Cl	75-29-6	78.54068	3.8802E-07	0.6367	205.08		155.97	4.175E-06	1000	2.618E-05
59	*m*-Cresol	C_7H_8O	108-39-4	108.13782	1.4427E-07	0.7438	166.15		285.39	6.113E-06	1000	2.108E-05
60	*o*-Cresol	C_7H_8O	95-48-7	108.13782	8.7371E-08	0.80775	98.538		304.19	6.687E-06	1000	2.108E-05
61	*p*-Cresol	C_7H_8O	106-44-5	108.13782	1.4305E-07	0.7451	159.8		307.93	6.731E-06	1000	2.120E-05
62	Cumene	C_9H_{12}	98-82-8	120.19158	3.3699E-07	0.60751	221.17		177.14	3.480E-06	1000	1.834E-05
63	Cyanogen	C_2N_2	460-19-5	52.0348	3.7385E-08	0.98433			245.25	8.411E-06	1000	3.355E-05
64	Cyclobutane	C_4H_8	287-23-0	56.10632	1.0881E-06	0.48359	330.86		182.48	4.797E-06	1000	2.308E-05
65	Cyclohexane	C_6H_{12}	110-82-7	84.15948	6.7700E-08	0.8367	36.7		279.69	6.671E-06	900	1.928E-05
66	Cyclohexanol	$C_6H_{12}O$	108-93-0	100.15888	7.9581E-08	0.8376	104.97		296.60	6.917E-06	1000	2.346E-05
67	Cyclohexanone	$C_6H_{10}O$	108-94-1	98.143	5.2312E-08	0.89422	58.008		242.00	5.714E-06	1000	2.381E-05
68	Cyclohexene	C_6H_{10}	110-83-8	82.1436	1.3326E-06	0.4537	445		169.67	3.778E-06	1000	2.118E-05
69	Cyclopentane	C_5H_{10}	287-92-3	70.1329	2.3619E-07	0.67465	139		179.28	4.409E-06	1000	2.191E-05
70	Cyclopentene	C_5H_8	142-29-0	68.11702	3.0260E-07	0.64991	167.14		138.13	3.369E-06	1000	2.309E-05
71	Cyclopropane	C_3H_6	75-19-4	42.07974	1.7578E-06	0.4265	370.34		145.59	4.150E-06	1000	2.441E-05
72	Cyclohexyl mercaptan	$C_6H_{12}S$	1569-69-3	116.22448	3.9150E-08	0.91427	22.264		189.64	4.238E-06	1000	2.118E-05

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , K	Viscosity at *T*	*T* , K	Viscosity at *T*
73	Decanal	$C_{10}H_{20}O$	112-31-2	156.2652	3.5018E-05	0.11725	3394.6		285.00	5.262E-06	1000	1.791E-05
74	Decane	$C_{10}H_{22}$	124-18-5	142.28168	2.6400E-08	0.9487	71		243.51	3.755E-06	1000	1.729E-05
75	Decanoic acid	$C_{10}H_{20}O_2$	334-48-5	172.265	7.1748E-08	0.7982	109.38		304.55	5.070E-06	1000	1.604E-05
76	1-Decanol	$C_{10}H_{22}O$	112-30-1	158.28108	5.5065E-08	0.8341	79.56		280.05	4.715E-06	1000	1.622E-05
77	1-Decene	$C_{10}H_{20}$	872-05-9	140.2658	6.1192E-08	0.82546	77.434		206.89	3.632E-06	1000	1.701E-05
78	Decylmercaptan	$C_{10}H_{22}S$	143-10-2	174.34668	3.2720E-08	0.9302	39.13		247.56	4.761E-06	1000	1.944E-05
79	1-Decyne	$C_{10}H_{18}$	764-93-2	138.24992	5.6914E-07	0.50744	273.3		229.15	4.091E-06	1000	1.488E-05
80	Deuterium	D_2	7782-39-0	4.0316	2.4999E-07	0.6878	0.5962		60.00	4.137E-06	480	1.744E-05
81	1,1-Dibromoethane	$C_2H_4Br_2$	557-91-5	187.86116	1.4125E-07	0.8097	83.243		210.15	7.685E-06	1000	3.502E-05
82	1,2-Dibromoethane	$C_2H_4Br_2$	106-93-4	187.86116	1.1379E-07	0.8502	93.816		282.85	1.038E-05	1000	3.696E-05
83	Dibromomethane	CH_2Br_2	74-95-3	173.83458	2.9444E-07	0.728	154.74		370.10	1.538E-05	1000	3.895E-05
84	Dibutyl ether	$C_8H_{18}O$	142-96-1	130.22792	7.7147E-08	0.79906	80.765		175.30	3.278E-06	1000	1.781E-05
85	*m*-Dichlorobenzene	$C_6H_4Cl_2$	541-73-1	147.00196	2.3340E-07	0.714	260		248.39	5.850E-06	1000	2.569E-05
86	*o*-Dichlorobenzene	$C_6H_4Cl_2$	95-50-1	147.00196	1.6030E-07	0.763	205		256.15	6.127E-06	1000	2.588E-05

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , K	Viscosity at *T*	*T* , K	Viscosity at *T*
87	*p*-Dichlorobenzene	$C_6H_4Cl_2$	106-46-7	147.00196	1.5913E-07	0.7639	193.14		326.14	8.313E-06	1000	2.611E-05
88	1,1-Dichloroethane	$C_2H_4Cl_2$	75-34-3	98.95916	2.0135E-07	0.73421	111.98		176.19	5.487E-06	1000	2.887E-05
89	1,2-Dichloroethane	$C_2H_4Cl_2$	107-06-2	98.95916	1.4321E-07	0.7785	98.159		237.49	7.164E-06	1000	2.824E-05
90	Dichloromethane	CH_2Cl_2	75-09-2	84.93258	7.6787E-07	0.5741	276.16		178.01	5.895E-06	1000	3.175E-05
91	1,1-Dichloropropane	$C_3H_6Cl_2$	78-99-9	112.98574	1.4906E-07	0.7617	105.9		200.00	5.515E-06	1000	2.599E-05
92	1,2-Dichloropropane	$C_3H_6Cl_2$	78-87-5	112.98574	1.1989E-07	0.79108	84.37		172.71	4.742E-06	1000	2.611E-05
93	Diethanolamine	$C_4H_{11}NO_2$	111-42-2	105.13564	3.3628E-08	0.9426	39.587		301.15	6.450E-06	1000	2.176E-05
94	Diethylamine	$C_4H_{11}N$	109-89-7	73.13684	4.3184E-07	0.6035	247		223.35	5.364E-06	1000	2.239E-05
95	Diethyl ether	$C_4H_{10}O$	60-29-7	74.1216	1.9480E-06	0.41	495.8		156.85	3.720E-06	1000	2.212E-05
96	Diethyl sulfide	$C_4H_{10}S$	352-93-2	90.1872	6.5492E-08	0.86232	59.455		169.20	4.046E-06	1000	2.388E-05
97	1,1-Difluoroethane	$C_2H_4F_2$	75-37-6	66.04997	2.7228E-06	0.39531	445.07		154.56	5.148E-06	1000	2.891E-05
98	1,2-Difluoroethane	$C_2H_4F_2$	624-72-6	66.04997	4.3934E-07	0.64867	169.64		215.00	8.001E-06	1000	3.317E-05
99	Difluoromethane	CH_2F_2	75-10-5	52.02339	7.7484E-07	0.57978	198.7		136.95	5.478E-06	1000	3.547E-05

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , K	Viscosity at *T*	*T* , K	Viscosity at *T*
100	Diisopropyl amine	$C_6H_{15}N$	108-18-9	101.19	4.1380 E-07	0.5999	269.5		357.05	8.016E-06	1000	2.055E-05
101	Diisopropyl ether	$C_6H_{14}O$	108-20-3	102.17476	1.6910 E-07	0.7114	124		187.65	4.218E-06	1000	2.049E-05
102	Diisopropyl ketone	$C_7H_{14}O$	565-80-0	114.18546	9.2797 E-08	0.7819	93.399		204.81	4.089E-06	1000	1.881E-05
103	1,1-Dimethoxyethane	$C_4H_{10}O_2$	534-15-6	90.121	4.4172 E-08	0.91098			159.95	4.497E-06	1000	2.388E-05
104	1,2-Dimethoxypropane	$C_5H_{12}O_2$	7778-85-0	104.14758	3.9833 E-08	0.91566			226.10	5.701E-06	1000	2.224E-05
105	Dimethyl acetylene	C_4H_6	503-17-3	54.09044	1.9377 E-06	0.4093	492.69		240.91	6.006E-06	1000	2.194E-05
106	Dimethyl amine	C_2H_7N	124-40-3	45.08368	2.7570 E-07	0.6841	133.2		180.96	5.563E-06	1000	2.744E-05
107	2,3-Dimethylbutane	C_6H_{14}	79-29-8	86.17536	6.8567 E-07	0.52542	278.82		145.19	3.211E-06	1000	2.021E-05
108	1,1-Dimethylcyclohexane	C_8H_{16}	590-66-9	112.21264	7.8220 E-07	0.4994	371.6		392.70	7.936E-06	1000	1.796E-05
109	*cis*-1,2-Dimethylcyclohexane	C_8H_{16}	2207-01-4	112.21264	8.4576 E-07	0.487	398		402.94	7.900E-06	1000	1.749E-05
110	*trans*-1,2-Dimethylcyclohexane	C_8H_{16}	6876-23-9	112.21264	9.9104 E-07	0.4723	436.89		396.58	7.957E-06	1000	1.801E-05
111	Dimethyl disulfide	$C_2H_6S_2$	624-92-0	94.19904	3.2282 E-08	0.97742			188.44	5.405E-06	1000	2.762E-05

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , K	Viscosity at *T*	*T* , K	Viscosity at *T*
112	Dimethyl ether	C_2H_6O	115-10-6	46.06844	2.6800E-06	0.3975	534		131.65	3.688E-06	1000	2.722E-05
113	*N*,*N*-Dimethyl formamide	C_3H_7NO	68-12-2	73.09378	3.5538E-06	0.3766	1176.1		212.72	4.097E-06	1000	2.202E-05
114	2,3-Dimethylpentane	C_7H_{16}	565-59-3	100.20194	5.0372E-07	0.54462	227.44		160.00	3.300E-06	1000	1.766E-05
115	Dimethyl phthalate	$C_{10}H_{10}O_4$	131-11-3	194.184	5.2195E-08	0.85584	69.036		274.18	5.089E-06	1000	1.804E-05
116	Dimethylsilane	C_2H_8Si	1111-74-6	60.17042	4.7238E-08	0.90849			122.93	3.739E-06	1000	2.511E-05
117	Dimethyl sulfide	C_2H_6S	75-18-3	62.134	5.2854E-07	0.6112	302.85		174.88	4.544E-06	1000	2.766E-05
118	Dimethyl sulfoxide	C_2H_6OS	67-68-5	78.13344	8.6101E-08	0.8345	167.86		291.67	6.231E-06	1000	2.350E-05
119	Dimethyl terephthalate	$C_{10}H_{10}O_4$	120-61-6	194.184	3.9554E-08	0.892597			413.79	8.569E-06	1000	1.884E-05
120	1,4-Dioxane	$C_4H_8O_2$	123-91-1	88.10512	2.7334E-07	0.7393	129.93		284.95	1.226E-05	1000	3.995E-05
121	Diphenyl ether	$C_{12}H_{10}O$	101-84-8	170.2072	2.8451E-08	0.93622			300.03	5.933E-06	1000	1.831E-05
122	Dipropyl amine	$C_6H_{15}N$	142-84-7	101.19	1.2900E-07	0.744	117.03		210.15	4.429E-06	1000	1.970E-05
123	Dodecane	$C_{12}H_{26}$	112-40-3	170.33484	6.3440E-08	0.8287	219.5		263.57	3.511E-06	1000	1.593E-05
124	Eicosane	$C_{20}H_{42}$	112-95-8	282.54748	2.9236E-07	0.62458	702.84		309.58	3.214E-06	1000	1.284E-05
125	Ethane	C_2H_6	74-84-0	30.069	2.5906E-07	0.67988	98.902		90.35	2.643E-06	1000	2.583E-05

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , K	Viscosity at *T*	*T* , K	Viscosity at *T*
126	Ethanol	C_2H_6O	64-17-5	46.06844	1.0613E-07	0.8066	52.7		200.00	6.029E-06	1000	2.651E-05
127	Ethyl acetate	$C_4H_8O_2$	141-78-6	88.10512	3.2140E-06	0.3572	667		189.60	4.632E-06	1000	2.274E-05
128	Ethylamine	C_2H_7N	75-04-7	45.08368	4.9340E-07	0.5924	239.17		192.15	4.953E-06	1000	2.384E-05
129	Ethylbenzene	C_8H_{10}	100-41-4	106.165	4.2231E-07	0.58154	239.21		178.20	3.673E-06	1000	1.893E-05
130	Ethyl benzoate	$C_9H_{10}O_2$	93-89-0	150.1745	6.3441E-08	0.8369	73.63		238.45	4.733E-06	1000	1.915E-05
131	2-Ethylbutanoic acid	$C_6H_{12}O_2$	88-09-5	116.15828	9.2371E-08	0.7908	102.32		258.15	5.344E-06	1000	1.975E-05
132	Ethyl butyrate	$C_6H_{12}O_2$	105-54-4	116.15828	1.6175E-07	0.7163	142.27	3590	175.15	3.392E-06	1000	1.989E-05
133	Ethylcyclohexane	C_8H_{16}	1678-91-7	112.21264	4.1070E-07	0.57143	230.06		161.84	3.103E-06	1000	1.729E-05
134	Ethylcyclopentane	C_7H_{14}	1640-89-7	98.18606	2.1696E-06	0.3812	577.77		134.71	2.659E-06	1000	1.914E-05
135	Ethylene	C_2H_4	74-85-1	28.05316	2.0789E-06	0.4163	352.7		169.41	5.714E-06	1000	2.726E-05
136	Ethylenediamine	$C_2H_8N_2$	107-15-3	60.09832	1.3744E-07	0.7557	122.8		284.29	6.863E-06	1000	2.264E-05
137	Ethylene glycol	$C_2H_6O_2$	107-21-1	62.06784	8.6706E-08	0.83923	75.512		260.15	7.150E-06	1000	2.655E-05
138	Ethyleneimine	C_2H_5N	151-56-4	43.0678	2.8132E-07	0.6792	238.46		329.00	8.359E-06	1000	2.477E-05
139	Ethylene oxide	C_2H_4O	75-21-8	44.05256	4.3403E-08	0.94806			160.65	5.356E-06	1000	3.032E-05
140	Ethyl formate	$C_3H_6O_2$	109-94-4	74.07854	6.7610E-07	0.5804	354.9		193.55	5.069E-06	1000	2.750E-05

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , K	Viscosity at *T*	*T* , K	Viscosity at *T*
141	2-Ethylhexanoic acid	$C_8H_{16}O_2$	149-57-5	144.211	2.5704E-08	0.94738			155.15	3.058E-06	1000	1.787E-05
142	Ethylhexyl ether	$C_8H_{18}O$	5756-43-4	130.22792	7.9129E-08	0.79565	83.193		180.00	3.371E-06	1000	1.781E-05
143	Ethylisopropyl ether	$C_5H_{12}O$	625-54-7	88.14818	1.3974E-07	0.74266	98.58		140.00	3.219E-06	1000	2.150E-05
144	Ethylisopropyl ketone	$C_6H_{12}O$	565-69-5	100.15888	1.0498E-07	0.76988	100.41		204.15	4.224E-06	1000	1.946E-05
145	Ethyl mercaptan	C_2H_6S	75-08-1	62.13404	8.5992E-08	0.8427	58.148		125.26	3.441E-06	1000	2.742E-05
146	Ethyl propionate	$C_5H_{10}O_2$	105-37-3	102.1317	5.5300E-07	0.6061	273.66		199.25	5.768E-06	1000	2.857E-05
147	Ethylpropyl ether	$C_5H_{12}O$	628-32-0	88.14818	5.1539E-07	0.5726	288.76		145.65	2.994E-06	1000	2.088E-05
148	Ethyltrichlorosilane	$C_2H_5Cl_3Si$	115-21-9	163.506	2.6635E-05	0.15779	2173.5		167.55	4.277E-06	1000	2.496E-05
149	Fluorine	F_2	7782-41-4	37.9968064	6.3600E-07	0.6638	61.6		53.48	4.148E-06	1000	5.873E-05
150	Fluorobenzene	C_6H_5F	462-06-6	96.1023032	2.1174E-07	0.7087	157.42		357.88	9.491E-06	1000	2.446E-05
151	Fluoroethane	C_2H_5F	353-36-6	48.0595	4.0868E-06	0.35526	651.07		129.95	3.832E-06	1000	2.880E-05
152	Fluoromethane	CH_3F	593-53-3	34.03292	3.9346E-08	1.0027			131.35	5.237E-06	1000	4.009E-05
153	Formaldehyde	CH_2O	50-00-0	30.02598	1.5948E-05	0.21516	1151.1		155.15	5.608E-06	1000	3.277E-05
154	Formamide	CH_3NO	75-12-7	45.04062	6.8290E-08	0.8774	54.864		275.60	7.882E-06	1000	2.776E-05
155	Formic acid	CH_2O_2	64-18-6	46.0257	5.0702E-08	0.9114			281.45	8.658E-06	1000	2.749E-05

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , K	Viscosity at *T*	*T* , K	Viscosity at *T*
156	Furan	C_4H_4O	110-00-9	68.07396	6.4320E-07	0.5854	325.3		187.55	5.037E-06	1000	2.768E-05
157	Helium-4	He	7440-59-7	4.0026	3.2530E-07	0.7162	−9.6	107	20.00	3.530E-06	2000	7.561E-05
158	Heptadecane	$C_{17}H_{36}$	629-78-7	240.46774	3.1338E-07	0.6238	692.2		295.13	3.254E-06	1000	1.377E-05
159	Heptanal	$C_7H_{14}O$	111-71-7	114.18546	4.2392E-05	0.1011	3420		229.80	4.625E-06	1000	1.928E-05
160	Heptane	C_7H_{16}	142-82-5	100.20194	6.6720E-08	0.82837	85.752		182.57	3.391E-06	1000	1.878E-05
161	Heptanoic acid	$C_7H_{14}O_2$	111-14-8	130.185	1.3633E-08	1.0595			265.83	5.052E-06	1000	2.056E-05
162	1-Heptanol	$C_7H_{16}O$	111-70-6	116.20134	2.5720E-07	0.6502	248.6		239.15	4.440E-06	1000	1.838E-05
163	2-Heptanol	$C_7H_{16}O$	543-49-7	116.20134	3.4649E-05	0.10705	2900.7		220.00	4.351E-06	1000	1.861E-05
164	3-Heptanone	$C_7H_{14}O$	106-35-4	114.18546	8.9656E-08	0.78236	100.14		234.15	4.485E-06	1000	1.812E-05
165	2-Heptanone	$C_7H_{14}O$	110-43-0	114.18546	8.8629E-08	0.78376	100.18		238.15	4.550E-06	1000	1.809E-05
166	1-Heptene	C_7H_{14}	592-76-7	98.18606	7.7509E-08	0.81089	69.927		154.12	3.169E-06	1000	1.962E-05
167	Heptyl mercaptan	$C_7H_{16}S$	1639-09-4	132.26694	4.6970E-08	0.8932	57.6		229.92	4.832E-06	1000	2.124E-05
168	1-Heptyne	C_7H_{12}	628-71-7	96.17018	5.9501E-07	0.52758	274.02		192.22	3.932E-06	1000	1.787E-05
169	Hexadecane	$C_{16}H_{34}$	544-76-3	226.44116	1.2463E-07	0.7322	395	6000	291.31	3.274E-06	1000	1.399E-05
170	Hexanal	$C_6H_{12}O$	66-25-1	100.15888	4.0986E-05	0.10349	3180.6		214.93	4.523E-06	1000	2.004E-05
171	Hexane	C_6H_{14}	110-54-3	86.17536	1.7514E-07	0.70737	157.14		177.83	3.631E-06	1000	2.005E-05

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , K	Viscosity at *T*	*T* , K	Viscosity at *T*
172	Hexanoic acid	$C_6H_{12}O_2$	142-62-1	116.158	1.2145E-08	1.0861			269.25	5.294E-06	1000	2.201E-05
173	1-Hexanol	$C_6H_{14}O$	111-27-3	102.17476	1.5773E-07	0.7189	163.3		228.55	4.567E-06	1000	1.945E-05
174	2-Hexanol	$C_6H_{14}O$	626-93-7	102.175	1.0652E-07	0.77022	105.85		223.00	4.650E-06	1000	1.970E-05
175	2-Hexanone	$C_6H_{12}O$	591-78-6	100.15888	9.7820E-08	0.7772	99.53		217.35	4.397E-06	1000	1.909E-05
176	3-Hexanone	$C_6H_{12}O$	589-38-8	100.15888	9.8882E-08	0.7755	99.825		217.50	4.403E-06	1000	1.907E-05
177	1-Hexene	C_6H_{12}	592-41-6	84.15948	8.0060E-08	0.81293	65.274		133.39	2.871E-06	1000	2.064E-05
178	3-Hexyne	C_6H_{10}	928-49-4	82.1436	5.2127E-07	0.5444	237.01		170.05	3.567E-06	1000	1.811E-05
179	Hexylmercaptan	$C_6H_{14}S$	111-31-9	118.24036	4.3636E-08	0.90747	42.32		192.62	4.235E-06	1000	2.209E-05
180	1-Hexyne	C_6H_{10}	693-02-7	82.1436	2.9986E-07	0.62647	178.17		141.25	2.947E-06	1000	1.928E-05
181	2-Hexyne	C_6H_{10}	764-35-2	82.1436	5.5562E-07	0.5337	244.38		183.65	3.851E-06	1000	1.782E-05
182	Hydrazine	H_4N_2	302-01-2	32.04516	2.3489E-07	0.7151	205.05		274.69	7.460E-06	1673.15	4.225E-05
183	Hydrogen	H_2	1333-74-0	2.01588	1.7970E-07	0.685	−0.59	140	13.95	6.517E-07	3000	4.330E-05
184	Hydrogen bromide	BrH	10035-10-6	80.91194	9.1700E-08	0.9273			206.45	1.285E-05	800	4.512E-05
185	Hydrogen chloride	ClH	7647-01-0	36.46094	4.9240E-07	0.6702	157.7		200.00	9.594E-06	1000	4.358E-05

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , K	Viscosity at *T*	*T* , K	Viscosity at *T*
186	Hydrogen cyanide	CHN	74-90-8	27.02534	1.2780E-08	1.0631	340		300.00	2.576E-06	425	4.421E-06
187	Hydrogen fluoride	FH	7664-39-3	20.0063432	4.5101E-14	3.0005	−521.83	76,111	285.50	9.931E-06	472.68	2.019E-05
188	Hydrogen sulfide	H_2S	7783-06-4	34.08088	3.9314E-08	1.0134			250.00	1.058E-05	480	2.050E-05
189	Isobutyric acid	$C_4H_8O_2$	79-31-2	88.10512	1.1202E-07	0.7822	100.3		227.15	5.415E-06	1000	2.261E-05
190	Isopropyl amine	C_3H_9N	75-31-0	59.11026	5.2542E-08	0.88063			177.95	5.037E-06	1000	2.304E-05
191	Malonic acid	$C_3H_4O_4$	141-82-2	104.06146	6.7978E-05	0.092766	4637.3		409.15	9.629E-06	1000	2.289E-05
192	Methacrylic acid	$C_4H_6O_2$	79-41-4	86.08924	9.1130E-08	0.8222	93.57		288.15	7.242E-06	1000	2.440E-05
193	Methane	CH_4	74-82-8	16.0425	5.2546E-07	0.59006	105.67		90.69	3.470E-06	1000	2.800E-05
194	Methanol	CH_4O	67-56-1	32.04186	3.0663E-07	0.69655	205		240.00	7.523E-06	1000	3.128E-05
195	*N*-Methylacetamide	C_3H_7NO	79-16-3	73.09378	8.0599E-08	0.8392	77.332		301.15	7.714E-06	1000	2.464E-05
196	Methyl acetate	$C_3H_6O_2$	79-20-9	74.07854	1.3226E-06	0.4885	504.3		250.00	6.505E-06	800	2.125E-05
197	Methylacetylene	C_3H_4	74-99-7	40.06386	1.1630E-06	0.4787	316		170.45	4.769E-06	800	2.045E-05
198	Methyl acrylate	$C_4H_6O_2$	96-33-3	86.08924	1.6480E-06	0.4444	510.66		196.32	4.781E-06	1000	2.350E-05
199	Methylamine	CH_5N	74-89-5	31.0571	5.6409E-07	0.5863	231.9		179.69	5.167E-06	1000	2.628E-05

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , K	Viscosity at *T*	*T* , K	Viscosity at *T*
200	Methyl benzoate	$C_8H_8O_2$	93-58-3	136.14792	7.4106E-08	0.82436	83.086		260.75	5.515E-06	1000	2.034E-05
201	3-Methyl-1,2-butadiene	C_5H_8	598-25-4	68.11702	4.0824E-07	0.5923	208.22		159.53	3.572E-06	1000	2.021E-05
202	2-Methylbutane	C_5H_{12}	78-78-4	72.14878	2.4344E-08	0.97376	−91.597	18,720	150.00	2.621E-06	1000	2.190E-05
203	2-Methylbutanoic acid	$C_5H_{10}O_2$	116-53-0	102.1317	1.8690E-07	0.7096	192		450.15	1.000E-05	1000	2.109E-05
204	3-Methyl-1-butanol	$C_5H_{12}O$	123-51-3	88.1482	8.9348E-08	0.80197	77.653		155.95	3.422E-06	1000	2.111E-05
205	2-Methyl-1-butene	C_5H_{10}	563-46-2	70.1329	5.0602E-07	0.55258	199.82		135.58	3.083E-06	1000	1.918E-05
206	2-Methyl-2-butene	C_5H_{10}	513-35-9	70.1329	8.5423E-07	0.47389	239.34		139.39	3.263E-06	1000	1.820E-05
207	2-Methyl-1-butene-3-yne	C_5H_6	78-80-8	66.10114	5.6844E-07	0.553	227.18		160.15	3.893E-06	1000	2.112E-05
208	Methyl butyl ether	$C_5H_{12}O$	628-28-4	88.14818	3.9342E-08	0.91086			157.48	3.947E-06	1000	2.125E-05
209	Methyl butyl sulfide	$C_5H_{12}S$	628-29-5	104.214	4.9950E-08	0.89479	44.662		175.30	4.052E-06	1000	2.312E-05
210	3-Methyl-1-butyne	C_5H_8	598-23-2	68.11702	4.0748E-08	0.92709			183.45	5.112E-06	1000	2.463E-05
211	Methyl butyrate	$C_5H_{10}O_2$	623-42-7	102.1317	3.7330E-07	0.6177	256.5		187.35	3.993E-06	1000	2.118E-05

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , K	Viscosity at *T*	*T* , K	Viscosity at *T*
212	Methyl chlorosilane	CH_5ClSi	993-00-0	80.5889	4.8806E-08	0.92549			139.05	4.698E-06	1000	2.917E-05
213	Methyl cyclohexane	C_7H_{14}	108-87-2	98.18606	6.5281E-07	0.5294	310.59		146.58	2.934E-06	1000	1.930E-05
214	1-Methylcyclohexanol	$C_7H_{14}O$	590-67-0	114.18546	8.5736E-08	0.80277	100.77		299.15	6.232E-06	1000	1.994E-05
215	*cis*-2-Methylcyclohexanol	$C_7H_{14}O$	7443-70-1	114.18546	2.4000E-07	0.68	210		280.15	6.331E-06	1000	2.175E-05
216	*trans*-2-Methylcyclohexanol	$C_7H_{14}O$	7443-52-9	114.18546	2.0000E-07	0.704	187		269.15	6.062E-06	1000	2.181E-05
217	Methylcyclopentane	C_6H_{12}	96-37-7	84.15948	9.0798E-07	0.495	355.89		130.73	2.722E-06	1000	2.046E-05
218	1-Methylcyclopentene	C_6H_{10}	693-89-0	82.1436	3.7026E-08	0.92849			146.62	3.800E-06	1000	2.259E-05
219	3-Methylcyclopentene	C_6H_{10}	1120-62-3	82.1436	3.9771E-08	0.92242			115.00	3.165E-06	1000	2.327E-05
220	Methyldichlorosilane	CH_4Cl_2Si	75-54-7	115.03396	1.9770E-07	0.7453	131.22		182.55	5.574E-06	1000	3.009E-05
221	Methyl ethyl ether	C_3H_8O	540-67-0	60.09502	2.6098E-07	0.68276	133.4		160.00	4.551E-06	1000	2.573E-05
222	Methyl ethyl ketone	C_4H_8O	78-93-3	72.10572	2.6552E-08	0.98316			186.48	4.534E-06	1000	2.364E-05
223	Methyl ethyl sulfide	C_3H_8S	624-89-5	76.1606	8.6219E-08	0.83591	72.564		167.23	4.341E-06	1000	2.588E-05
224	Methyl formate	$C_2H_4O_2$	107-31-3	60.05196	6.9755E-06	0.3154	1034.5		174.15	5.117E-06	1000	3.029E-05

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , K	Viscosity at *T*	*T* , K	Viscosity at *T*
225	Methyl isobutyl ether	$C_5H_{12}O$	625-44-5	88.14818	1.5035E-07	0.7338	108.5		150.00	3.448E-06	1000	2.157E-05
226	Methyl isobutyl ketone	$C_6H_{12}O$	108-10-1	100.15888	9.4257E-08	0.7845	90.183		189.15	3.901E-06	1000	1.951E-05
227	Methyl Isocyanate	C_2H_3NO	624-83-9	57.05132	3.1573E-07	0.66404	173.59		256.15	7.481E-06	1000	2.642E-05
228	Methyl isopropyl ether	$C_4H_{10}O$	598-53-8	74.1216	1.9250E-07	0.7091	109		127.93	3.242E-06	1000	2.327E-05
229	Methyl isopropyl ketone	$C_5H_{10}O$	563-80-4	86.1323	1.0826E-07	0.77382	93.349		180.15	3.968E-06	1000	2.076E-05
230	Methyl isopropyl sulfide	$C_4H_{10}S$	1551-21-9	90.1872	8.6077E-08	0.81669	71.294		171.64	4.065E-06	1000	2.265E-05
231	Methyl mercaptan	CH_4S	74-93-1	48.10746	1.6370E-07	0.76706	107.97		150.18	4.450E-06	1000	2.956E-05
232	Methyl methacrylate	$C_5H_8O_2$	80-62-6	100.11582	4.8890E-07	0.6096	342.23		224.95	5.265E-06	1000	2.456E-05
233	2-Methyl octanoic acid	$C_9H_{18}O_2$	3004-93-1	158.23802	7.2131E-08	0.80319	99.437		240.00	4.162E-06	1000	1.685E-05
234	2-Methyl pentane	C_6H_{14}	107-83-5	86.17536	1.1164E-06	0.4537	374.74		119.55	2.366E-06	1000	1.865E-05
235	Methyl pentyl ether	$C_6H_{14}O$	628-80-8	102.17476	1.0546E-07	0.77106	93.745		176.00	3.707E-06	1000	1.983E-05
236	2-Methyl propane	C_4H_{10}	75-28-5	58.1222	1.0871E-07	0.78135	70.639		150.00	3.707E-06	1000	2.242E-05

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , K	Viscosity at *T*	*T* , K	Viscosity at *T*
237	2-Methyl-2-propanol	$C_4H_{10}O$	75-65-0	74.1216	9.6050E-07	0.4856	381		298.97	6.727E-06	600	1.312E-05
238	2-Methylpropene	C_4H_8	115-11-7	56.10632	9.0981E-07	0.49288	260.08		132.81	3.423E-06	1000	2.174E-05
239	Methyl propionate	$C_4H_8O_2$	554-12-1	88.10512	3.5642E-07	0.6327	232.2		185.65	4.316E-06	1000	2.288E-05
240	Methyl propyl ether	$C_4H_{10}O$	557-17-5	74.1216	4.4941E-08	0.90199			133.97	3.725E-06	1000	2.284E-05
241	Methyl propyl sulfide	$C_4H_{10}S$	3877-15-4	90.1872	5.8223E-08	0.88057	48.298		160.17	3.908E-06	1000	2.434E-05
242	Methyl silane	CH_6Si	992-94-9	46.14384	3.8926E-07	0.63159	169.45		116.34	3.196E-06	1000	2.612E-05
243	alpha-Methyl styrene	C_9H_{10}	98-83-9	118.1757	7.1455E-07	0.49832	303.31		249.95	5.057E-06	1000	1.714E-05
244	Methyl tert-butyl ether	$C_5H_{12}O$	1634-04-4	88.1482	1.5779E-07	0.73224	112.15		164.55	3.938E-06	1000	2.232E-05
245	Methyl vinyl ether	C_3H_6O	107-25-5	58.07914	7.6460E-07	0.5476	284		278.65	8.264E-06	1000	2.616E-05
246	Naphthalene	$C_{10}H_8$	91-20-3	128.17052	6.4318E-07	0.5389	400.16		353.43	7.125E-06	1000	1.900E-05
247	Neon	Ne	7440-01-9	20.1797	7.1900E-07	0.6659	5.3		30.00	5.884E-06	3273.1	1.573E-04
248	Nitroethane	$C_2H_5NO_2$	79-24-3	75.0666	2.4391E-07	0.702	280		183.63	3.752E-06	1000	2.432E-05
249	Nitrogen	N_2	7727-37-9	28.0134	6.5592E-07	0.6081	54.714		63.15	4.372E-06	1970	6.432E-05
250	Nitrogen trifluoride	F_3N	7783-54-2	71.00191	8.2005E-07	0.61423	114.58		66.46	3.964E-06	1000	5.122E-05

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , K	Viscosity at *T*	*T* , K	Viscosity at *T*
251	Nitromethane	CH_3NO_2	75-52-5	61.04002	4.0700E-07	0.6485	367.5		244.60	5.756E-06	1000	2.625E-05
252	Nitrous oxide	N_2O	10024-97-2	44.0128	2.1150E-06	0.4642	305.7		182.30	8.854E-06	1000	4.000E-05
253	Nitric oxide	NO	10102-43-9	30.0061	1.4670E-06	0.5123	125.4		110.00	7.618E-06	1500	5.737E-05
254	Nonadecane	$C_{19}H_{40}$	629-92-5	268.5209	3.0465E-07	0.62218	705.34		305.04	3.231E-06	1000	1.314E-05
255	Nonanal	$C_9H_{18}O$	124-19-6	142.23862	3.8518E-05	0.10867	3502.7		267.30	5.013E-06	1000	1.812E-05
256	Nonane	C_9H_{20}	111-84-2	128.2551	1.0344E-07	0.77301	220.47		219.66	3.335E-06	1000	1.767E-05
257	Nonanoic acid	$C_9H_{18}O_2$	112-05-0	158.238	1.8105E-08	0.99668			285.55	5.074E-06	1000	1.769E-05
258	1-Nonanol	$C_9H_{20}O$	143-08-8	144.2545	1.2000E-07	0.74	180		268.15	4.499E-06	1000	1.688E-05
259	2-Nonanol	$C_9H_{20}O$	628-99-9	144.255	3.5879E-05	0.10109	3258.2		238.15	4.250E-06	1000	1.694E-05
260	1-Nonene	C_9H_{18}	124-11-8	126.23922	6.6329E-08	0.82027	76.204		191.91	3.542E-06	1000	1.781E-05
261	Nonyl mercaptan	$C_9H_{20}S$	1455-21-6	160.3201	3.8673E-08	0.91142	50.646		253.05	4.995E-06	1000	1.996E-05
262	1-Nonyne	C_9H_{16}	3452-09-3	124.22334	6.1447E-07	0.50705	287.19		223.15	4.170E-06	1000	1.585E-05
263	Octadecane	$C_{18}H_{38}$	593-45-3	254.49432	3.2095E-07	0.61839	709.09		301.31	3.266E-06	1000	1.345E-05
264	Octanal	$C_8H_{16}O$	124-13-0	128.212	3.9500E-05	0.10787	3390		251.65	4.955E-06	1000	1.896E-05
265	Octane	C_8H_{18}	111-65-9	114.22852	3.1191E-08	0.92925	55.092		216.38	3.677E-06	1000	1.813E-05
266	Octanoic acid	$C_8H_{16}O_2$	124-07-2	144.211	1.5557E-08	1.0299			289.65	5.338E-06	1000	1.913E-05

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , K	Viscosity at *T*	*T* , K	Viscosity at *T*
267	1-Octanol	$C_8H_{18}O$	111-87-5	130.22792	1.7520E-07	0.6941	206.8		257.65	4.583E-06	1000	1.755E-05
268	2-Octanol	$C_8H_{18}O$	123-96-6	130.228	3.4163E-05	0.10661	3028		241.55	4.530E-06	1000	1.771E-05
269	2-Octanone	$C_8H_{16}O$	111-13-7	128.21204	8.0901E-08	0.79062	99.338		252.85	4.611E-06	1000	1.733E-05
270	3-Octanone	$C_8H_{16}O$	106-68-3	128.21204	6.1515E-11	1.8808			255.55	2.075E-06	1000	2.700E-05
271	1-Octene	C_8H_{16}	111-66-0	112.21264	5.0324E-05	0.077611	3604.6		171.45	3.406E-06	1000	1.868E-05
272	Octyl mercaptan	$C_8H_{18}S$	111-88-6	146.29352	3.3253E-08	0.9351	32.426		223.95	4.579E-06	1000	2.057E-05
273	1-Octyne	C_8H_{14}	629-05-0	110.19676	5.7084E-07	0.52446	271.76		193.55	3.757E-06	1000	1.681E-05
274	Oxalic acid	$C_2H_2O_4$	144-62-7	90.03488	6.3032E-05	0.10487	4210.1		462.65	1.188E-05	1000	2.496E-05
275	Oxygen	O_2	7782-44-7	31.9988	1.1010E-06	0.5634	96.3		54.35	3.773E-06	1500	6.371E-05
276	Ozone	O_3	10028-15-6	47.9982	1.1960E-07	0.84797			80.15	4.922E-06	1000	4.184E-05
277	Pentadecane	$C_{15}H_{32}$	629-62-9	212.41458	4.0828E-08	0.8766	212.68		283.07	3.288E-06	1000	1.436E-05
278	Pentanal	$C_5H_{10}O$	110-62-3	86.1323	4.3300E-05	0.098676	3090		191.59	4.246E-06	1000	2.093E-05
279	Pentane	C_5H_{12}	109-66-0	72.14878	6.3412E-08	0.84758	41.718		143.42	3.305E-06	1000	2.124E-05
280	Pentanoic acid	$C_5H_{10}O_2$	109-52-4	102.132	1.0971E-08	1.11			239.15	4.793E-06	1000	2.346E-05
281	1-Pentanol	$C_5H_{12}O$	71-41-0	88.1482	1.8903E-07	0.7031	175.9		410.95	9.111E-06	1000	2.068E-05
282	2-Pentanol	$C_5H_{12}O$	6032-29-7	88.1482	1.1749E-07	0.7649	103.78		200.00	4.452E-06	1000	2.098E-05

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , K	Viscosity at *T*	*T* , K	Viscosity at *T*
283	2-Pentanone	$C_5H_{10}O$	107-87-9	86.1323	2.4630E-07	0.6653	208.7		196.29	4.003E-06	1000	2.019E-05
284	3-Pentanone	$C_5H_{10}O$	96-22-0	86.1323	1.1640E-07	0.7615	107.94		234.18	5.079E-06	1000	2.023E-05
285	1-Pentene	C_5H_{10}	109-67-1	70.1329	1.6378E-06	0.44337	636.11	–26,218	108.02	2.813E-06	1000	2.176E-05
286	2-Pentylmercaptan	$C_5H_{12}S$	2084-19-7	104.21378	8.8646E-08	0.81492	85.198		160.75	3.638E-06	1000	2.275E-05
287	Pentylmercaptan	$C_5H_{12}S$	110-66-7	104.21378	2.7467E-08	0.97555			197.45	4.766E-06	1000	2.320E-05
288	1-Pentyne	C_5H_8	627-19-0	68.11702	4.1022E-08	0.90585			167.45	4.242E-06	1000	2.141E-05
289	2-Pentyne	C_5H_8	627-21-4	68.11702	5.7650E-07	0.53498	235.2		163.83	3.621E-06	1000	1.879E-05
290	Phenanthrene	$C_{14}H_{10}$	85-01-8	178.2292	4.3478E-07	0.5272	238.27		372.38	6.010E-06	1000	1.340E-05
291	Phenol	C_6H_6O	108-95-2	94.11124	1.0094E-07	0.799	103.1		314.06	7.514E-06	1000	2.283E-05
292	Phenylisocyanate	C_7H_5NO	103-71-9	119.1207	8.5360E-08	0.80872	88.273		243.15	5.324E-06	1000	2.093E-05
293	Phthalic anhydride	$C_8H_4O_3$	85-44-9	148.11556	4.3511E-08	0.908	102.73		404.15	8.072E-06	1000	2.090E-05
294	Propadiene	C_3H_4	463-49-0	40.06386	6.0758E-07	0.53845	173.45		136.87	3.788E-06	1000	2.135E-05
295	Propane	C_3H_8	74-98-6	44.09562	4.9054E-08	0.90125			85.47	2.702E-06	1000	2.480E-05
296	1-Propanol	C_3H_8O	71-23-8	60.09502	7.9420E-07	0.5491	415.8		200.00	4.732E-06	1000	2.490E-05
297	2-Propanol	C_3H_8O	67-63-0	60.095	1.2003E-06	0.494	479.78		187.35	4.471E-06	1000	2.461E-05

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , K	Viscosity at *T*	*T* , K	Viscosity at *T*
298	Propenylcyclohexene	C_9H_{14}	13511-13-2	122.20746	5.4749E-07	0.53893	283.52		199.00	3.914E-06	1000	1.765E-05
299	Propionaldehyde	C_3H_6O	123-38-6	58.07914	3.8397E-05	0.10821	2510.9		165.00	4.114E-06	1000	2.309E-05
300	Propionic acid	$C_3H_6O_2$	79-09-4	74.0785	1.4807E-08	1.0733			252.45	5.607E-06	1000	2.457E-05
301	Propionitrile	C_3H_5N	107-12-0	55.0785	9.6891E-06	0.24601	1537.6		180.37	3.652E-06	1000	2.089E-05
302	Propyl acetate	$C_5H_{10}O_2$	109-60-4	102.1317	2.1372E-07	0.6894	178.57		178.15	3.802E-06	1000	2.122E-05
303	Propylamine	C_3H_9N	107-10-8	59.11026	1.6200E-07	0.7285	117		188.36	4.540E-06	1000	2.223E-05
304	Propylbenzene	C_9H_{12}	103-65-1	120.19158	3.0387E-07	0.61945	210.35		173.55	3.350E-06	1000	1.812E-05
305	Propylene	C_3H_6	115-07-1	42.07974	7.3919E-07	0.5423	263.73		87.89	2.093E-06	1000	2.477E-05
306	Propylformate	$C_4H_8O_2$	110-74-7	88.10512	6.0741E-07	0.5863	367.29		180.25	4.203E-06	1000	2.550E-05
307	2-Propylmercaptan	C_3H_8S	75-33-2	76.16062	3.5532E-08	0.95654			142.61	4.085E-06	1000	2.632E-05
308	Propylmercaptan	C_3H_8S	107-03-9	76.16062	7.9457E-08	0.84656	65.878		159.95	4.132E-06	1000	2.583E-05
309	1,2-Propylene glycol	$C_3H_8O_2$	57-55-6	76.09442	4.5430E-08	0.9173	61		213.15	4.832E-06	1000	2.418E-05
310	Quinone	$C_6H_4O_2$	106-51-4	108.09476	1.1085E-07	0.8008	152.51		388.85	9.439E-06	1000	2.429E-05
311	Silicon tetrafluoride	F_4Si	7783-61-1	104.07911	2.1671E-07	0.76757	16.28		250.00	1.410E-05	500	2.475E-05
312	Styrene	C_8H_8	100-42-5	104.14912	6.3863E-07	0.5254	295.1		242.54	5.158E-06	1000	1.858E-05

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , K	Viscosity at *T*	*T* , K	Viscosity at *T*
313	Succinic acid	$C_4H_6O_4$	110-15-6	118.088 04	5.7821 E-05	0.099467	4409.6		460.85	1.007E-05	1000	2.125E-05
314	Sulfur dioxide	O_2S	7446-09-5	64.0638	6.8630 E-07	0.6112	217		197.67	8.280E-06	1000	3.844E-05
315	Sulfur hexafluoride	F_6S	2551-62-4	146.0554192	5.3986 E-07	0.6349	34.5	19,000	205.15	9.790E-06	5000	1.195E-04
316	Sulfur trioxide	O_3S	7446-11-9	80.0632	3.9067 E-06	0.3845	470.1		297.93	1.355E-05	694.19	2.883E-05
317	Terephthalic acid	$C_8H_6O_4$	100-21-0	166.13084	3.9218 E-05	0.12589	3861.1		700.15	1.373E-05	1000	1.925E-05
318	*o*-Terphenyl	$C_{18}H_{14}$	84-15-1	230.30376	7.0859 E-07	0.51971	652.24		329.35	4.837E-06	1000	1.554E-05
319	Tetradecane	$C_{14}H_{30}$	629-59-4	198.388	5.1567 E-09	1.1561			279.01	3.465E-06	1000	1.516E-05
320	Tetrahydrofuran	C_4H_8O	109-99-9	72.10572	3.7780 E-07	0.6533	271.01		164.65	4.006E-06	1000	2.710E-05
321	1,2,3,4-Tetrahydronaphthalene	$C_{10}H_{12}$	119-64-2	132.20228	5.0784 E-07	0.5614	328.55		237.38	4.592E-06	1000	1.847E-05
322	Tetrahydrothiophene	C_4H_8S	110-01-0	88.17132	8.5988 E-08	0.82841	68.172		176.99	4.520E-06	1000	2.461E-05
323	2,2,3,3-Tetramethylbutane	C_8H_{18}	594-82-1	114.22852	8.1458 E-07	0.50257	380.29		373.96	7.930E-06	1000	1.900E-05
324	Thiophene	C_4H_4S	110-02-1	84.13956	1.0300 E-06	0.5497	569.4		234.94	6.049E-06	1000	2.926E-05
325	Toluene	C_7H_8	108-88-3	92.13842	8.7268 E-07	0.49397	323.79		178.18	4.008E-06	1000	2.000E-05
326	1,1,2-Trichloroethane	$C_2H_3Cl_3$	79-00-5	133.40422	2.7081 E-07	0.6955	187.93		236.50	6.756E-06	1000	2.782E-05

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , K	Viscosity at *T*	*T* , K	Viscosity at *T*
327	Tridecane	$C_{13}H_{28}$	629-50-5	184.36142	3.5585E-08	0.8987	165.3		267.76	3.344E-06	1000	1.517E-05
328	Triethyl amine	$C_6H_{15}N$	121-44-8	101.19	2.4110E-07	0.6845	223		158.45	3.210E-06	1000	2.230E-05
329	Trimethyl amine	C_3H_9N	75-50-3	59.11026	1.2434E-06	0.4832	447.7		156.08	3.689E-06	1000	2.418E-05
330	1,2,3-Trimethylbenzene	C_9H_{12}	526-73-8	120.19158	7.8498E-07	0.49855	362.79		247.79	4.975E-06	1000	1.803E-05
331	1,2,4-Trimethylbenzene	C_9H_{12}	95-63-6	120.19158	6.8812E-07	0.51063	330.88		229.33	4.520E-06	1000	1.760E-05
332	2,2,4-Trimethylpentane	C_8H_{18}	540-84-1	114.22852	1.1070E-07	0.746	72.4		165.78	3.488E-06	1000	1.786E-05
333	2,3,3-Trimethylpentane	C_8H_{18}	560-21-4	114.22852	8.2418E-07	0.4931	371.44		387.91	7.958E-06	1000	1.812E-05
334	1,3,5-Trinitrobenzene	$C_6H_3N_3O_6$	99-35-4	213.10452	3.4066E-08	0.95252	43.528		398.40	9.208E-06	1000	2.352E-05
335	2,4,6-Trinitrotoluene	$C_7H_5N_3O_6$	118-96-7	227.1311	2.8471E-08	0.96571	30.83		354.00	7.581E-06	1000	2.179E-05
336	Undecane	$C_{11}H_{24}$	1120-21-4	156.30826	3.5940E-08	0.9052	125		247.57	3.506E-06	1000	1.660E-05
337	1-Undecanol	$C_{11}H_{24}O$	112-42-5	172.30766	5.9537E-08	0.81842	90.245		288.45	4.677E-06	1000	1.558E-05
338	Vinyl acetate	$C_4H_6O_2$	108-05-4	86.08924	1.3880E-07	0.7599	98		180.35	4.659E-06	1000	2.407E-05
339	Vinyl acetylene	C_4H_4	689-97-4	52.07456	6.7484E-07	0.5304	230.17		173.15	4.459E-06	1000	2.140E-05

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , K	Viscosity at *T*	*T* , K	Viscosity at *T*
340	Vinyl chloride	C_2H_3Cl	75-01-4	62.49822	2.3790E-07	0.71517	102.84		119.36	3.907E-06	1000	3.016E-05
341	Vinyl trichlorosilane	$C_2H_3Cl_3Si$	75-94-5	161.48972	3.6429E-08	0.95924			178.35	5.260E-06	1000	2.749E-05
342	Water	H_2O	7732-18-5	18.01528	1.7096E-08	1.1146			273.16	8.882E-06	1073.15	4.082E-05
343	*m*-Xylene	C_8H_{10}	108-38-3	106.165	6.8293E-07	0.52199	324.17		225.30	4.735E-06	1000	1.898E-05
344	*o*-Xylene	C_8H_{10}	95-47-6	106.165	8.3436E-07	0.49713	365.86		247.98	5.225E-06	1000	1.894E-05
345	*p*-Xylene	C_8H_{10}	106-42-3	106.165	9.3485E-07	0.47683	371.96		286.41	6.037E-06	1000	1.836E-05

The vapor viscosity is calculated by

$$\mu = C_1 T^{C_2}/(1 + C_3/T + C_4/T^2)$$

where μ is the viscosity in Pa·s and *T* is the temperature in K. Viscosities are at either 1 atm or the vapor pressure, whichever is lower.

Values in this table were taken from the Design Institute for Physical Properties (DIPPR) of the American Institute of Chemical Engineers (AIChE), 801 Critically Evaluated Gold Standard™ Database, copyright 2016 AIChE, and reproduced with permission of AIChE and of the DIPPR Evaluated Process Design Data Project Steering Committee. Their source should be cited as "R. L. Rowley, W. V. Wilding, J. L. Oscarson, T. A. Knotts, and N. F. Giles, *DIPPR® Data Compilation of Pure Chemical Properties*, Design Institute for Physical Properties, AIChE, New York, NY (2016)".

Table 2-139 Viscosity of Inorganic and Organic Liquids (Pa·s)

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	C_1	C_2	C_3	C_4	C_5	T_{min}, K	Viscosity at T_{min}	T_{max}, K	Viscosity at T_{max}
101	1	Acetaldehyde	C_2H_4O	75-07-0	44.05256	−10.976	755.12				149.78	2.647E-03	294.15	2.229E-04
101	2	Acetamide	C_2H_5NO	60-35-5	59.06072	1.5525	1376.4	−2.0126			353.33	1.728E-03	494.3	2.895E-04
101	3	Acetic acid	$C_2H_4O_2$	64-19-7	60.052	−9.03	1212.3	−0.322			289.81	1.265E-03	391.05	3.890E-04
101	4	Acetic anhydride	$C_4H_6O_3$	108-24-7	102.08864	−20.457	1638.6	1.3834			200.15	7.159E-03	412.7	2.874E-04
101	5	Acetone	C_3H_6O	67-64-1	58.07914	−14.9	1023.4	0.5961			190	1.655E-03	329.44	2.351E-04
101	6	Acetonitrile	C_2H_3N	75-05-8	41.05519	5.4711	143.99	−2.4432			229.32	7.616E-04	354.81	2.100E-04
101	7	Acetylene	C_2H_2	74-86-2	26.03728	6.224	−151.8	−2.6554			193.15	1.958E-04	273.15	9.819E-05
101	8	Acrolein	C_3H_4O	107-02-8	56.06326	−12.032	867.34	0.19534			185.45	1.773E-03	353.22	2.181E-04
101	9	Acrylic acid	$C_3H_4O_2$	79-10-7	72.06266	−28.12	2280.2	2.3956			286.15	1.359E-03	460	2.086E-04
101	10	Acrylonitrile	C_3H_3N	107-13-1	53.06026	−0.24126	350.57	−1.5676			189.63	1.340E-03	350.45	2.191E-04
101	11	Air	Mixture	132259-10-0	28.96	−20.077	285.15	1.784	−6.238E-22	10	59.15	3.430E-04	130	4.276E-05
101	12	Ammonia	H_3N	7664-41-7	17.03052	−6.743	598.3	−0.7341	−3.690E-27	10	195.41	5.240E-04	393.15	4.858E-05
101	13	Anisole	C_7H_8O	100-66-3	108.13782	−15.407	1518.7	0.60172			235.65	3.429E-03	426.73	2.736E-04
101	14	Argon	Ar	7440-37-1	39.948	−8.8685	204.29	−0.38305	−1.294E-22	10	83.78	2.950E-04	150	3.823E-05
101	15	Benzamide	C_7H_7NO	55-21-0	121.13658	−12.632	2668.2				403	2.451E-03	563.15	3.730E-04

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	C	C	C	C	C	T, K	Viscosity at T	T, K	Viscosity at T
101	16	Benzene	C_6H_6	71-43-2	78.11184	7.5117	294.68	−2.794			278.68	7.761E-04	545	7.106E-05
101	17	Benzenethiol	C_6H_6S	108-98-5	110.17684	−8.4562	1024.4	−0.30635			258.27	2.047E-03	442.29	3.333E-04
101	18	Benzoic acid	$C_7H_6O_2$	65-85-0	122.12134	−12.947	2557.9				395.52	1.534E-03	600.8	1.683E-04
101	19	Benzonitrile	C_7H_5N	100-47-0	103.1213	−23.268	1880.5	1.7994			260.28	2.393E-03	464.15	2.836E-04
101	20	Benzophenone	$C_{13}H_{10}O$	119-61-9	182.2179	−148.6	8377.2	20.559	−0.000013	2	321.35	5.369E-03	664	2.614E-04
101	21	Benzyl alcohol	C_7H_8O	100-51-6	108.13782	−14.152	2652				257.85	2.092E-02	478.6	1.821E-04
101	22	Benzyl ethyl ether	$C_9H_{12}O$	539-30-0	136.19098	−11.46	1497	−0.043397			275.65	1.886E-03	458.15	2.121E-04
101	23	Benzyl mercaptan	C_7H_8S	100-53-8	124.20342	−11.459	1334.4	0.0004969 4			243.95	2.513E-03	472.03	1.788E-04
101	24	Biphenyl	$C_{12}H_{10}$	92-52-4	154.2078	−9.9265	1576.3	−0.21119			342.2	1.427E-03	723.15	1.076E-04
101	25	Bromine	Br_2	7726-95-6	159.808	16.775	−314	−3.9763			265.85	1.353E-03	350	6.021E-04
101	26	Bromobenzene	C_6H_5Br	108-86-1	157.0079	−20.611	1656.5	1.4415			242.43	2.842E-03	429.24	3.310E-04
101	27	Bromoethane	C_2H_5Br	74-96-4	108.965	−5.0539	645.8	−0.87689			154.25	5.065E-03	393.15	1.751E-04
101	28	Bromomethane	CH_3Br	74-83-9	94.93852	−16.615	931.44	0.94366			179.44	1.464E-03	363.15	2.060E-04
101	29	1,2-Butadiene	C_4H_6	590-19-2	54.09044	−10.143	472.79	−0.028241			136.95	1.081E-03	284	1.773E-04

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	C	C	C	C	C	$T_{,}$ K	Viscosity at T	$T_{,}$ K	Viscosity at T
101	30	1,3-Butadiene	C_4H_6	106-99-0	54.09044	17.844	−310.2	−4.5058			250	2.547E-04	400	4.880E-05
101	31	Butane	C_4H_{10}	106-97-8	58.1222	−7.2471	534.82	−0.57469	−4.6625E-27	10	134.86	2.243E-03	420	3.566E-05
101	32	1,2-Butanediol	$C_4H_{10}O_2$	584-03-2	90.121	−393.86	19,042	59.978	−0.049479	1	220	2.020E+02	544	3.441E-04
101	33	1,3-Butanediol	$C_4H_{10}O_2$	107-88-0	90.121	−390.03	18,609	60.014	−0.055844	1	196.15	4.410E+04	540.8	2.890E-04
101	34	1-Butanol	$C_4H_{10}O$	71-36-3	74.12216	−82.851	4481.8	11.182	−0.00000020943	2	190	2.602E-01	391.9	3.845E-04
101	35	2-Butanol	$C_4H_{10}O$	78-92-2	74.12216	−16.323	3141.7				238	4.404E-02	372.9	3.715E-04
101	36	1-Butene	C_4H_8	106-98-9	56.10632	−10.773	591.61				87.8	1.769E-02	335.6	1.222E-04
101	37	*cis*-2-Butene	C_4H_8	590-18-1	56.10632	−10.346	522.3	−0.011847			134.26	1.483E-03	276.87	1.982E-04
101	38	*trans*-2-Butene	C_4H_8	624-64-6	56.10632	−10.335	521.39	−0.013184			167.62	6.810E-04	274.03	2.022E-04
101	39	Butyl acetate	$C_6H_{12}O_2$	123-86-4	116.15828	−17.488	1478.2	0.91828			250	1.496E-03	399.26	2.521E-04
101	40	Butylbenzene	$C_{10}H_{14}$	104-51-8	134.21816	−23.802	1887.2	1.8479			200	1.030E-02	456.46	2.359E-04
101	41	Butylmercaptan	$C_4H_{10}S$	109-79-5	90.18072	−10.807	966.74	−0.014851			157.46	8.716E-03	373.15	2.475E-04
101	42	*sec*-Butylmercaptan	$C_4H_{10}S$	513-53-1	90.18072	−10.903	932.82	0.023034			133.02	2.287E-02	358.13	2.851E-04

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	C	C	C	C	C	T, K	Viscosity at T	T, K	Viscosity at T
101	43	1-Butyne	C_4H_6	107-00-6	54.09044	−3.4644	334.5	−1.0811			147.43	1.369E-03	373.15	1.271E-04
101	44	Butyraldehyde	C_4H_8O	123-72-8	72.10572	−6.4551	744.7	−0.67524			176.8	3.223E-03	347.94	2.570E-04
101	45	Butyric acid	$C_4H_8O_2$	107-92-6	88.1051	−9.817	1388	−0.238			267.95	2.561E-03	436.42	3.087E-04
101	46	Butyronitrile	C_4H_7N	109-74-0	69.1051	−11.13	1084.1				161.3	1.217E-02	390.74	2.351E-04
101	47	Carbon dioxide	CO_2	124-38-9	44.0095	18.775	−402.92	−4.6854	−6.9171E-26	10	216.58	2.488E-04	303.15	5.652E-05
101	48	Carbon disulfide	CS_2	75-15-0	76.1407	−10.306	703.01				161.58	2.592E-03	441.6	1.643E-04
101	49	Carbon monoxide	CO	630-08-0	28.0101	−4.9735	97.67	−1.1088			68.15	2.688E-04	131.37	6.515E-05
101	50	Carbon tetrachloride	CCl_4	56-23-5	153.8227	−8.0738	1121.1	−0.4726			250	2.032E-03	455	2.030E-04
101	51	Carbon tetrafluoride	CF_4	75-73-0	88.0043	−9.9212	300.5				89.56	1.408E-03	145.1	3.897E-04
101	52	Chlorine	Cl_2	7782-50-5	70.906	−9.5412	456.62				172.12	1.020E-03	333.72	2.822E-04
101	53	Chlorobenzene	C_6H_5Cl	108-90-7	112.5569	0.15772	540.5	−1.6075			250	1.422E-03	540	1.291E-04
101	54	Chloroethane	C_2H_5Cl	75-00-3	64.5141	10.9222	−118.895	−3.305			136.75	2.026E-03	423.15	8.727E-05
101	55	Chloroform	$CHCl_3$	67-66-3	119.37764	−14.109	1049.2	0.5377			209.63	1.970E-03	353.2	3.410E-04

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*C*	*T*, K	Viscosity at *T*	*T*, K	Viscosity at *T*
101	56	Chloromethane	CH_3Cl	74-87-3	50.4875	10.39	−134.38	−3.262			175.43	7.234E-04	416.25	6.726E-05
101	57	1-Chloropropane	C_3H_7Cl	540-54-5	78.54068	10.27183	−67.2235	−3.1664			150.35	2.362E-03	423.15	1.190E-04
101	58	2-Chloropropane	C_3H_7Cl	75-29-6	78.54068	−15.458	1086	0.654			250	5.514E-04	308.85	2.767E-04
101	59	*m*-Cresol	C_7H_8O	108-39-4	108.13782	−914.12	38,855	139.11	−0.000014757	2	273.15	8.438E-02	564.68	1.793E-05
101	60	*o*-Cresol	C_7H_8O	95-48-7	108.13782	−377.23	17,909	55.565	−0.000004841	2	293.15	9.548E-03	558.04	1.514E-04
101	61	*p*-Cresol	C_7H_8O	106-44-5	108.13782	−851.12	36,686	129.13	−0.000013329	2	273.15	9.674E-02	563.72	2.992E-05
101	62	Cumene	C_9H_{12}	98-82-8	120.19158	−24.988	1807.9	2.0556			200	6.363E-03	400	2.881E-04
101	63	Cyanogen	C_2N_2	460-19-5	52.0348	−11.794	992.33				245.25	4.317E-04	320.12	1.676E-04
101	64	Cyclobutane	C_4H_8	287-23-0	56.10632	−3.4968	397.94	−1.1087			182.48	8.345E-04	367.94	1.278E-04
101	65	Cyclohexane	C_6H_{12}	110-82-7	84.15948	−33.763	2497.2	3.2236			279.69	1.264E-03	443.04	2.070E-04
101	66	Cyclohexanol	$C_6H_{12}O$	108-93-0	100.15888	280.87	−31,869	−38.837	3,994,500	−2.002	296.6	6.328E-02	520.08	1.652E-04
101	67	Cyclohexanone	$C_6H_{10}O$	108-94-1	98.143	−44.877	3227.7	4.887			242	8.960E-03	428.58	4.402E-04
101	68	Cyclohexene	C_6H_{10}	110-83-8	82.1436	−11.641	1154.3	0.066511			200	4.017E-03	373.15	2.877E-04
101	69	Cyclopentane	C_5H_{10}	287-92-3	70.1329	−3.2612	614.16	−1.156			225	1.122E-03	325	3.167E-04

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	C	C	C	C	C	T, K	Viscosity at T	T, K	Viscosity at T
101	70	Cyclopentene	C_5H_8	142-29-0	68.11702	−4.1508	599.77	−1.0308			138.13	7.531E-03	405.6	1.416E-04
101	71	Cyclopropane	C_3H_6	75-19-4	42.07974	−3.524	342.54	−1.1599			145.59	9.601E-04	318.4	1.080E-04
101	72	Cyclohexylmercaptan	$C_6H_{12}S$	1569-69-3	116.22448	−11.338	1304.1	0.00009236			189.64	1.155E-02	431.95	2.440E-04
101	73	Decanal	$C_{10}H_{20}O$	112-31-2	156.2652	4.1184	629.98	−2.2076			285	2.134E-03	481.65	2.718E-04
101	74	Decane	$C_{10}H_{22}$	124-18-5	142.28168	−97.663	4342.7	13.645	−0.00019319	2	240.05	2.741E-03	494.16	1.292E-04
101	75	Decanoic acid	$C_{10}H_{20}O_2$	334-48-5	172.265	−12.305	2324.1	−0.055494			304.55	6.798E-03	543.15	2.304E-04
101	76	1-Decanol	$C_{10}H_{22}O$	112-30-1	158.28108	−69.985	5818.8	8.0715			285	1.937E-02	503	2.727E-04
101	77	1-Decene	$C_{10}H_{20}$	872-05-9	140.2658	−15.868	1434.8	0.68071			206.89	4.975E-03	443.75	2.064E-04
101	78	Decylmercaptan	$C_{10}H_{22}S$	143-10-2	174.34668	−11.464	1510.1	−0.012754			247.56	4.364E-03	512.35	1.848E-04
101	79	1-Decyne	$C_{10}H_{18}$	764-93-2	138.24992	−2.3633	791.93	−1.2272			229.15	3.786E-03	505.6	2.167E-04
100	80	Deuterium	D_2	7782-39-0	4.0316	0.00000134 8					20.35	1.348E-06	20.35	1.348E-06
101	81	1,1-Dibromoethane	$C_2H_4Br_2$	557-91-5	187.86116	−10.457	1101.1	−0.003135 4			210.15	5.331E-03	381.15	5.071E-04
101	82	1,2-Dibromoethane	$C_2H_4Br_2$	106-93-4	187.86116	−17.582	1635.4	0.9932			282.85	2.042E-03	404.51	5.120E-04

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*C*	*T*, K	Viscosity at *T*	*T*, K	Viscosity at *T*
101	83	Dibromomethane	CH_2Br_2	74-95-3	173.83458	−10.013	921.31				220.6	2.919E-03	488.8	2.951E-04
101	84	Dibutyl ether	$C_8H_{18}O$	142-96-1	130.22792	10.027	206	−3.1607			175.3	5.931E-03	414.15	1.989E-04
101	85	*m*-Dichlorobenzene	$C_6H_4Cl_2$	541-73-1	147.00196	−114.7	4905.4	16.358	−0.00020577	2	248.39	2.463E-03	547.16	1.565E-04
101	86	*o*-Dichlorobenzene	$C_6H_4Cl_2$	95-50-1	147.00196	−30.6	2153.4	2.9371			256.15	2.726E-03	453.57	3.761E-04
101	87	*p*-Dichlorobenzene	$C_6H_4Cl_2$	106-46-7	147.00196	31.63	−1080	−6.114			326.14	8.543E-04	447.21	3.039E-04
101	88	1,1-Dichloroethane	$C_2H_4Cl_2$	75-34-3	98.95916	−8.991	870.2	−0.2805			176.19	4.076E-03	330.45	3.407E-04
101	89	1,2-Dichloroethane	$C_2H_4Cl_2$	107-06-2	98.95916	15.312	−41.12	−3.919			237.49	1.839E-03	400	2.557E-04
101	90	Dichloromethane	CH_2Cl_2	75-09-2	84.93258	−13.071	940.03	0.3733			208.38	1.406E-03	373.93	2.374E-04
101	91	1,1-Dichloropropane	$C_3H_6Cl_2$	78-99-9	112.98574	−10.872	1033.1	−0.00067435			192.5	4.051E-03	361.25	3.301E-04
101	92	1,2-Dichloropropane	$C_3H_6Cl_2$	78-87-5	112.98574	−11.269	1195.3	0.012736			172.71	1.381E-02	369.52	3.495E-04
101	93	Diethanolamine	$C_4H_{11}NO_2$	111-42-2	105.13564	−375.21	17,177	66.66	−3.6367	0.5	293.15	8.128E-01	589.28	1.090E-04

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	C	C	C	C	C	T, K	Viscosity at T	T, K	Viscosity at T
101	94	Diethylamine	$C_4H_{11}N$	109-89-7	73.13684	−17.57	1385.7	0.85647			223.35	1.190E-03	329.1	2.260E-04
101	95	Diethyl ether	$C_4H_{10}O$	60-29-7	74.12216	10.197	−63.8	−3.226			200	7.359E-04	373.15	1.141E-04
101	96	Diethyl sulfide	$C_4H_{10}S$	352-93-2	90.18072	−5.135	667.5	−0.8553			225	1.113E-03	365.25	2.354E-04
101	97	1,1-Difluoroethane	$C_2H_4F_2$	75-37-6	66.04997	10.501	−52.181	−3.3459			154.56	1.229E-03	343.15	1.026E-04
101	98	1,2-Difluoroethane	$C_2H_4F_2$	624-72-6	66.04997	−10.072	710.48	−0.14677			179.6	1.030E-03	283.65	2.257E-04
101	99	Difluoromethane	CH_2F_2	75-10-5	52.02339	−17.723	850.2	1.0601	−1.1719E-18	7	137	1.832E-03	343.15	6.050E-05
101	100	Diisopropylamine	$C_6H_{15}N$	108-18-9	101.19	−1.7366	599.8	−1.4237			250	7.479E-04	357.05	2.193E-04
101	101	Diisopropyl ether	$C_6H_{14}O$	108-20-3	102.17476	−11.5	993	0.022			187.65	2.258E-03	341.45	2.110E-04
101	102	Diisopropyl ketone	$C_7H_{14}O$	565-80-0	114.18546	−15.097	1426.9	0.51512			204.81	4.569E-03	397.55	2.194E-04
101	103	1,1-Dimethoxyethane	$C_4H_{10}O_2$	534-15-6	90.121	−10.968	885.49				159.95	4.375E-03	337.45	2.378E-04
101	104	1,2-Dimethoxypropane	$C_5H_{12}O_2$	7778-85-0	104.14758	−10.631	1086.4				226.1	2.950E-03	366.15	4.695E-04

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*C*	*T*, K	Viscosity at *T*	*T*, K	Viscosity at *T*
101	105	Dimethylacetylene	C_4H_6	503-17-3	54.09044	0.10842	300.2	−1.6831			240.91	3.796E-04	371	1.186E-04
101	106	Dimethylamine	C_2H_7N	124-40-3	45.08368	−10.93	699.5				200	5.917E-04	308.15	1.734E-04
101	107	2,3-Dimethylbutane	C_6H_{14}	79-29-8	86.17536	7.2565	221.4	−2.7946			220	1.103E-03	331.13	2.509E-04
101	108	1,1-Dimethylcyclohexane	C_8H_{16}	590-66-9	112.21264	−10.716	1140.5	−0.047736			239.66	1.992E-03	392.7	3.045E-04
101	109	*cis*-1,2-Dimethylcyclohexane	C_8H_{16}	2207-01-4	112.21264	−11.796	1463.5				223.16	5.311E-03	484.92	1.541E-04
101	110	*trans*-1,2-Dimethylcyclohexane	C_8H_{16}	6876-23-9	112.21264	−11.344	1168.9	0.04513			184.99	8.315E-03	396.58	2.956E-04
101	111	Dimethyldisulfide	$C_2H_6S_2$	624-92-0	94.19904	−10.577	1172.6	−0.14244			188.44	6.093E-03	382.9	2.336E-04
101	112	Dimethylether	C_2H_6O	115-10-6	46.06844	−10.62	448.99	0.00008396 7			131.65	7.398E-04	248.31	1.490E-04
101	113	*N,N*-Dimethylformamide	C_3H_7NO	68-12-2	73.09378	−20.425	1515.5	1.4444			240	2.041E-03	425.15	2.981E-04
101	114	2,3-Dimethylpentane	C_7H_{16}	565-59-3	100.20194	−12.08	1112.2	0.09654			160	9.669E-03	362.93	2.147E-04

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	C	C	C	C	C	T, K	Viscosity at T	T, K	Viscosity at T
101	115	Dimethyl phthalate	$C_{10}H_{10}O_4$	131-11-3	194.184	152.9	−10,183	−22.709	50,373,000,000	−4	274.18	6.023E-02	612.8	1.109E-04
	116	Dimethylsilane	C_2H_8Si	1111-74-6	60.17042									
101	117	Dimethyl sulfide	C_2H_6S	75-18-3	62.134	−17.641	1067.5	1.0317			225	6.696E-04	310.48	2.528E-04
101	118	Dimethyl sulfoxide	C_2H_6OS	67-68-5	78.13344	−37.347	2835	3.7937			291.67	2.253E-03	464	3.547E-04
101	119	Dimethyl terephthalate	$C_{10}H_{10}O_4$	120-61-6	194.184	−16.0542	2221.79	0.63829			413.79	1.071E-03	559.2	3.214E-04
101	120	1,4-Dioxane	$C_4H_8O_2$	123-91-1	88.10512	−46.166	3086.2	5.104			284.95	1.525E-03	374.65	4.610E-04
101	121	Diphenyl ether	$C_{12}H_{10}O$	101-84-8	170.2072	−12.373	2017.5				293.15	4.124E-03	613.44	1.134E-04
101	122	Dipropylamine	$C_6H_{15}N$	142-84-7	101.19	−15.404	1390	0.5564			260	9.454E-04	382.35	2.118E-04
101	123	Dodecane	$C_{12}H_{26}$	112-40-3	170.33484	−134.91	6054.2	19.337	−0.000024443	2	262.15	3.002E-03	526.4	1.220E-04
101	124	Eicosane	$C_{20}H_{42}$	112-95-8	282.54748	−18.315	2283.5	0.95485			309.58	4.242E-03	616.93	2.078E-04
101	125	Ethane	C_2H_6	74-84-0	30.069	−7.00046	276.38	−0.6087	−3.11E-18	7	90.35	1.247E-03	300	3.587E-05
101	126	Ethanol	C_2H_6O	64-17-5	46.06844	7.875	781.98	−3.0418			200	1.315E-02	440	1.416E-04
101	127	Ethyl acetate	$C_4H_8O_2$	141-78-6	88.10512	14.354	−154.6	−3.7887			220	1.132E-03	473.15	9.061E-05
101	128	Ethylamine	C_2H_7N	75-04-7	45.08368	19.822	−0.12598	−4.9793			192.15	1.727E-03	289.73	2.236E-04

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	C	C	C	C	C	T, K	Viscosity at T	T, K	Viscosity at T
101	129	Ethylbenzene	C_8H_{10}	100-41-4	106.165	−13.563	1208.6	0.377			178.2	8.012E-03	413.1	2.326E-04
101	130	Ethylbenzoate	$C_9H_{10}O_2$	93-89-0	150.1745	−40.706	3035	4.2655			250	6.643E-03	486.55	3.109E-04
101	131	2-Ethylbutanoic acid	$C_6H_{12}O_2$	88-09-5	116.15828	−12.24	1836.4	0.021868			258.15	6.705E-03	466.95	2.822E-04
101	132	Ethylbutyrate	$C_6H_{12}O_2$	105-54-4	116.15828	−15.485	1325.6	0.6432			250	1.319E-03	394.65	2.533E-04
101	133	Ethylcyclohexane	C_8H_{16}	1678-91-7	112.21264	−22.11	1673	1.641			200	6.406E-03	404.94	2.956E-04
101	134	Ethylcyclopentane	C_7H_{14}	1640-89-7	98.18606	−6.894	818.6	−0.5941			253.15	9.605E-04	378.15	2.599E-04
101	135	Ethylene	C_2H_4	74-85-1	28.05316	1.8878	78.865	−2.1554			104	6.334E-04	250	6.142E-05
101	136	Ethylenediamine	$C_2H_8N_2$	107-15-3	60.09832	−53.908	4030.8	5.9704			284.29	2.487E-03	483.15	1.723E-04
101	137	Ethyleneglycol	$C_2H_6O_2$	107-21-1	62.06784	−290.36	14,251	42.486	−0.00 0040 369	2	260.15	1.305E-01	576	1.276E-04
101	138	Ethyleneimine	C_2H_5N	151-56-4	43.0678	−11.012	967.4				250	7.909E-04	329	3.123E-04
101	139	Ethyleneoxide	C_2H_4O	75-21-8	44.05256	−8.521	634.2	−0.3314			160.65	1.918E-03	283.85	2.863E-04
101	140	Ethylformate	$C_3H_6O_2$	109-94-4	74.07854	−9.8417	876.4	−0.1708			245	7.435E-04	345	2.486E-04
101	141	2-Ethylhexanoic acid	$C_8H_{16}O_2$	149-57-5	144.211	−13.037	2346				155.15	8.035E+00	510.1	2.165E-04

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*C*	*T*, K	Viscosity at *T*	*T*, K	Viscosity at *T*
101	142	Ethyl hexyl ether	$C_8H_{18}O$	5756-43-4	130.22792	−11.311	1337.2	−0.02982			180	1.765E-02	417.15	2.522E-04
101	143	Ethyl isopropyl ether	$C_5H_{12}O$	625-54-7	88.14818	−11.331	908.46	0.0004247 8			140	7.908E-03	326.15	1.949E-04
101	144	Ethyl isopropyl ketone	$C_6H_{12}O$	565-69-5	100.15888	−11.452	1172.7	−0.000100 95			204.15	3.319E-03	386.55	2.207E-04
101	145	Ethyl mercaptan	C_2H_6S	75-08-1	62.13404	−9.7574	729.43	−0.14912			125.26	9.520E-03	308.15	2.626E-04
101	146	Ethyl propionate	$C_5H_{10}O_2$	105-37-3	102.1317	−8.9215	950.8	−0.32687			250	9.848E-04	372.25	2.480E-04
101	147	Ethyl propyl ether	$C_5H_{12}O$	628-32-0	88.14818	0.7109	386.51	−1.7754			200	1.156E-03	337.01	2.086E-04
101	148	Ethyl trichlorosilane	$C_2H_5Cl_3Si$	115-21-9	163.506	−11.499	1122.6				167.55	8.239E-03	371.05	2.089E-04
101	149	Fluorine	F_2	7782-41-4	37.996806 4	8.18	−75.6	−3.5148			53.48	7.317E-04	140	5.954E-05
101	150	Fluorobenzene	C_6H_5F	462-06-6	96.102303 2	−10.064	1058.7	−0.17162			232.15	1.599E-03	453.15	1.542E-04
101	151	Fluoroethane	C_2H_5F	353-36-6	48.0595	−10.118	464.42				129.95	1.438E-03	235.45	2.900E-04
101	152	Fluoromethane	CH_3F	593-53-3	34.03292	−10.501	427.78	0.0086309			131.35	7.450E-04	194.82	2.587E-04
101	153	Formaldehyde	CH_2O	50-00-0	30.02598	−7.6591	603.36	−0.53378			155.15	1.560E-03	253.85	2.645E-04
101	154	Formamide	CH_3NO	75-12-7	45.04062	−74.521	5081.5	9.0873			273.15	7.171E-03	493	3.829E-04

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	C	C	C	C	C	T, K	Viscosity at T	T, K	Viscosity at T
101	155	Formic acid	CH_2O_2	64-18-6	46.0257	−48.529	3394.7	5.3903			281.45	2.319E-03	373.71	5.444E-04
101	156	Furan	C_4H_4O	110-00-9	68.07396	−10.923	894.63	−0.00068418			200	1.575E-03	304.5	3.392E-04
101	157	Helium-4	He	7440-59-7	4.0026	−9.6312	−3.841	−1.458	−1.065E-08	10	2.2	3.628E-06	5.1	2.532E-06
101	158	Heptadecane	$C_{17}H_{36}$	629-78-7	240.46774	−19.991	2245.1	1.1982			295.13	3.814E-03	575.3	2.088E-04
101	159	Heptanal	$C_7H_{14}O$	111-71-7	114.18546	−9.5468	1147.2	−0.23251			229.8	2.971E-03	426.15	2.580E-04
101	160	Heptane	C_7H_{16}	142-82-5	100.20194	−98.159	3592.6	14.197	−0.00029555	2	180.15	4.341E-03	432.16	1.003E-04
101	161	Heptanoic acid	$C_7H_{14}O_2$	111-14-8	130.185	−40.543	3328.3	4.1804			265.83	9.242E-03	496.15	3.754E-04
101	162	1-Heptanol	$C_7H_{16}O$	111-70-6	116.20134	−66.654	5325.8	7.66	−2.2512E-28	9.9041	239.15	8.805E-02	448.6	3.190E-04
101	163	2-Heptanol	$C_7H_{16}O$	543-49-7	116.20134	−125.81	7996	16.412	−7.6643E-17	6	220	3.856E-01	432.9	2.707E-04
101	164	3-Heptanone	$C_7H_{14}O$	106-35-4	114.18546	−9.3874	1204.9	−0.32618			234.15	2.427E-03	421.15	2.040E-04
101	165	2-Heptanone	$C_7H_{14}O$	110-43-0	114.18546	−13.929	1321.9	0.40382			250	1.642E-03	424.18	2.318E-04
101	166	1-Heptene	C_7H_{14}	592-76-7	98.18606	−10.819	841.33				154.12	4.701E-03	429.92	1.417E-04
101	167	Heptyl mercaptan	$C_7H_{16}S$	1639-09-4	132.26694	−11.812	1291.9	0.076469			229.92	3.097E-03	450.09	2.087E-04
101	168	1-Heptyne	C_7H_{12}	628-71-7	96.17018	−2.7947	563.86	−1.1636			192.22	2.528E-03	447.2	1.777E-04

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	C	C	C	C	C	T, K	Viscosity at T	T, K	Viscosity at T
101	169	Hexadecane	$C_{16}H_{34}$	544-76-3	226.44116	−20.182	2203.5	1.2289			291.31	3.536 E-03	564.15	2.054 E-04
101	170	Hexanal	$C_6H_{12}O$	66-25-1	100.15888	0.1369	633.77	−1.6659			214.93	2.849 E-03	401.15	2.563 E-04
101	171	Hexane	C_6H_{14}	110-54-3	86.17536	−56.569	2140.5	7.5175	−0.00 0017 676	2	174.65	2.379 E-03	406.08	1.164 E-04
101	172	Hexanoic acid	$C_6H_{12}O_2$	142-62-1	116.158	−46.402	3448.6	5.0849			269.25	5.854 E-03	478.85	4.019 E-04
101	173	1-Hexanol	$C_6H_{14}O$	111-27-3	102.17476	−39.324	3841	3.6933	−2.12 E-30	10.485	228.55	8.570 E-02	429.9	3.343 E-04
101	174	2-Hexanol	$C_6H_{14}O$	626-93-7	102.175	−82.705	7404.9	6.4721	1.5016	0.41014	223	4.919 E-01	412.4	3.274 E-04
101	175	2-Hexanone	$C_6H_{12}O$	591-78-6	100.15888	−11.445	1187.2	0.0029076			217.35	2.561 E-03	400.7	2.108 E-04
101	176	3-Hexanone	$C_6H_{12}O$	589-38-8	100.15888	−13.684	1283.4	0.33755			217.5	2.563 E-03	396.65	2.185 E-04
101	177	1-Hexene	C_6H_{12}	592-41-6	84.15948	−10.903	796.19				133.39	7.197 E-03	336.63	1.959 E-04
101	178	3-Hexyne	C_6H_{10}	928-49-4	82.14036	−4.2684	647.6	−1.0087			170.05	3.550 E-03	432	1.377 E-04
101	179	Hexylmercaptan	$C_6H_{14}S$	111-31-9	118.24036	−10.073	1123.3	−0.16515			192.62	6.035 E-03	425.81	2.172 E-04
101	180	1-Hexyne	C_6H_{10}	693-02-7	82.14036	−4.7263	594.43	−0.86247			141.25	8.332 E-03	412	2.083 E-04
101	181	2-Hexyne	C_6H_{10}	764-35-2	82.14036	−3.7464	624.2	−1.084			183.65	2.483 E-03	435	1.368 E-04
101	182	Hydrazine	H_4N_2	302-01-2	32.04516	−75.781	4175.4	9.6508	−7.27 E-09	3	274.69	1.451 E-03	522.52	2.191 E-04
101	183	Hydrogen	H_2	1333-74-0	2.01588	−11.661	24.7	−0.261	−4.10 E-16	10	13.95	2.546 E-05	33	3.906 E-06

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*C*	*T*, K	Viscosity at *T*	*T*, K	Viscosity at *T*
101	184	Hydrogen bromide	BrH	10035-10-6	80.91194	−11.633	316.38	0.56191			185.15	9.207E-04	206.45	8.206E-04
101	185	Hydrogen chloride	ClH	7647-01-0	36.46094	−116.34	3834.6	16.864	−2.5875E-10	4	158.97	1.003E-03	318.15	5.777E-05
101	186	Hydrogen cyanide	CHN	74-90-8	27.02534	−21.927	1266.5	1.5927			259.83	2.754E-04	298.85	1.821E-04
101	187	Hydrogen fluoride	FH	7664-39-3	20.006343 2	353.99	13,928	−41.717	−2962	−0.5	189.79	1.545E-03	368.92	1.185E-04
101	188	Hydrogen sulfide	H_2S	7783-06-4	34.08088	−10.905	762.11	−0.11863			187.68	5.726E-04	350	8.089E-05
101	189	Isobutyric acid	$C_4H_8O_2$	79-31-2	88.10512	−11.497	1365.7	0.036966			250	2.938E-03	450	2.649E-04
101	190	Isopropylamine	C_3H_9N	75-31-0	59.11026	−31.157	1926	2.925			250	6.737E-04	453.15	1.214E-04
101	191	Malonic acid	$C_3H_4O_4$	141-82-2	104.06146	−117.73	9943.3	14.589			409.15	3.386E-03	580	4.281E-04
101	192	Methacrylic acid	$C_4H_6O_2$	79-41-4	86.08924	−14.527	1497.7	0.51747			288.15	1.664E-03	434.15	3.582E-04
101	193	Methane	CH_4	74-82-8	16.04625	−6.1572	178.15	−0.95239	−9.0606E-24	10	90.69	2.063E-04	188	2.262E-05
101	194	Methanol	CH_4O	67-56-1	32.04186	−25.317	1789.2	2.069			175.47	1.193E-02	337.85	3.442E-04
101	195	*N*-Methylacetamide	C_3H_7NO	79-16-3	73.09378	−4.648	1832	−1.2191			301.15	3.995E-03	478.15	2.392E-04

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	C	C	C	C	C	T, K	Viscosity at T	T, K	Viscosity at T
101	196	Methyl acetate	$C_3H_6O_2$	79-20-9	74.07854	13.557	−187.3	−3.6592			250	6.135E-04	425	1.198E-04
101	197	Methyl acetylene	C_3H_4	74-99-7	40.06386	−2.8737	301.35	−1.2271			170.45	6.045E-04	373.15	8.846E-05
101	198	Methyl acrylate	$C_4H_6O_2$	96-33-3	86.08924	10.848	75	−3.297			275	6.126E-04	400	1.636E-04
101	199	Methyl amine	CH_5N	74-89-5	31.05571	−17.044	1074	0.84203			179.69	1.236E-03	273.15	2.275E-04
101	200	Methyl benzoate	$C_8H_8O_2$	93-58-3	136.14792	−21.971	2267.4	1.4173			288.15	2.299E-03	472.65	2.149E-04
101	201	3-Methyl-1,2-butadiene	C_5H_8	598-25-4	68.11702	−10.481	648.37	−0.041947			159.53	1.321E-03	314	1.739E-04
101	202	2-Methylbutane	C_5H_{12}	78-78-4	72.14878	−12.596	889.11	0.20469			150	3.542E-03	310	1.928E-04
101	203	2-Methylbutanoic acid	$C_5H_{10}O_2$	116-53-0	102.1317	−1.035	1048.5	−1.5474			298.15	1.774E-03	450.15	2.859E-04
101	204	3-Methyl-1-butanol	$C_5H_{12}O$	123-51-3	88.14182	−46.377	4169.6	4.7			155.95	5.989E+01	404.15	3.891E-04
101	205	2-Methyl-1-butene	C_5H_{10}	563-46-2	70.13229	−10.755	705.48	−0.011113			135.58	3.675E-03	304.3	2.034E-04
101	206	2-Methyl-2-butene	C_5H_{10}	513-35-9	70.13229	−8.4453	639.21	−0.38409			139.39	3.164E-03	311.7	1.841E-04

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*C*	*T*, K	Viscosity at *T*	*T*, K	Viscosity at *T*
101	207	2-Methyl-1-butene-3-yne	C_5H_6	78-80-8	66.10114	−3.6585	441.1	−1.0547			160.15	1.915E-03	390.15	1.476E-04
101	208	Methylbutyl ether	$C_5H_{12}O$	628-28-4	88.14818	−11.278	949.12	−0.00012343			157.48	5.239E-03	343.31	2.006E-04
101	209	Methylbutyl sulfide	$C_5H_{12}S$	628-29-5	104.2214	−10.97	1067.3	−0.017484			175.3	6.930E-03	396.58	2.286E-04
101	210	3-Methyl-1-butyne	C_5H_8	598-23-2	68.11702	−1.8842	433.58	−1.3238			183.45	1.628E-03	364	2.035E-04
101	211	Methyl butyrate	$C_5H_{10}O_2$	623-42-7	102.1317	−12.206	1141.7	0.15014			200	3.339E-03	375.9	2.539E-04
101	212	Methylchlorosilane	CH_5ClSi	993-00-0	80.5889	−12.002	1009.7				139.05	8.734E-03	353.6	1.066E-04
101	213	Methylcyclohexane	C_7H_{14}	108-87-2	98.18606	−11.358	1213.1				146.58	4.587E-02	457.68	1.653E-04
101	214	1-Methylcyclohexanol	$C_7H_{14}O$	590-67-0	114.18546	−6.1534	3219	−1.4494			299.15	2.584E-02	548.8	8.025E-05
101	215	*cis*-2-Methylcyclohexanol	$C_7H_{14}O$	7443-70-1	114.18546	−6.6904	3150.5	−1.392			280.15	3.729E-02	491.2	1.360E-04
101	216	*trans*-2-Methylcyclohexanol	$C_7H_{14}O$	7443-52-9	114.18546	−6.6915	3173.2	−1.3046			269.15	1.107E-01	493.6	2.356E-04

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	C	C	C	C	C	T, K	Viscosity at T	T, K	Viscosity at T
101	217	Methylcyclopentane	C_6H_{12}	96-37-7	84.15948	−1.8553	612.62	−1.3774			248.15	9.288E-04	353.15	2.742E-04
101	218	1-Methylcyclopentene	C_6H_{10}	693-89-0	82.1436	−4.8515	679.07	−0.93238			146.62	7.669E-03	433.6	1.301E-04
101	219	3-Methylcyclopentene	C_6H_{10}	1120-62-3	82.1436	−6.7424	788.86	−0.69862			168.54	3.539E-03	420.8	1.129E-04
101	220	Methyldichlorosilane	CH_4Cl_2Si	75-54-7	115.03396	−10.517	745.32				275	4.070E-04	314.7	2.891E-04
101	221	Methylethyl ether	C_3H_8O	540-67-0	60.09502	−11.104	627.18	0.036581			160	9.133E-04	280.5	1.731E-04
101	222	Methylethyl ketone	C_4H_8O	78-93-3	72.10572	−1.0598	520.68	−1.4961			186.48	2.266E-03	535.5	7.577E-05
101	223	Methylethyl sulfide	C_3H_8S	624-89-5	76.1606	−10.842	863.65	−0.000074603			167.23	3.409E-03	339.8	2.474E-04
101	224	Methyl formate	$C_2H_4O_2$	107-31-3	60.05196	−39.641	2113.3	4.308			250	6.104E-04	304.9	3.134E-04
101	225	Methylisobutyl ether	$C_5H_{12}O$	625-44-5	88.14818	−11.27	888.42	0.024736			188	1.637E-03	331.7	2.143E-04
101	226	Methylisobutyl ketone	$C_6H_{12}O$	108-10-1	100.15888	−11.394	1168.7	−0.007539			189.15	5.222E-03	389.15	2.170E-04
	227	Methyl isocyanate	C_2H_3NO	624-83-9	57.05132									

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	C	C	C	C	C	T, K	Viscosity at T	T, K	Viscosity at T
101	228	Methylisopropyl ether	$C_4H_{10}O$	598-53-8	74.1216	−11.216	737.75	0.019308			127.93	4.722E-03	303.92	1.703E-04
101	229	Methylisopropyl ketone	$C_5H_{10}O$	563-80-4	86.1323	−11.272	1048.9	0.0003049 3			180.15	4.305E-03	367.55	2.212E-04
101	230	Methylisopropyl sulfide	$C_4H_{10}S$	1551-21-9	90.1872	−11.075	990.72				171.64	4.977E-03	553.1	9.292E-05
101	231	Methyl mercaptan	CH_4S	74-93-1	48.10746	−10.628	645	0.025885			150.18	2.022E-03	279.11	2.826E-04
101	232	Methyl methacrylate	$C_5H_8O_2$	80-62-6	100.11582	−0.099	496	−1.5939			260	8.635E-04	400	2.229E-04
101	233	2-Methyloctanoic acid	$C_9H_{18}O_2$	3004-93-1	158.23802	−12.579	2224.2				240	3.646E-02	518.15	2.519E-04
101	234	2-Methylpentane	C_6H_{14}	107-83-5	86.17536	−12.86	946.91	0.26191			119.55	2.506E-02	333.41	2.038E-04
101	235	Methyl pentyl ether	$C_6H_{14}O$	628-80-8	102.17476	−11.391	1090.8	1.0752E-07			176	5.554E-03	372	2.120E-04
101	236	2-Methylpropane	C_4H_{10}	75-28-5	58.1222	−13.912	797.09	0.45308			110	1.072E-02	310.95	1.588E-04
101	237	2-Methyl-2-propanol	$C_4H_{10}O$	75-65-0	74.1216	400.35	−30,387	−56.971	550,680,000	−3	295.56	5.334E-03	451.21	1.006E-04

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	C	C	C	C	C	T, K	Viscosity at T	T, K	Viscosity at T
101	238	2-Methylpropene	C_4H_8	115-11-7	56.10632	−10.385	599.59	−0.046088			132.81	2.253E-03	266.25	2.270E-04
101	239	Methyl propionate	$C_4H_8O_2$	554-12-1	88.10512	−4.841	696.7	−0.9194			250	8.002E-04	352.6	2.593E-04
101	240	Methylpropyl ether	$C_4H_{10}O$	557-17-5	74.12316	−10.705	788.94	−0.048383			133.97	6.390E-03	312.2	2.127E-04
101	241	Methylpropyl sulfide	$C_4H_{10}S$	3877-15-4	90.18772	−10.569	952.38	−0.063873			160.17	7.103E-03	368.69	2.333E-04
	242	Methylsilane	CH_6Si	992-94-9	46.14384									
101	243	alpha-Methyl styrene	C_9H_{10}	98-83-9	118.1757	−11.632	1251.6	0.071692			249.95	1.972E-03	438.65	2.382E-04
101	244	Methyl tert-butyl ether	$C_5H_{12}O$	1634-04-4	88.14882	−13.415	1050.5	0.33157	0	0	164.55	4.801E-03	328.2	2.502E-04
101	245	Methyl vinyl ether	C_3H_6O	107-25-5	58.07914	−10.34	519.61	−0.013899			151.15	9.377E-04	278.65	1.929E-04
101	246	Naphthalene	$C_{10}H_8$	91-20-3	128.17052	−19.308	1822.5	1.218			353.43	9.077E-04	633.15	1.892E-04
101	247	Neon	Ne	7440-01-9	20.1797	−17.945	115.57	1.428	−2.14E-17	10	25.09	1.602E-04	44.13	2.706E-05
101	248	Nitroethane	$C_2H_5NO_2$	79-24-3	75.06766	−4.438	746.5	−0.9385			200	3.420E-03	387.22	3.027E-04
101	249	Nitrogen	N_2	7727-37-9	28.0134	16.004	−181.61	−5.1551			63.15	2.633E-04	124	3.331E-05

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	C	C	C	C	C	T_{min}, K	Viscosity at T_{min}	T_{max}, K	Viscosity at T_{max}
	250	Nitrogen trifluoride	F_3N	7783-54-2	71.00191									
101	251	Nitromethane	CH_3NO_2	75-52-5	61.04002	−9.5556	981.64	−0.19453			244.6	1.344E-03	374.35	3.078E-04
101	252	Nitrous oxide	N_2O	10024-97-2	44.0128	19.329	−381.68	−4.8618			210	2.065E-04	283.09	7.730E-05
101	253	Nitric oxide	NO	10102-43-9	30.0061	−246.65	3150.3	49.98	−0.22541	1	109.5	3.858E-04	180.05	3.791E-05
101	254	Nonadecane	$C_{19}H_{40}$	629-92-5	268.5209	−16.403	2119.5	0.6881			305.04	4.012E-03	603.15	2.068E-04
101	255	Nonanal	$C_9H_{18}O$	124-19-6	142.23862	−4.3492	1052.7	−1.0035			267.3	2.432E-03	465.52	2.606E-04
101	256	Nonane	C_9H_{20}	111-84-2	128.2551	−68.54	3165.3	9.0919	−0.00013519	2	218.15	3.306E-03	593.15	4.997E-05
101	257	Nonanoic acid	$C_9H_{18}O_2$	112-05-0	158.238	−48.851	4095	5.294			285.55	1.030E-02	528.75	3.670E-04
101	258	1-Nonanol	$C_9H_{20}O$	143-08-8	144.2545	−39.863	4089	3.7631			280	1.733E-02	486.25	2.823E-04
101	259	2-Nonanol	$C_9H_{20}O$	628-99-9	144.255	−98.854	7183.8	12.283			238.15	2.310E-01	471.7	3.334E-04
101	260	1-Nonene	C_9H_{18}	124-11-8	126.23922	−11.069	1081.7				191.91	4.372E-03	420.02	2.048E-04
101	261	Nonyl mercaptan	$C_9H_{20}S$	1455-21-6	160.3201	−11.319	1428	−0.022545			253.05	3.026E-03	492.95	1.912E-04
101	262	1-Nonyne	C_9H_{16}	3452-09-3	124.22334	−2.3409	715.52	−1.222			223.15	3.206E-03	487.2	2.172E-04
101	263	Octadecane	$C_{18}H_{38}$	593-45-3	254.49432	−22.688	2466	1.5703			301.31	3.926E-03	589.86	2.057E-04

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*C*	*T*, K	Viscosity at *T*	*T*, K	Viscosity at *T*
101	264	Octanal	$C_8H_{16}O$	124-13-0	128.212	−2.5373	900.91	−1.2685			251.65	2.555 E-03	445.15	2.614 E-04
101	265	Octane	C_8H_{18}	111-65-9	114.22852	−98.805	3905.5	14.103	−0.00025112	2	211.15	2.629 E-03	454.96	1.111 E-04
101	266	Octanoic acid	$C_8H_{16}O_2$	124-07-2	144.211	−60.795	4617.8	7.028			289.65	6.652 E-03	512.85	3.576 E-04
101	267	1-Octanol	$C_8H_{18}O$	111-87-5	130.22792	−0.22128	3018.4	−2.8054	0.00001314 1	2	280	1.472 E-02	468.35	2.902 E-04
101	268	2-Octanol	$C_8H_{18}O$	123-96-6	130.228	−145.99	9296.7	19.285			241.55	1.856 E-01	452.9	5.409 E-04
101	269	2-Octanone	$C_8H_{16}O$	111-13-7	128.21204	−11.736	1415.2	0.0003618			252.85	2.161 E-03	446.15	1.913 E-04
101	270	3-Octanone	$C_8H_{16}O$	106-68-3	128.21204	−20.804	1834.6	1.3403			255.55	2.039 E-03	440.65	2.075 E-04
101	271	1-Octene	C_8H_{16}	111-66-0	112.21264	−11.19	1057.4				171.45	6.587 E-03	453.52	1.422 E-04
101	272	Octylmercaptan	$C_8H_{18}S$	111-88-6	146.29352	−11.498	1362.1	0.015575			223.95	4.837 E-03	472.19	1.999 E-04
101	273	1-Octyne	C_8H_{14}	629-05-0	110.19676	−3.8552	684.22	−1.0071			193.55	3.614 E-03	468	1.868 E-04
101	274	Oxalic acid	$C_2H_2O_4$	144-62-7	90.03488	−27.978	2915.1	2.3374			462.65	6.539 E-04	516	4.399 E-04
101	275	Oxygen	O_2	7782-44-7	31.9988	−4.1476	94.04	−1.207			54.36	7.170 E-04	150	6.990 E-05
101	276	Ozone	O_3	10028-15-6	47.9982	−10.94	415.96				77.55	3.787 E-03	208.8	1.300 E-04
101	277	Pentadecane	$C_{15}H_{32}$	629-62-9	212.41458	−19.299	2088.6	1.1091			283.07	3.486 E-03	543.84	2.091 E-04
101	278	Pentanal	$C_5H_{10}O$	110-62-3	86.1323	−8.2185	919.43	−0.42363			191.59	3.532 E-03	375.15	2.539 E-04

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*C*	*T*, K	Viscosity at *T*	*T*, K	Viscosity at *T*
101	279	Pentane	C_5H_{12}	109-66-0	72.14878	−53.509	1836.6	7.1409	−0.00019627	2	143.42	3.529E-03	465.15	4.796E-05
101	280	Pentanoic acid	$C_5H_{10}O_2$	109-52-4	102.132	−37.067	2856.7	3.7344			270	3.773E-03	458.95	3.510E-04
101	281	1-Pentanol	$C_5H_{12}O$	71-41-0	88.14882	−36.561	3542.2	3.3364	−8.0487E-37	12.84	253.15	1.649E-02	410.95	3.842E-04
101	282	2-Pentanol	$C_5H_{12}O$	6032-29-7	88.14882	−16.456	3209.9				200	6.660E-01	392.2	2.557E-04
101	283	2-Pentanone	$C_5H_{10}O$	107-87-9	86.1323	−11.055	1005.3	0.0039301			250	9.009E-04	375.46	2.354E-04
101	284	3-Pentanone	$C_5H_{10}O$	96-22-0	86.1323	−2.8695	596.32	−1.2025			234.18	1.024E-03	375.14	2.232E-04
101	285	1-Pentene	C_5H_{10}	109-67-1	70.1329	−10.667	659.56				108.02	1.045E-02	303.22	2.051E-04
101	286	2-Pentylmercaptan	$C_5H_{12}S$	2084-19-7	104.21378	−6.9168	818.76	−0.59628			220	1.643E-03	385.15	2.385E-04
101	287	Pentylmercaptan	$C_5H_{12}S$	110-66-7	104.21378	−11.677	1091.2	0.10658			197.45	3.745E-03	399.79	2.463E-04
101	288	1-Pentyne	C_5H_8	627-19-0	68.11702	−1.7273	424.34	−1.342			167.45	2.322E-03	378	1.898E-04
101	289	2-Pentyne	C_5H_8	627-21-4	68.11702	−3.7241	516.54	−1.1167			163.83	1.902E-03	415.2	9.980E-05
101	290	Phenanthrene	$C_{14}H_{10}$	85-01-8	178.2292	−22.472	2566.9	1.5749			372.38	1.920E-03	610.03	2.849E-04
101	291	Phenol	C_6H_6O	108-95-2	94.11124	−15.822	3301.8				291.45	1.119E-02	555.4	5.134E-05

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	C	C	C	C	C	T, K	Viscosity at T	T, K	Viscosity at T
101	292	Phenyl isocyanate	C_7H_5NO	103-71-9	119.1207	−11.31	1280				243.15	2.368E-03	522.4	1.420E-04
101	293	Phthalic anhydride	$C_8H_4O_3$	85-44-9	148.11556	195.25	−11,072	−29.084			404.15	1.229E-03	557.65	1.986E-04
101	294	Propadiene	C_3H_4	463-49-0	40.06386	−6.3528	240.85	−0.58229			136.87	5.772E-04	298.15	1.416E-04
101	295	Propane	C_3H_8	74-98-6	44.09562	−17.156	646.25	1.1101	−7.3439E-11	4	85.47	9.458E-03	360	4.275E-05
101	296	1-Propanol	C_3H_8O	71-23-8	60.09502	23.467	116.07	−5.3372	2,880,100,000	−4.0267	146.95	2.069E+01	370.35	4.735E-04
101	297	2-Propanol	C_3H_8O	67-63-0	60.095	−8.8918	2357.6	−0.91376			185.26	3.917E-01	355.3	4.892E-04
101	298	Propenylcyclohexene	C_9H_{14}	13511-13-2	122.20746	−11.208	1079.8				199	3.083E-03	508.8	1.133E-04
101	299	Propionaldehyde	C_3H_6O	123-38-6	58.07914	−5.9402	617.95	−0.74183			165	2.522E-03	322.15	2.470E-04
101	300	Propionic acid	$C_3H_6O_2$	79-09-4	74.0785	−23.931	1834.6	1.9124			252.45	2.275E-03	414.32	3.430E-04
101	301	Propionitrile	C_3H_5N	107-12-0	55.0785	−6.698	753.58	−0.63783			180.37	2.928E-03	370.25	2.172E-04
101	302	Propyl acetate	$C_5H_{10}O_2$	109-60-4	102.1317	17.797	−252.43	−4.291			250	1.002E-03	473.15	1.045E-04
101	303	Propylamine	C_3H_9N	107-10-8	59.11026	−9.8074	1010.4	−0.25697			188.36	3.060E-03	321	2.908E-04
101	304	Propylbenzene	C_9H_{12}	103-65-1	120.19158	−18.282	1549.7	1.0454			200	6.774E-03	432.39	2.357E-04

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*C*	*T*, K	Viscosity at *T*	*T*, K	Viscosity at *T*
101	305	Propylene	C_3H_6	115-07-1	42.07974	−92.082	1907.3	15.639	−0.043098	1	87.89	1.549E-02	333.15	5.147E-05
101	306	Propyl formate	$C_4H_8O_2$	110-74-7	88.10512	−73.735	2668.2	10.993	−0.018364	1	180.25	5.852E-03	353.97	2.810E-04
101	307	2-Propyl mercaptan	C_3H_8S	75-33-2	76.16062	−5.7244	638.2	−0.76415			142.61	6.477E-03	325.71	2.784E-04
101	308	Propyl mercaptan	C_3H_8S	107-03-9	76.16062	−10.153	840.71	−0.093763			159.95	4.641E-03	340.87	2.656E-04
101	309	1,2-Propylene glycol	$C_3H_8O_2$	57-55-6	76.09442	−804.54	30,487	130.79	−0.15449	1	213.15	9.502E+02	500.8	3.307E-04
101	310	Quinone	$C_6H_4O_2$	106-51-4	108.09476	−14.846	1829.4	0.3729			388.85	3.642E-04	454	1.965E-04
	311	Silicon tetrafluoride	F_4Si	7783-61-1	104.07911									
101	312	Styrene	C_8H_8	100-42-5	104.14912	−22.675	1758	1.6701			242.54	1.919E-03	418.31	2.268E-04
101	313	Succinic acid	$C_4H_6O_4$	110-15-6	118.08804	−104.32	9615.1	12.587			460.85	1.913E-03	591	4.426E-04
101	314	Sulfur dioxide	O_2S	7446-09-5	64.0638	46.223	−1378	−8.7475			225	6.900E-04	400	6.557E-05
101	315	Sulfur hexafluoride	F_6S	2551-62-4	146.0554192	3.8305	41.21	−2.1342			223.15	5.388E-04	318.69	2.383E-04
101	316	Sulfur trioxide	O_3S	7446-11-9	80.0632	−88.793	6400.7	10.709			289.95	2.477E-03	318.15	9.456E-04

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	C	C	C	C	C	$T_{,K}$	Viscosity at T	$T_{,K}$	Viscosity at T
101	317	Terephthalic acid	$C_8H_6O_4$	100-21-0	166.13084	−11.566	2843.2				700.15	5.502E-04	795.28	3.385E-04
101	318	o-Terphenyl	$C_{18}H_{14}$	84-15-1	230.30376	−215.09	11,612	31.849	−0.026882	1	329.35	1.736E-02	723.15	1.522E-04
101	319	Tetradecane	$C_{14}H_{30}$	629-59-4	198.3888	−136.73	6421.3	19.493	−0.00002297	2	277.65	3.350E-03	554.4	1.170E-04
101	320	Tetrahydrofuran	C_4H_8O	109-99-9	72.10572	−10.321	900.92	−0.069128			164.65	5.505E-03	373.15	2.446E-04
101	321	1,2,3,4-Tetrahydronaphthalene	$C_{10}H_{12}$	119-64-2	132.20228	−118.86	5829.5	16.605	−0.00016991	2	237.4	1.183E-02	576	1.458E-04
101	322	Tetrahydrothiophene	C_4H_8S	110-01-0	88.17132	−10.843	1165.2				293.15	1.040E-03	303.15	9.125E-04
101	323	2,2,3,3-Tetramethylbutane	C_8H_{18}	594-82-1	114.22852	5.5351	632.38	−2.6576			373.96	1.999E-04	454	8.859E-05
101	324	Thiophene	C_4H_4S	110-02-1	84.13956	−16.671	1342.5	0.8388			250	1.269E-03	393.15	2.625E-04
101	325	Toluene	C_7H_8	108-88-3	92.13842	−226.08	6805.7	37.542	−0.060853	1	178.18	1.569E-02	383.78	2.428E-04
101	326	1,1,2-Trichloroethane	$C_2H_3Cl_3$	79-00-5	133.40422	0.388	736.5	−1.7063			236.5	2.955E-03	387	3.798E-04
101	327	Tridecane	$C_{13}H_{28}$	629-50-5	184.36142	−111.98	5468.6	15.579	−0.00016992	2	267.67	3.399E-03	540	1.520E-04
101	328	Triethylamine	$C_6H_{15}N$	121-44-8	101.19	−3.7067	585.78	−1.0926			250	6.135E-04	359.05	2.028E-04

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	C	C	C	C	C	T, K	Viscosity at T	T, K	Viscosity at T
101	329	Trimethylamine	C_3H_9N	75-50-3	59.11026	10.142	−130.41	−3.2199			200	5.156E-04	308.15	1.612E-04
101	330	1,2,3-Trimethylbenzene	C_9H_{12}	526-73-8	120.19158	−11.756	1483.1	−0.040387			247.79	2.495E-03	449.27	1.663E-04
101	331	1,2,4-Trimethylbenzene	C_9H_{12}	95-63-6	120.19158	−9.6461	1281.2	−0.29478			229.33	3.477E-03	442.53	1.942E-04
101	332	2,2,4-Trimethylpentane	C_8H_{18}	540-84-1	114.22852	−12.928	1137.5	0.25725	−3.6929E-28	10	165.78	8.636E-03	541.15	4.530E-05
101	333	2,3,3-Trimethylpentane	C_8H_{18}	560-21-4	114.22852	−4.0309	990.76	−1.1771			172.22	1.305E-02	387.91	2.049E-04
101	334	1,3,5-Trinitrobenzene	$C_6H_3N_3O_6$	99-35-4	213.10452	−10.707	1818.5				398.4	2.150E-03	676.8	3.288E-04
101	335	2,4,6-Trinitrotoluene	$C_7H_5N_3O_6$	118-96-7	227.1311	−11.504	3301	−0.39102			353.15	1.167E-02	625	1.601E-04
101	336	Undecane	$C_{11}H_{24}$	1120-21-4	156.30826	52.176	−4951.9	−8.5676	570,980	−2	247.57	3.240E-03	511.2	1.569E-04
101	337	1-Undecanol	$C_{11}H_{24}O$	112-42-5	172.30766	−69.778	5905.2	8.0214			288.45	2.089E-02	590.15	1.856E-04
101	338	Vinyl acetate	$C_4H_6O_2$	108-05-4	86.08924	−22.407	1462.8	1.7006			225	1.237E-03	345.65	2.654E-04
101	339	Vinylacetylene	C_4H_4	689-97-4	52.07456	−2.2333	320.37	−1.2915			173.15	8.764E-04	364	1.273E-04
101	340	Vinyl chloride	C_2H_3Cl	75-01-4	62.49822	0.26297	276.55	−1.7282			130	2.425E-03	400	8.272E-05

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	C	C	C	C	C	T, K	Viscosity at T	T, K	Viscosity at T
101	341	Vinyltrichlorosilane	$C_2H_3Cl_3Si$	75-94-5	161.48972	−10.37	823.31				178.35	3.171E-03	434.52	2.086E-04
101	342	Water	H_2O	7732-18-5	18.01528	−52.843	3703.6	5.866	−5.879E-29	10	273.16	1.702E-03	646.15	5.028E-05
101	343	*m*-Xylene	C_8H_{10}	108-38-3	106.165	−11.91	1094.9	0.13825			225.3	1.834E-03	413.1	2.189E-04
101	344	*o*-Xylene	C_8H_{10}	95-47-6	106.165	−15.489	1393.5	0.63711			247.98	1.735E-03	418.1	2.459E-04
101	345	*p*-Xylene	C_8H_{10}	106-42-3	106.165	−7.381	911.7	−0.54152			286.41	7.021E-04	413.1	2.169E-04

Except for deuterium, the liquid viscosity is calculated by Eqn 101: $\mu = \exp(C_1 + C_2/T + C_3 \ln T + C_4 T^{C5})$ where μ is the viscosity in Pa·s and T is the temperature in K. Viscosity is either 1 atm or the vapor pressure, whichever is higher. For deuterium, liquid viscosity is calculated by Eqn 100: $\mu = C_1 + C_2T + C_3T^2 + C_4T^3 + C_5T^4$ where μ is the viscosity in Pa·s and T is the temperature in K.

Values in this table were taken from the Design Institute for Physical Properties (DIPPR) of the American Institute of Chemical Engineers (AIChE), 801 Critically Evaluated Gold Standard™ Database, copyright 2016 AIChE, and reproduced with permission of AIChE and of the DIPPR Evaluated Process Design Data Project Steering Committee. Their source should be cited as "R. L. Rowley, W. V. Wilding, J. L. Oscarson, T. A. Knotts, N. F. Giles, *DIPPR® Data Compilation of Pure Chemical Properties*, Design Institute for Physical Properties, AIChE, New York, NY (2016)".

Table 2-140 Viscosities of Liquids: Coordinates for Use with Fig. 2-19

Liquid	X	Y	Liquid	X	Y
Acetaldehyde	15.2	4.8	Glycerol, 100%	2.0	30.0
Acetic acid, 100%	12.1	14.2	Glycerol, 50%	6.9	19.6
Acetic acid, 70%	9.5	17.0	Heptane	14.1	8.4
Acetic anhydride	12.7	12.8	Hexane	14.7	7.0
Acetone, 100%	14.5	7.2	Hydrochloric acid, 31.5%	13.0	16.6
Acetone, 35%	7.9	15.0	Iodobenzene	12.8	15.9
Acetonitrile	14.4	7.4	Isobutyl alcohol	7.1	18.0
Acrylic acid	12.3	13.9	Isobutyric acid	12.2	14.4
Allyl alcohol	10.2	14.3	Isopropyl iodide	13.7	11.2
Allyl bromide	14.4	9.6	Kerosene	10.2	16.9

Liquid	X	Y	Liquid	X	Y
Allyl iodide	14.0	11.7	Linseed oil, raw	7.5	27.2
Ammonia, 100%	12.6	2.0	Mercury	18.4	16.4
Ammonia, 26%	10.1	13.9	Methanol, 100%	12.4	10.5
Amyl acetate	11.8	12.5	Methanol, 90%	12.3	11.8
Amyl alcohol	7.5	18.4	Methanol, 40%	7.8	15.5
Aniline	8.1	18.7	Methyl acetate	14.2	8.2
Anisole	12.3	13.5	Methyl acrylate	13.0	9.5
Arsenic trichloride	13.9	14.5	Methyl *i*-butyrate	12.3	9.7
Benzene	12.5	10.9	Methyl *n*-butyrate	13.2	10.3
Brine, $CaCl_2$, 25%	6.6	15.9	Methyl chloride	15.0	3.8
Brine, NaCl, 25%	10.2	16.6	Methyl ethyl ketone	13.9	8.6
Bromine	14.2	13.2	Methyl formate	14.2	7.5
Bromotoluene	20.0	15.9	Methyl iodide	14.3	9.3
Butyl acetate	12.3	11.0	Methyl propionate	13.5	9.0
Butyl acrylate	11.5	12.6	Methyl propyl ketone	14.3	9.5
Butyl alcohol	8.6	17.2	Methyl sulfide	15.3	6.4
Butyric acid	12.1	15.3	Naphthalene	7.9	18.1
Carbon dioxide	11.6	0.3	Nitric acid, 95%	12.8	13.8
Carbon disulfide	16.1	7.5	Nitric acid, 60%	10.8	17.0
Carbon tetrachloride	12.7	13.1	Nitrobenzene	10.6	16.2
Chlorobenzene	12.3	12.4	Nitrogen dioxide	12.9	8.6
Chloroform	14.4	10.2	Nitrotoluene	11.0	17.0
Chlorosulfonic acid	11.2	18.1	Octane	13.7	10.0
Chlorotoluene, *ortho*	13.0	13.3	Octyl alcohol	6.6	21.1
Chlorotoluene, *meta*	13.3	12.5	Pentachloroethane	10.9	17.3
Chlorotoluene, *para*	13.3	12.5	Pentane	14.9	5.2

Liquid	X	Y	Liquid	X	Y
Cresol, *meta*	2.5	20.8	Phenol	6.9	20.8
Cyclohexanol	2.9	24.3	Phosphorus tribromide	13.8	16.7
Cyclohexane	9.8	12.9	Phosphorus trichloride	16.2	10.9
Dibromomethane	12.7	15.8	Propionic acid	12.8	13.8
Dichloroethane	13.2	12.2	Propyl acetate	13.1	10.3
Dichloromethane	14.6	8.9	Propyl alcohol	9.1	16.5
Diethyl ketone	13.5	9.2	Propyl bromide	14.5	9.6
Diethyl oxalate	11.0	16.4	Propyl chloride	14.4	7.5
Diethylene glycol	5.0	24.7	Propyl formate	13.1	9.7
Diphenyl	12.0	18.3	Propyl iodide	14.1	11.6
Dipropyl ether	13.2	8.6	Refrigerant R-22	17.2	4.7
Dipropyl oxalate	10.3	17.7	Sodium	16.4	13.9
Ethyl acetate	13.7	9.1	Sodium hydroxide, 50%	3.2	25.8
Ethyl acrylate	12.7	10.4	Stannic chloride	13.5	12.8
Ethyl alcohol, 100%	10.5	13.8	Succinonitrile	10.1	20.8
Ethyl alcohol, 95%	9.8	14.3	Sulfur dioxide	15.2	7.1
Ethyl alcohol, 40%	6.5	16.6	Sulfuric acid, 110%	7.2	27.4
Ethyl benzene	13.2	11.5	Sulfuric acid, 100%	8.0	25.1
Ethyl bromide	14.5	8.1	Sulfuric acid, 98%	7.0	24.8
2-Ethyl butyl acrylate	11.2	14.0	Sulfuric acid, 60%	10.2	21.3
Ethyl chloride	14.8	6.0	Sulfuryl chloride	15.2	12.4
Ethyl ether	14.5	5.3	Tetrachloroethane	11.9	15.7
Ethyl formate	14.2	8.4	Thiophene	13.2	11.0
2-Ethyl hexyl acrylate	9.0	15.0	Titanium tetrachloride	14.4	12.3
Ethyl iodide	14.7	10.3	Toluene	13.7	10.4
Ethyl propionate	13.2	9.9	Trichloroethylene	14.8	10.5
Ethyl propyl ether	14.0	7.0	Triethylene glycol	4.7	24.8

Liquid	X	Y	Liquid	X	Y
Ethyl sulfide	13.8	8.9	Turpentine	11.5	14.9
Ethylene bromide	11.9	15.7	Vinyl acetate	14.0	8.8
Ethylene chloride	12.7	12.2	Vinyl toluene	13.4	12.0
Ethylene glycol	6.0	23.6	Water	10.2	13.0
Ethylidene chloride	14.1	8.7	Xylene, *ortho*	13.5	12.1
Fluorobenzene	13.7	10.4	Xylene, *meta*	13.9	10.6
Formic acid	10.7	15.8	Xylene, *para*	13.9	10.9

Figure 2-19 Nomograph for viscosities of liquids at 1 atm. For coordinates see Table 2-141. To convert centipoise to pascal-seconds, multiply by 0.001.

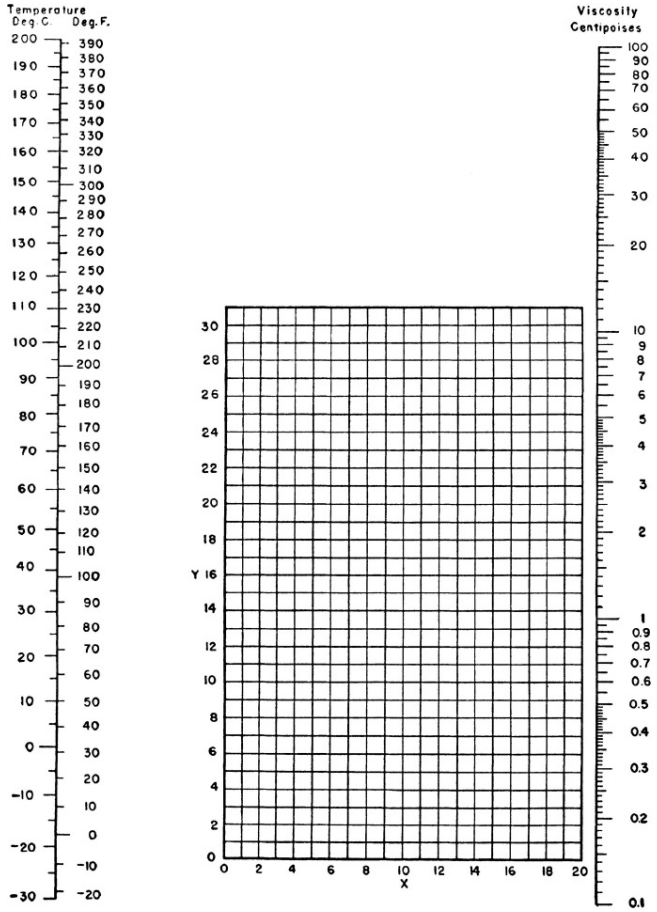

Table 2-141 Diffusivities of Pairs of Gases and Vapors (1 atm), D_v in cm^2/s

Substance	Temp., °C	Air	A	H_2	O_2	N_2	CO_2	N_2O	CH_4	C_2H_6	C_2H_4	n-C_4H_{10}	i-C_4H_{10}	Ref.
Acetic acid	0	0.1064		0.416			0.0716							8
Acetone	0	.109		.361										6, 16
n-Amyl alcohol	0	.0589		.235			.0422							8
sec-Amyl alcohol	30	.072												5
Amyl butyrate	0	.040												8
Amyl formate	0	.0543												8
i-Amyl formate	0	.058												8
Amyl isobutyrate	0	.0419		.171										8
Amyl propionate	0	.046		.1914			.0347							8
Aniline	0	.0610												8
	30	.075												5
Anthracene	0	.0421												8
Argon	20					0.194								18
Benzene	0	.077		.306	0.0797		.0528							8, 15
Benzidine	0	.0298												8

Substance	Temp., °C	Air	A	H	O	N	CO	N O	CH	C H	C H	*n*-C H	*i*-C H	Ref.
Benzyl chloride	0	.066												8
n-Butyl acetate	0	.058												8
i-Butyl acetate	0	.0612		.2364			.0425							8
n-Butyl alcohol	0	.0703		.2716			.0476							8
	30	.088												5
i-Butyl alcohol	0	.0727		.2771			.0483							8
Butyl amine	0	.0821												8
i-Butyl amine	0	.0853												8
i-Butyl butyrate	0	.0468		.185			.0327							8
i-Butyl formate	0	.0705												8
i-Butyl isobutyrate	0	.0457		.191			.0364							8
i-Butyl propionate	0	.0529		.203			.0366							8

Substance	Temp., °C	Air	A	H	O	N	CO	N O	CH	C H	C H	*n*-C H	*i*-C H	Ref.
i-Butyl valerate	0	.0424		.173			.0308							8
Butyric acid	0	.067		.264			.0476							8
i-Butyric acid	0	.0679		.271			.0471							8
Cadmium	0					.17								13
Caproic acid	0	.050												8
i-Caproic acid	0	.0513												8
Carbon dioxide	0	.138		.550	.139			0.096	0.153					8
	20					.163								19
	25							.0996 *	.0021 5†					1, 9
	500‡				.9									18
Carbon disulfide	0	.0892		.369			.063							8
Carbon monoxide	0			.651	.185		.137				0.116			8
	450‡				1.0									18
Carbon tetrachloride	0			.293	0.0636									16, 17
Chloroben zene	30	.075												5

Substance	Temp., °C	Air	A	H	O	N	CO	N O	CH	C H	C H	*n*-C H	*i*-C H	Ref.
Chloroform	0	.091												6
Chloropicrin	25	.088												10
m-Chlorotoluene	0	.054												8
o-Chlorotoluene	0	.059												8
p-Chlorotoluene	0	.051												8
Cyanogen chloride	0	.111												10
Cyclohexane	15		0.0719	.319	.0744	.0760								3
	45	.086												6
n-Decane	90			.306		.0841								3
Diethylamine	0	.0884												8
2,3-Dimethylbutane	15		.0657	.301	.0753	.0751								3
Diphenyl	0	.0610												8
n-Dodecane	126			.308		.0813								3
Ethane	0			.459										8
Ethanol	0			.377			.0686							20

Substance	Temp., °C	Air	A	H	O	N	CO	N O	CH	C H	C H	*n*-C H	*i*-C H	Ref.
Ether (diethyl)	0	.0778		.298			.0546							7, 8
Ethyl acetate	0	.0715		.273			.0487							8
	30	.089												5
Ethyl alcohol	0	.102		.375			.0685							8
Ethyl benzene	0	.0658												8
Ethyl *n*-butyrate	0	.0579		.224			.0407							8
Ethyl *i*-butyrate	0	.0591		.229			.0413							8
Ethyl ene	0			.486										8
Ethyl formate	0	.0840		.337			.0573							8
Ethyl propionate	0	.068		.236			.0450							4, 8
Ethyl valerate	0	.0512		.205			.0367							8
Eugenol	0	.0377												8
Formic acid	0	.1308		.510			.0874							8
Helium	0		.641											8
	20					.705								19
n-Heptane	38								.066§					

Substance	Temp., °C	Air	A	H	O	N	CO	N O	CH	C H	C H	*n*-C H	*i*-C H	Ref.
n-Hexane	15		.0663	.290	.0753	.0757								3
Hexyl alcohol	0	.0499		.200			.0351							8
Hydrogen	0	.611			.697	.674	.550	.535	.625	0.459	0.486	0.272	0.277	8
	25						.646			.537	.726			2
	500				4.2									18
Hydrogen cyanide	0	0.173												10
Hydrogen peroxide	60	.188												11
Iodine	0	.07				0.070								8, 12, 14
Mercury	0	.112		0.53		.13								8, 12, 13
Mesitylene	0	.056												8
Methane	500				1.1								18	
Methyl acetate	0	.084		.333			0.0567							8
Methyl alcohol	0	.132		.506			.0879							8
Methyl butyrate	0	.0633		.242			.0446							8
Methyl *i*-butyrate	0	.0639		.257			.0451							8

Substance	Temp., °C	Air	A	H	O	N	CO	N O	CH	C H	C H	*n*-C H	*i*-C H	Ref.
Methyl cyclopentane	15		0.0731	.318	0.0742	0.0758								3
Methyl formate	0	.0872												8
Methyl propionate	0	.0735		.295			.0528							8
Methyl valerate	0	0.0569												8
Naphthalene	0	.0513												8
Nitrogen	0				0.181									8
	25						0.165			0.148	0.163	0.0960	0.0908	2
Nitrous oxide	0			0.535			.096							8
n-Octane	0	.0505												8
	30		0.0642	.271	0.0705	0.0710								3
Oxygen	0	.178		.697		0.181	.139							8
Phosgene	0	.095												10
Propionic acid	0	.0829		.330			.0588							8
Propyl acetate	0	.067												8

Substance	Temp., °C	Air	A	H	O	N	CO	N O	CH	C H	C H	*n*-C H	*i*-C H	Ref.
n-Propyl alcohol	0	.085		.315			.0577							8
i-Propyl alcohol	0	.0818												8
	30	.101												5
n-Propyl benzene	0	.0481												8
i-Propyl benzene	0	.0489												8
n-Propyl bromide	0	.085												8
i-Propyl bromide	0	.0902												8
Propyl butyrate	0	.0530		.206			.0364							8
Propyl formate	0	.0712		.281			.0490							8
n-Propyl iodide	0	.079												8
i-Propyl iodide	0	.0802												8
n-Propyl isobutyrate	0	.0549		.212			.0388							8

Substance	Temp., °C	Air	A	H	O	N	CO	N O	CH	C H	C H	*n*-C H	*i*-C H	Ref.
i-Propyl isobutyrate	0	.059												8
Propyl propionate	0	.057		.212			.0395							8
Propyl valerate	0	.0466		.189			.0341							8
Safrol	0	.0434												8
i-Safrol	0	.0455												8
Sulfur hexafluoride	25			.418										2
Toluene	0	.076	0.071											4, 8
	30	.088												5
Trimethylcarbinol	0	.087												8
2,2,4-Trimethylpentane	30		0.0618	.288	0.0688	0.0705								3
2,2,3-Trimethylheptane	90			.270		0.0684								3
n-Valeric acid	0	0.050												8
i-Valeric acid	0	0.0544		.212			.0376							8

Substance	Temp., °C	Air	A	H	O	N	CO	N O	CH	C H	C H	*n*-C H	*i*-C H	Ref.
Water	0	0.220		.75			.138							8, 20
	450				1.3									18

*320 mmHg.

†40 atm.

‡Also at other temperatures.

§Strong function of concentration.

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Substance	Temp., °C	Air	A	H	O	N	CO	N O	CH	C H	C H	*n*-C H	*i*-C H	Ref.
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Table 2-143 has a representative selection of diffusion coefficients. The subsection "Prediction and Correlation of Physical Properties" should be consulted for estimation techniques.

Table 2-142 Diffusivities in Liquids (25°C)

Solute†	Solvent	$D_L \times 10^5$, sq cm/sec	Estimated possible, error, ± %1	Ref.
Acetal*	Ethanol	1.25	5	11
Acetamide*	Ethanol	0.68	5	11
Acetamide*	Water	1.19	3	11
Acetic acid	Acetone	3.31		4
Acetic acid	Benzene	2.11		1, 4
Acetic acid	Carbon tetrachloride	1.49		4
Acetic acid	Ethylene glycol	0.13		4
Acetic acid	Toluene	2.26		4
Acetic acid*	Water	1.24	3	11
Acetonitrile	Water	1.66	5	11
Acetylene	Water	1.78, 2.11		1, 24
Allyl alcohol*	Ethanol	1.06	5	11
Allyl alcohol	Water	1.19	6	11
Ammonia*	Water	1.7, 2.0, 2.3		1, 11
i-Amyl alcohol*	Ethanol	0.87	5	11
i-Amyl alcohol	Water	1.0	8	11, 25
Benzene	Carbon tetrachloride	1.53		7
Benzene (50 mole %)	*n*-Decane	1.72		26
Benzene (50 mole %)	2,4-Dimethyl pentane	2.49		26
Benzene (50 mole %)	*n*-Dodecane	1.40		26

Solute†	Solvent	$D \times 10$, sq cm/sec	Estimated possible, error, ± %1	Ref.
Benzene (50 mole %)	*n*-Heptane	2.47		26
Benzene (50 mole %)	*n*-Hexadecane	0.96		26
Benzene (50 mole %)	*n*-Octadecane	0.86		26
Benzoic acid	Acetone	2.62		4
Benzoic acid	Benzene	1.38		4
Benzoic acid	Carbon tetrachloride	0.91		4
Benzoic acid	Ethylene glycol	0.043		4
Benzoic acid	Toluene	1.49		4
Bromine	Benzene	2.7		11
Bromine	Carbon disulfide	4.1		11
Bromine	Water	1.3		11
Bromobenzene	Benzene	2.30		25
Bromoform*	Acetone	2.90		11
Bromoform	*i*-Amyl alcohol	0.53		11
Bromoform	Ethanol	1.08	5	11
Bromoform*	Ethyl ether	3.62		11
Bromoform	Methanol	2.20		23
Bromoform	*n*-Propanol	0.94		11
n-Butanol	Water	0.96	5	1, 11, 18, 25
Caffeine	Water	0.63	6	11
Carbon dioxide	Ethanol	4.0	6	11
Carbon dioxide	Water	1.96	1	1, 3, 5, 20, 24, 28
Carbon disulfide (50 mole %, 200 atm.)	*n*-Butanol	3.57		14
Carbon disulfide (50 mole %, 200 atm.)	*i*-Butanol	2.42		14
Carbon disulfide (50 mole %, 218 atm.)	Chlorobenzene	3.00		14

Solute†	Solvent	$D \times 10$, sq cm/sec	Estimated possible, error, ± %1	Ref.
Carbon disulfide (50 mole %, 200 atm.)	2,4-Dimethyl pentane	3.63		14
Carbon disulfide (50 mole %, 100 atm.)	*n*-Heptane	3.0		14
Carbon disulfide (50 mole %, 50 atm.)	Methyl cyclohexane	3.5		14
Carbon disulfide (50 mole %, 200 atm.)	*n*-Octane	3.10		14
Carbon disulfide (50 mole %)	Toluene	2.06		14
Carbon tetrachloride	Benzene	2.04	3	7, 9
Carbon tetrachloride*	Cyclohexane	1.49	2	9, 10*
Carbon tetrachloride	Decalin	0.776	2	9
Carbon tetrachloride	Dioxane	1.02	2	9
Carbon tetrachloride*	Ethanol	1.50	2	9, 10*
Carbon tetrachloride	*n*-Heptane	3.17	2	9
Carbon tetrachloride	Kerosene	0.961	2	9
Carbon tetrachloride	Methanol	2.30	2	9
Carbon tetrachloride	*i*-Octane	2.57	2	9
Carbon tetrachloride	Tetralin	0.735	2	9
Chloral*	Ethanol	0.68	5	11
Chloral hydrate	Water	0.77	7	11
Chlorine	Water	1.44	4	1, 28
Chlorobenzene	Benzene	2.66		25
Chloroform	Benzene	2.50	6	1, 25
Chloroform	Ethanol	1.38	3	11
Cinnamic acid	Acetone	2.41		4
Cinnamic acid	Benzene	1.12		4
Cinnamic acid	Carbon tetrachloride	0.76		4
Cinnamic acid	Toluene	2.41		4

Solute†	Solvent	$D \times 10$, sq cm/sec	Estimated possible, error, ± %1	Ref.
1,1'-Dichloropropanol	Water	1.0	6	11
Dicyanodiamide*	Water	1.18	4	11
Diethyl ether	Benzene	2.73		25
Diethyl ether	Water	0.85		2
2,4-Dimethyl pentane (50 mole %)	*n*-Dodecane	1.44		26
2,4-Dimethyl pentane (50 mole %)	*n*-Hexadecane	0.88		26
Ethanol*	Water	1.28	4	1, 7, 9,* 11,* 22
Ethyl acetate	Ethyl benzoate	0.94		6
Ethylene dichloride	Benzene	2.8		1, 25
Formic acid	Acetone	3.77		4
Formic acid	Benzene	2.28		4
Formic acid	Carbon tetrachloride	1.89		4
Formic acid	Ethylene glycol	0.094		4
Formic acid	Toluene	2.65		
Formic acid	Water	1.37	10	11
Glucose	Water	0.69	6	11
Glycerol	*i*-Amyl alcohol	0.12		11
Glycerol	Ethanol	0.56		11
Glycerol*	Water	0.94	6	1, 11*
n-Heptane (50 mole %)	*n*-Dodecane	1.58		26
n-Heptane (50 mole %)	*n*-Hexadecane	1.00		26
n-Heptane (50 mole %)	*n*-Octadecane	0.92		26
n-Heptane (50 mole %)	*n*-Tetradecane	1.29		26
Hexamethylene tetramine	Water	0.67		11
Hydrogen chloride*	Water	3.10	3	4, 11,* 12*
Hydrogen	Water	5.85 (4.4)		1, 11, 24(?)

Solute†	Solvent	$D \times 10^{5}$, sq cm/sec	Estimated possible, error, ± %1	Ref.
Hydrogen sulfide	Water	1.61		1
Hydroquinone*	Ethanol	0.53	5	11
Hydroquinone*	Water	0.88, 1.12		2, 11*
Iodine	Acetic acid	1.13		11
Iodine	Anisole	1.25		11
Iodine	Benzene	1.98		9, 19, 23
Iodine	Bromobenzene	1.25	10	4, 11, 19
Iodine	Carbon disulfide	3.2		11, 19, 23
Iodine	Carbon tetrachloride	1.45	8	9, 11, 19
Iodine	Chloroform	2.30	3	11, 23
Iodine	Cyclohexane	1.80		4
Iodine	Dioxane	1.07		9
Iodine*	Ethanol	1.30		4, 11*
Iodine	Ethyl acetate	2.2		11, 19
Iodine	Ethyl ether	3.61		11
Iodine	Ethylene bromide	0.93		11
Iodine	*n*-Heptane	3.4, 2.5		9, 11, 19
Iodine	*n*-Hexane	4.15		4, 9
Iodine	Mesitylene	1.49		9
Iodine	Methanol	1.74		19
Iodine	Methyl cyclohexane	2.1		4
Iodine	*n*-Octane	2.76		4
Iodine	Tetrabromoethane	2.0		11
Iodine	*n*-Tetradecane	0.96		4
Iodine	Toluene	2.1		11
Iodine	*m*-Xylene	1.82		9, 11

Solute†	Solvent	$D \times 10^{5}$, sq cm/sec	Estimated possible, error, ± %1	Ref.
Iodobenzene	Ethanol	1.09	3	11
Lactose*	Water	0.49	5	11
Maltose*	Water	0.48	5	11
Mannitol*	Water	0.65	5	11
Methanol	Water	1.6		1, 7, 11
Nicotine*	Water	0.60	8	11
Nitric acid*	Water	2.98	2	11
Nitrobenzene	Carbon tetrachloride	1.00		7
Nitrogen	Water	1.9		1, 24
Nitrous oxide	Water	1.8		1, 11
Oxalic acid*	Water	1.61	2	11
Oxygen	Glycerol*-water (106 poise)	0.24		13
Oxygen	Sucrose*-water (125 poise)	0.25		13
Oxygen	Water	2.5	20	1, 3, 15, 21, 24
Pentaerythritol*	Water	0.77	4	11
Phenol	*i*-Amyl alcohol	0.2		11
Phenol	Benzene	1.68		1
Phenol	Carbon disulfide	3.7		11
Phenol	Chloroform	2.0		11
Phenol	Ethanol	0.89		11
Phenol	Ethyl ether	3.9		11
n-Propanol	Water	1.1		1, 7, 11
Pyridine*	Ethanol	1.24	3	11
Pyridine	Water	0.76	7	11
Pyrogallol	Water	0.74	7	11

Solute†	Solvent	$D \times 10^{5}$, sq cm/sec	Estimated possible, error, ± %1	Ref.
Raffinose*	Water	0.41	4	11
Resorcinol*	Ethanol	0.46	5	11
Resorcinol*	Water	0.87	4	11
Saccharose*	Water	0.49	4	11
Stearic acid*	Ethanol	0.65	5	11
Succinic acid*	Water	0.94		11
Sucrose	Water	0.56	6	2, 27
Sulfur dioxide	Water	1.7		15, 17
Sulfuric acid*	Water	1.97	3	11
Tartaric acid*	Water	0.80	10	11
1,1,2,2-Tetrabromoethane	1,1,2,2-Tetra-chloroethane	0.61	4	11
Toluene	*n*-Decane	2.09		4
Toluene	*n*-Dodecane	1.38		4
Toluene	*n*-Heptane	3.72		4
Toluene	*n*-Hexane	4.21		4
Toluene	*n*-Tetradecane	1.02		4
Urea	Ethanol	0.73		11
Urea	Water	1.37	2	8, 11
Urethane	Water	1.06		11, 25
Water	Glycerol	0.021		16

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Solute†	Solvent	D × 10 , sq cm/sec	Estimated possible, error, ± %1	Ref.
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†Dilute solutions and 1 atm unless otherwise noted; use $D_L\mu/T$ = constant to estimate effect of temperature; * indicates that reference gives effect of concentration.				

2.15.2. THERMAL TRANSPORT PROPERTIES

Table 2-143 Transport Properties of Selected Gases at Atmospheric Pressure*

	Thermal conductivity, W/(m · K) Temperature, K					Viscosity, 10^{-4} Pa · s Temperature, K					Prandtl number, dimensionless Temperature, K			
Substance	250	300	400	500	600	250	300	400	500	600	250	300	400	500
Acetone	0.0080	0.0115	0.0201	0.0310			0.077	0.101	0.128	0.156				
Acetylene	0.0162	0.0213	0.0332	0.0452	0.0561		0.104	0.135	0.164					
Benzene	0.0077	0.0104	0.0195	0.0335	0.0524		0.076	0.101	0.127	0.154				
Bromine	0.0038	0.0048	0.0067					0.203	0.260	0.291				
CCl_4	0.0053	0.0067	0.0099	0.0126			0.101	0.131	0.162	0.191				
Chlorine	0.0071	0.0089	0.0124	0.0156	0.0190		0.136	0.178	0.218	0.259				
Deuterium	0.122	0.141	0.176			0.111	0.126	0.153	0.178	0.201				
Propylene	0.0114	0.0168	0.0226	0.0430	0.0580	0.073	0.087	0.115	0.141		0.860	0.797	0.762	
R 22	0.0080	0.0109	0.0170	0.0230	0.0290	0.109	0.129	0.168			0.820	0.771	0.760	
SO_2	0.0078	0.0096	0.0143	0.0200	0.0256		0.129	0.175	0.217	0.256				

*An approximate interpolation scheme is to plot the logarithm of the viscosity or the thermal conductivity versus the logarithm of the absolute temperature. At 250 K the viscosity of gaseous argon is to be read as 1.95×10^{-5} Pa · s = 0.0000195 N · s/m^2.

Table 2-144 Prandtl Number of Air*, Pressure, bar

Temperature, K	1	5	10	20	30	40	50	60	70	80	90	100
80	mix	2.31	2.32	2.35	2.37	2.40	2.42	2.45	2.48	2.51	2.54	2.57
90	0.796	1.76	1.77	1.78	1.79	1.81	1.82	1.83	1.85	1.87	1.89	1.91
100	0.786	0.872	1.54	1.53	1.53	1.53	1.53	1.53	1.53	1.54	1.54	1.55
120	0.773	0.813	0.89	1.44	1.65	1.54	1.48	1.43	1.40	1.38	1.36	1.34
140	0.763	0.782	0.82	0.94	1.20	1.59	2.14	2.43	2.07	1.78	1.62	1.52

Temperature, K	1	5	10	20	30	40	50	60	70	80	90	100
160	0.754	0.765	0.78	0.84	0.92	1.03	1.13	1.25	1.37	1.65	1.83	1.72
180	0.745	0.754	0.763	0.792	0.830	0.876	0.932	1.00	1.07	1.14	1.20	1.25
200	0.738	0.743	0.749	0.766	0.788	0.812	0.841	0.87	0.90	0.95	0.97	1.00
240	0.724	0.727	0.729	0.737	0.746	0.756	0.767	0.78	0.80	0.81	0.81	0.82
280	0.710	0.711	0.713	0.717	0.721	0.726	0.731	0.737	0.742	0.75	0.75	0.76
300	0.705	0.707	0.708	0.712	0.715	0.717	0.721	0.725	0.728	0.732	0.737	0.742
350	0.699	0.699	0.699	0.701	0.703	0.705	0.707	0.709	0.711	0.712	0.714	0.716
400	0.694	0.694	0.694	0.695	0.696	0.697	0.698	0.699	0.700	0.701	0.703	0.704
450	0.691	0.691	0.691	0.691	0.692	0.692	0.693	0.693	0.694	0.695	0.695	0.696
500	0.689	0.689	0.689	0.689	0.689	0.690	0.690	0.690	0.690	0.691	0.691	0.691
600	0.690	0.690	0.690	0.689	0.689	0.689	0.689	0.689	0.689	0.690	0.690	0.690
700	0.696	0.696	0.695	0.695	0.695	0.695	0.695	0.695	0.695	0.695	0.695	0.695
800	0.705	0.704	0.704	0.704	0.704	0.703	0.703	0.703	0.703	0.702	0.702	0.702
900	0.709	0.709	0.708	0.708	0.708	0.708	0.708	0.708	0.708	0.708	0.708	0.708
1000	0.711	0.711	0.711	0.711	0.711	0.710	0.710	0.710	0.710	0.709	0.709	0.709

*Compiled by P. E. Liley from tables of specific heat at constant pressure, thermal conductivity, and viscosity given in SI units for integral kelvin temperatures and pressures in bars by Vasserman. *Thermophysical Properties of Air and Its Components* and *Thermophysical Properties of Liquid Air and Its Components.* Nauka, Moscow, and in translated form by the National Bureau of Standards, Washington. The number of significant figures given above reflects the similar numbers appearing for the constituent properties in the source references. While reasonable agreement occurs for atmospheric pressure with some other works, the fragmentary data available for the saturated, etc., states show large deviations.

Click here for the **Natural Convection Heat Transfer Coefficients** spreadsheet calculator.

Table 2-145 Vapor Thermal Conductivity of Inorganic and Organic Substances [W/(m·K)]

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	C_1	C_2	C_3	C_4	T_{min}, K	Thermal cond. at T_{min}	T_{max}, K	Thermal cond. at T_{max}
102	1	Acetaldehyde	C_2H_4O	75-07-0	44.05256	1.09433E-07	2.0279			294.15	0.01110	1000	0.13269

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , *K*	Thermal cond. at *T*	*T* , *K*	Thermal cond. at *T*
102	2	Acetamide	C_2H_5NO	60-35-5	59.0672	0.00013195	0.97	728.3		494.3	0.02189	1000	0.06206
100	3	Acetic acid	$C_2H_4O_2$	64-19-7	60.052	2.4148	−0.020867	0.00005940 9	−5.4718E-08	391.05	0.06749	458.15	0.06259
100	3	Acetic acid	$C_2H_4O_2$	64-19-7	60.052	1.0879	−0.0038977	3.6227E-06		458.15	0.06258	541.5	0.03955
102	3	Acetic acid	$C_2H_4O_2$	64-19-7	60.052	3.3901E-06	1.9588	36053	14,086,000	541.5	0.03925	1000	0.11105
102	4	Acetic anhydride	$C_4H_6O_3$	108-24-7	102.08864	3.1289E-06	1.4618			412.7	0.02084	1000	0.07600
102	5	Acetone	C_3H_6O	67-64-1	58.07914	−26.8	0.9098	126,500,000		329.44	0.01363	1000	0.11362
102	6	Acetonitrile	C_2H_3N	75-05-8	41.0519	8.3653E-07	1.6481			339.09	0.01238	1000	0.07358
102	7	Acetylene	C_2H_2	74-86-2	26.03728	0.000075782	1.0327	−36.227	31,432	189.35	0.01011	1000	0.09545
102	8	Acrolein	C_3H_4O	107-02-8	56.06326	0.024098	0.3285	1325.3	577,830	325.84	0.01534	1000	0.08028
102	9	Acrylic acid	$C_3H_4O_2$	79-10-7	72.06266	0.00009265	0.7035	627.58	112,460	414.15	0.02027	1000	0.06867
102	10	Acrylonitrile	C_3H_3N	107-13-1	53.0626	−0.0000861	0.77281	−2555.2		298.15	0.00929	1000	0.11525
102	11	Air	Mixture	132259-10-0	28.96	0.00031417	0.7786	−0.7116	2121.7	70	0.00603	2000	0.11675
102	12	Ammonia	H_3N	7664-41-7	17.03052	9.6608E-06	1.3799			200	0.01446	900	0.11523
102	13	Anisole	C_7H_8O	100-66-3	108.13782	0.00059858	0.7527	354.04	241,830	426.73	0.01809	1000	0.06796
102	14	Argon	Ar	7440-37-1	39.948	0.000633	0.6221	70		90	0.00585	3273.1	0.09525
102	15	Benzamide	C_7H_7NO	55-21-0	121.13658	0.025389	0.28547	1018.3	1,228,600	563.15	0.02317	1000	0.05618

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , *K*	Thermal cond. at *T*	*T* , *K*	Thermal cond. at *T*
102	16	Benzene	C_6H_6	71-43-2	78.111184	0.00001652	1.3117	491		339.15	0.01407	1000	0.09542
102	17	Benzenethiol	C_6H_6S	108-98-5	110.17684	0.00047951	0.7818	463.4	189,410	442.29	0.01861	1000	0.06427
102	18	Benzoic acid	$C_7H_6O_2$	65-85-0	122.12134	0.0001163	0.9705	740		522.4	0.02090	1000	0.05452
102	19	Benzonitrile	C_7H_5N	100-47-0	103.1213	1.3917E-06	1.5389			464.15	0.01767	1000	0.05758
102	20	Benzophenone	$C_{13}H_{10}O$	119-61-9	182.2179	0.0001235	0.9495	778.7		579.24	0.02213	1000	0.04899
102	21	Benzyl alcohol	C_7H_8O	100-51-6	108.13782	0.00023476	0.8639	187.8	193,840	478.6	0.02167	1000	0.06636
102	22	Benzyl ethyl ether	$C_9H_{12}O$	539-30-0	136.19098	0.00096451	0.69225	519.99	278,930	458.15	0.01936	1000	0.06398
102	23	Benzyl mercaptan	C_7H_8S	100-53-8	124.20342	0.00015525	0.9446	715.78		472.03	0.02071	1000	0.06171
102	24	Biphenyl	$C_{12}H_{10}$	92-52-4	154.2078	2.8646E-06	1.4098	−391.35	156,820	373.15	0.01123	1000	0.06347
102	25	Bromine	Br_2	7726-95-6	159.808	1.0404E-06	1.4685			300	0.00452	500	0.00956
102	26	Bromobenzene	C_6H_5Br	108-86-1	157.0079	0.00027085	0.7932	278.33	165,880	429.24	0.01302	1000	0.04495
102	27	Bromoethane	C_2H_5Br	74-96-4	108.965	0.00099879	0.71894	2358.4		311.49	0.00723	1000	0.04267
102	28	Bromomethane	CH_3Br	74-83-9	94.93852	5.7816E-07	1.6666			273	0.00664	1000	0.05779
102	29	1,2-Butadiene	C_4H_6	590-19-2	54.09044	0.000088221	1.0273	75.316	99,063	284	0.01172	1000	0.09071

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , *K*	Thermal cond. at *T*	*T* , *K*	Thermal cond. at *T*
102	30	1,3-Butadiene	C_4H_6	106-99-0	54.09044	−20890	0.9593	−93,820,000,000		268.74	0.01281	1000	0.16809
102	31	Butane	C_4H_{10}	106-97-8	58.12122	0.051094	0.45253	5455.5	1,979,800	272.65	0.01357	1000	0.13799
102	32	1,2-Butanediol	$C_4H_{10}O_2$	584-03-2	90.121	0.00014035	1.0032	711.66		469.57	0.02672	1000	0.08383
102	33	1,3-Butanediol	$C_4H_{10}O_2$	107-88-0	90.121	−918.39	−0.21199	334420	−2,884,200,000	481.38	0.02110	1000	0.08332
102	34	1-Butanol	$C_4H_{10}O$	71-36-3	74.12216	0.0011484	0.87647	3253.7		370.7	0.02097	712.94	0.06536
102	35	2-Butanol	$C_4H_{10}O$	78-92-2	74.12216	4.5894E-06	1.4484			372.9	0.02435	1000	0.10161
102	36	1-Butene	C_4H_8	106-98-9	56.10632	0.0000968089	1.1153	781.82		266.91	0.01252	1000	0.12049
102	37	*cis*-2-Butene	C_4H_8	590-18-1	56.10632	0.0000677337	1.0709	−65.881	129,390	273.15	0.01105	1273.15	0.13926
102	38	*trans*-2-Butene	C_4H_8	624-64-6	56.10632	0.0000785776	1.0565	14.63	105,920	274.03	0.01200	1257	0.13704
102	39	Butyl acetate	$C_6H_{12}O_2$	123-86-4	116.15828	5.86E-09	2.376	−401.32	69,280	273	0.00783	800	0.07634
102	40	Butylbenzene	$C_{10}H_{14}$	104-51-8	134.21816	0.1807	0.0082225	−129.42	1,691,500	456.46	0.02151	1000	0.07465
102	41	Butyl mercaptan	$C_4H_{10}S$	109-79-5	90.1872	0.00097826	0.78643	1531.5	67,115	371.61	0.01832	1000	0.08610
102	42	*sec*-Butyl mercaptan	$C_4H_{10}S$	513-53-1	90.1872	0.9719	−0.111	1167.2	3,163,200	358.13	0.01749	1000	0.08470
102	43	1-Butyne	C_4H_6	107-00-6	54.09044	0.0000372669	1.1427	−43.844	79,421	281.22	0.01268	1000	0.09644

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , *K*	Thermal cond. at *T*	*T* , *K*	Thermal cond. at *T*
102	44	Butyraldehyde	C_4H_8O	123-72-8	72.10572	9.9652E-07	1.6558			347.94	0.01610	1000	0.09245
100	45	Butyric acid	$C_4H_8O_2$	107-92-6	88.10051	0.7873	−0.0036161	5.6641E-06	−2.8451E-09	436.42	0.05147	706.95	0.05647
102	45	Butyric acid	$C_4H_8O_2$	107-92-6	88.10051	9.2069E-08	2.0312			706.95	0.05647	1000	0.11421
102	46	Butyronitrile	C_4H_7N	109-74-0	69.10051	1.3751E-06	1.5786			390.74	0.01698	1000	0.07484
102	47	Carbon dioxide	CO_2	124-38-9	44.0095	3.69	−0.3838	964	1,860,000	194.67	0.00887	1500	0.09025
102	48	Carbon disulfide	CS_2	75-15-0	76.14007	0.0003467	0.7345	479		273.15	0.00776	1000	0.03745
102	49	Carbon monoxide	CO	630-08-0	28.0101	0.00059882	0.6863	57.13	501.92	70	0.00576	1500	0.08724
102	50	Carbon tetrachloride	CCl_4	56-23-5	153.8227	0.00016599	0.94375	1449.6		349.79	0.00812	1000	0.04595
102	51	Carbon tetrafluoride	CF_4	75-73-0	88.0043	0.000092004	1.0164	270.83		145.1	0.00505	1000	0.08108
102	52	Chlorine	Cl_2	7782-50-5	70.906	0.00009993	0.5472	458.6		200	0.00551	1000	0.03002
102	53	Chlorobenzene	C_6H_5Cl	108-90-7	112.5569	0.00004783	0.8994	1845.5	163,000	400	0.01579	1000	0.07935
102	54	Chloroethane	C_2H_5Cl	75-00-3	64.5141	4.91778E-07	1.70639	−232.008	46603.4	285.45	0.01004	1000	0.07943
102	55	Chloroform	$CHCl_3$	67-66-3	119.37764	0.00043073	0.83878	1874.5		334.33	0.00854	1000	0.04920

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , *K*	Thermal cond. at *T*	*T* , *K*	Thermal cond. at *T*
102	56	Chloromethane	CH_3Cl	74-87-3	50.4875	−3263.77	0.0675	−46,803,200	−25,000,700,000	248.95	0.00801	1000	0.07246
102	57	1-Chloropropane	C_3H_7Cl	540-54-5	78.54068	0.01652	0.44154	2444.42	793,392	319.67	0.01285	1000	0.08232
102	58	2-Chloropropane	C_3H_7Cl	75-29-6	78.54068	0.00009154	1.0681	746.6		308.85	0.01222	1000	0.08389
102	59	*m*-Cresol	C_7H_8O	108-39-4	108.13782	0.00019307	0.9248	710		475.43	0.02316	1000	0.06716
102	60	*o*-Cresol	C_7H_8O	95-48-7	108.13782	0.00018648	0.9302	709.37		464.15	0.02230	1000	0.06736
102	61	*p*-Cresol	C_7H_8O	106-44-5	108.13782	0.00019063	0.9282	716.91		475.13	0.02319	1000	0.06762
102	62	Cumene	C_9H_{12}	98-82-8	120.19158	1.6743E-07	1.8369	−449.46	112,760	380	0.01534	1000	0.08181
102	63	Cyanogen	C_2N_2	460-19-5	52.0348	0.000014433	1.2104			251.9	0.01164	1000	0.06174
102	64	Cyclobutane	C_4H_8	287-23-0	56.10632	−449910	0.27364	−10,001,000,000	−9.8654E+12	285.66	0.01356	1000	0.14994
102	65	Cyclohexane	C_6H_{12}	110-82-7	84.15948	0.0000008589	1.7709	243		325	0.01380	1000	0.14198
102	66	Cyclohexanol	$C_6H_{12}O$	108-93-0	100.15888	0.0032207	0.5991	608.69	509,290	434	0.02399	1000	0.09535
102	67	Cyclohexanone	$C_6H_{10}O$	108-94-1	98.143	−1095.5	−0.023408	498,780	−7,835,500,000	428.58	0.02291	1000	0.12704
102	68	Cyclohexene	C_6H_{10}	110-83-8	82.1436	0.00009001	1.0897	655		356.12	0.01914	1000	0.10116
102	69	Cyclopentane	C_5H_{10}	287-92-3	70.1329	9.5461E-06	1.4641	632.62		273	0.01061	1000	0.14429

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , *K*	Thermal cond. at *T*	*T* , *K*	Thermal cond. at *T*
102	70	Cyclopentene	C_5H_8	142-29-0	68.11702	0.0010949	0.71644	175.55	346,040	317.38	0.01360	1000	0.10148
102	71	Cyclopropane	C_3H_6	75-19-4	42.07974	−91.383	0.89718	−283,310,000		240.37	0.01061	1000	0.15854
102	72	Cyclohexyl mercaptan	$C_6H_{12}S$	1569-69-3	116.22448	0.0000813	1.0674	697.6		431.95	0.02022	1000	0.07629
102	73	Decanal	$C_{10}H_{20}O$	112-31-2	156.2652	1.9749E-06	1.5349			481.65	0.02590	1000	0.07948
102	74	Decane	$C_{10}H_{22}$	124-18-5	142.28168	−668.4	0.9323	−4,071,000,000		447.3	0.02173	1000	0.10286
102	75	Decanoic acid	$C_{10}H_{20}O_2$	334-48-5	172.265	3.3251E-09	2.4876	−124.9		543.15	0.02746	1000	0.11029
102	76	1-Decanol	$C_{10}H_{22}O$	112-30-1	158.28108	−0.3072	0.489	−67,500	−29,400,000	504	0.02590	1000	0.09389
102	77	1-Decene	$C_{10}H_{20}$	872-05-9	140.2658	0.00002723 2	1.257	751.7		443.75	0.02149	1000	0.09175
102	78	Decyl mercaptan	$C_{10}H_{22}S$	143-10-2	174.34668	0.00012058	1.0111	740		512.35	0.02709	1000	0.07482
102	79	1-Decyne	$C_{10}H_{18}$	764-93-2	138.24992	0.000016707	1.2128	−206.08	153,850	447.15	0.02092	1000	0.07667
102	80	Deuterium	D_2	7782-39-0	4.0316	0.00028527	0.9874	−200.51	21,807	233.15	0.11474	1500	0.44547
102	81	1,1-Dibromoethane	$C_2H_4Br_2$	557-91-5	187.86116	0.00021231	0.8052	649.51		381.15	0.00940	1000	0.03351
102	82	1,2-Dibromoethane	$C_2H_4Br_2$	106-93-4	187.86116	0.00015878	0.8636	659.5		404.51	0.01077	1000	0.03729
102	83	Dibromomethane	CH_2Br_2	74-95-3	173.83458	0.00021302	0.8719	1620		370.1	0.00687	1000	0.03356

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , *K*	Thermal cond. at *T*	*T* , *K*	Thermal cond. at *T*
102	84	Dibutyl ether	$C_8H_{18}O$	142-96-1	130.22792	0.0032694	0.58633	1259.9	300,890	323.15	0.01244	1000	0.07330
102	85	*m*-Dichlorobenzene	$C_6H_4Cl_2$	541-73-1	147.00196	−1067.8	0.754	−3,036,100,000		446.23	0.01561	1000	0.06430
102	86	*o*-Dichlorobenzene	$C_6H_4Cl_2$	95-50-1	147.00196	−1420	0.7614	−4,504,000,000		453.57	0.01507	1000	0.06066
102	87	*p*-Dichlorobenzene	$C_6H_4Cl_2$	106-46-7	147.00196	−1520.8	0.754	−433,2800,000		447.21	0.01564	1000	0.06417
102	88	1,1-Dichloroethane	$C_2H_4Cl_2$	75-34-3	98.95916	0.0001315	1.0113	1023.8		330.45	0.01132	1000	0.07025
102	89	1,2-Dichloroethane	$C_2H_4Cl_2$	107-06-2	98.95916	0.00021054	0.9574	1414		356.59	0.01177	1000	0.06498
102	90	Dichloromethane	CH_2Cl_2	75-09-2	84.93258	0.0014796	0.69531	2657.4		312.9	0.00847	1000	0.04931
102	91	1,1-Dichloropropane	$C_3H_6Cl_2$	78-99-9	112.98574	0.0005760 3	1.1148	849.98		361.25	0.01220	1000	0.06881
102	92	1,2-Dichloropropane	$C_3H_6Cl_2$	78-87-5	112.98574	0.0006243 5	1.103	913.43		369.52	0.01222	1000	0.06647
102	93	Diethanolamine	$C_4H_{11}NO_2$	111-42-2	105.13564	−11,633	0.4621	−3,793,900,000		541.54	0.03044	1000	0.07463
102	94	Diethylamine	$C_4H_{11}N$	109-89-7	73.13684	0.00001706	1.248	−112.8	77,960	273.15	0.01148	1000	0.09804
102	95	Diethyl ether	$C_4H_{10}O$	60-29-7	74.12 16	−0.0044894	0.6155	−3266.3		200	0.00764	600	0.05181
102	96	Diethyl sulfide	$C_4H_{10}S$	352-93-2	90.1872	0.0018097	0.67406	1179.7	174,850	365.25	0.01743	1000	0.08089

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , *K*	Thermal cond. at *T*	*T* , *K*	Thermal cond. at *T*
102	97	1,1-Difluoroethane	$C_2H_4F_2$	75-37-6	66.04997	0.00005924	1.0713	101.84	45,974	248.95	0.01016	1000	0.08447
102	98	1,2-Difluoroethane	$C_2H_4F_2$	624-72-6	66.04997	2.4194E-06	1.4456			303.65	0.00938	993.65	0.05206
102	99	Difluoromethane	CH_2F_2	75-10-5	52.02339	0.00001301	1.1897			221.5	0.00803	1000	0.04826
102	100	Diisopropylamine	$C_6H_{15}N$	108-18-9	101.19	0.00051305	0.8076	360.19	154,510	357.05	0.01836	1000	0.08967
102	101	Diisopropyl ether	$C_6H_{14}O$	108-20-3	102.17476	0.00019879	0.9423	306.8	106,230	328.05	0.01598	1000	0.09444
102	102	Diisopropylketone	$C_7H_{14}O$	565-80-0	114.18546	−8.5357	−0.00056423	1882.1	−65,622,000	397.55	0.02015	1000	0.13085
102	103	1,1-Dimethoxyethane	$C_4H_{10}O_2$	534-15-6	90.121	0.00046265	0.81968	539.34	104,530	337.45	0.01554	1000	0.08099
102	104	1,2-Dimethoxypropane	$C_5H_{12}O_2$	7778-85-0	104.14758	3.7962E-06	1.4462			366.15	0.01936	1000	0.08279
102	105	Dimethylacetylene	C_4H_6	503-17-3	54.09044	0.00021761	0.9187	217	132,070	300.13	0.01288	1000	0.09199
102	106	Dimethylamine	C_2H_7N	124-40-3	45.08368	1.6085	−0.1103	2160.3	2,989,300	280.03	0.01845	1000	0.12209
102	107	2,3-Dimethylbutane	C_6H_{14}	79-29-8	86.17536	0.00003474	1.1646	−99.956	130,820	331.13	0.01581	1000	0.10506
102	108	1,1-Dimethylcyclohexane	C_8H_{16}	590-66-9	112.21264	0.008856	0.4215	−50.645	764,580	392.7	0.01884	1000	0.09500

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , *K*	Thermal cond. at *T*	*T* , *K*	Thermal cond. at *T*
102	109	*cis*-1,2-Dimethylcyclohexane	C_8H_{16}	2207-01-4	112.21264	0.013298	0.3692	0.1027	852,540	402.94	0.01948	1000	0.09196
102	110	*trans*-1,2-Dimethylcyclohexane	C_8H_{16}	6876-23-9	112.21264	0.012144	0.3854	52.191	803,590	396.58	0.01952	1000	0.09376
102	111	Dimethyl disulfide	$C_2H_6S_2$	624-92-0	94.19904	0.000 22578	0.892	697		382.9	0.01613	1000	0.06310
102	112	Dimethyl ether	C_2H_6O	115-10-6	46.06844	0.059975	0.2667	1018.6	1,098,800	248.31	0.01139	1500	0.19458
102	113	*N*,*N*-Dimethylformamide	C_3H_7NO	68-12-2	73.09378	0.014449	0.3612	595.22	728,130	425.15	0.02001	1000	0.07539
102	114	2,3-Dimethylpentane	C_7H_{16}	565-59-3	100.20194	0.000 022421	1.2137	−146.91	131,830	362.93	0.01797	1000	0.09962
102	115	Dimethyl phthalate	$C_{10}H_{10}O_4$	131-11-3	194.184	0.000 12822	0.9324	752.5		556.85	0.01981	1000	0.04587
102	116	Dimethylsilane	C_2H_8Si	1111-74-6	60.17042	0.001 1808	0.742	1131	6400	253.55	0.01291	1000	0.09296
102	117	Dimethyl sulfide	C_2H_6S	75-18-3	62.134	0.000 23614	0.9204	638		310.48	0.01520	1000	0.08319
102	118	Dimethyl sulfoxide	C_2H_6OS	67-68-5	78.13344	0.000 64761	0.7716	1013.3	82,563	462.15	0.02059	1000	0.06379

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	C	C	C	C	T ,K	Thermal cond. at T	T ,K	Thermal cond. at T
102	119	Dimethyl terephthalate	$C_{10}H_{10}O_4$	120-61-6	194.184	0.00402358	0.57548	3598.32		559.2	0.02063	1000	0.04661
102	120	1,4-Dioxane	$C_4H_8O_2$	123-91-1	88.10512	6.4032E-07	1.7194			337.85	0.01427	768.01	0.05855
102	121	Diphenyl ether	$C_{12}H_{10}O$	101-84-8	170.2072	0.00014629	0.9377	745.89		531.46	0.02188	1000	0.05449
102	122	Dipropylamine	$C_6H_{15}N$	142-84-7	101.19	0.0001123	0.9958	183.2	98,000	279.65	0.01055	1000	0.08515
102	123	Dodecane	$C_{12}H_{26}$	112-40-3	170.33484	0.000005719	1.4699	579.4		489.47	0.02354	1000	0.09301
102	124	Eicosane	$C_{20}H_{42}$	112-95-8	282.54748	−375.32	1.0708	−8,783,600,000		616.93	0.02563	1000	0.06968
102	125	Ethane	C_2H_6	74-84-0	30.069	0.0000738669	1.1689	500.73		184.55	0.00886	1000	0.15807
102	126	Ethanol	C_2H_6O	64-17-5	46.06844	−0.010109	0.6475	−7332	−268,000	293.15	0.01475	1000	0.13417
102	127	Ethyl acetate	$C_4H_8O_2$	141-78-6	88.10512	1.3575E-07	1.9681			273.15	0.00847	990.21	0.10681
102	128	Ethylamine	C_2H_7N	75-04-7	45.08368	0.3935	0.0131	1380	1,710,000	289.73	0.01622	1000	0.10532
102	129	Ethylbenzene	C_8H_{10}	100-41-4	106.165	0.00001753 7	1.3144	560.65		409.35	0.02007	1000	0.09859
102	130	Ethyl benzoate	$C_9H_{10}O_2$	93-89-0	150.1745	0.00002012	1.1513	−89.583	125,410	486.55	0.01855	1000	0.05524
102	131	2-Ethylbutanoic acid	$C_6H_{12}O_2$	88-09-5	116.15828	0.00017727	0.9428	712.4		466.95	0.02306	1000	0.06973
102	132	Ethyl butyrate	$C_6H_{12}O_2$	105-54-4	116.15828	829.29	1.0156	8,955,300,000		394.65	0.01583	1000	0.10314

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	C	C	C	C	T ,K	Thermal cond. at T	T ,K	Thermal cond. at T
102	133	Ethylcyclohexane	C_8H_{16}	1678-91-7	112.21264	0.00007483	1.1103	686		404.95	0.02180	1000	0.09505
102	134	Ethylcyclopentane	C_7H_{14}	1640-89-7	98.18606	0.0043244	0.5429	333.67	570,470	376.62	0.01832	1000	0.09659
102	135	Ethylene	C_2H_4	74-85-1	28.05316	8.6806E-06	1.4559	299.72	−29,403	170	0.00879	590.92	0.06613
102	136	Ethylenediamine	$C_2H_8N_2$	107-15-3	60.09832	0.1655	0.1798	3827.9	1,600,000	390.41	0.02272	1000	0.08915
102	137	Ethylene glycol	$C_2H_6O_2$	107-21-1	62.06784	−8145800	−0.30502	1,832,500,000	−1.1842E+13	470.45	0.02513	1000	0.09896
102	138	Ethyleneimine	C_2H_5N	151-56-4	43.06678	0.00077079	0.7713	446.16	197,930	329	0.01610	1000	0.09659
102	139	Ethylene oxide	C_2H_4O	75-21-8	44.05256	−0.0003788	1.115	−5641		273.15	0.01004	1000	0.18063
102	140	Ethyl formate	$C_3H_6O_2$	109-94-4	74.07854	508	0.9023	2,170,000,000		327.46	0.01426	1000	0.11921
102	141	2-Ethylhexanoic acid	$C_8H_{16}O_2$	149-57-5	144.211	2.5804E-06	1.4669			500.66	0.02353	1000	0.06492
102	142	Ethylhexyl ether	$C_8H_{18}O$	5756-43-4	130.22792	0.0052833	0.52982	1415.7	378,180	417.15	0.01967	1000	0.07348
102	143	Ethylisopropyl ether	$C_5H_{12}O$	625-54-7	88.14818	0.00021652	0.94192	632.16		326.15	0.01717	1000	0.08882
102	144	Ethylisopropyl ketone	$C_6H_{12}O$	565-69-5	100.15888	−152400	−0.049106	80,955,000	−9.3122E+11	386.55	0.01889	1000	0.12768
102	145	Ethyl mercaptan	C_2H_6S	75-08-1	62.13404	0.0015251	0.70243	1347.5	35,085	308.15	0.01487	1000	0.08195

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , *K*	Thermal cond. at *T*	*T* , *K*	Thermal cond. at *T*
102	146	Ethyl propionate	$C_5H_{10}O_2$	105-37-3	102.1317	1.0507E-07	1.9854			400	0.01540	1000	0.09499
102	147	Ethylpropyl ether	$C_5H_{12}O$	628-32-0	88.14818	5.8174E-08	2.0116	−372.68	57,690	273.15	0.01133	550	0.03690
102	148	Ethyltrichlorosilane	$C_2H_5Cl_3Si$	115-21-9	163.506	2.7142E-06	1.4281			371.05	0.01268	1000	0.05223
102	149	Fluorine	F_2	7782-41-4	37.9968064	0.00012144	0.93831			70	0.00654	700	0.05675
102	150	Fluorobenzene	C_6H_5F	462-06-6	96.1023032	0.0005343 2	1.1576	760.75		357.88	0.01546	600	0.03874
102	151	Fluoroethane	C_2H_5F	353-36-6	48.0595	6.3522E-06	1.346			235.45	0.00990	1000	0.06933
102	152	Fluoromethane	CH_3F	593-53-3	34.03292	0.0004899 8	1.0175			194.82	0.01047	1000	0.05529
102	153	Formaldehyde	CH_2O	50-00-0	30.02598	5.2201E-06	1.417			253.85	0.01333	1000	0.09304
102	154	Formamide	CH_3NO	75-12-7	45.04062	0.00025893	0.9083	723.6		493	0.02930	1000	0.07973
100	155	Formic acid	CH_2O_2	64-18-6	46.0257	−0.8303	0.0046141	−5.7466E-06		420	0.09392	470	0.06890
100	155	Formic acid	CH_2O_2	64-18-6	46.0257	1.8897	−0.006901	6.4407E-06		470	0.06898	537.9	0.04118
102	155	Formic acid	CH_2O_2	64-18-6	46.0257	0.00072291	1.8898	4,877,600	−1,889,300,000	537.9	0.04120	1000	0.11296
102	156	Furan	C_4H_4O	110-00-9	68.07396	−644950	0.2862	−16,794,000,000	−1.7372E+13	304.5	0.01367	1000	0.13631
102	157	Helium-4	He	7440-59-7	4.0026	0.00226	0.7305	−18.63	440	30	0.03124	2000	0.58820
102	158	Heptadecane	$C_{17}H_{36}$	629-78-7	240.46774	−114.41	1.0566	−2,211,400,000		575.3	0.02454	1000	0.07649

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , *K*	Thermal cond. at *T*	*T* , *K*	Thermal cond. at *T*
102	159	Heptanal	$C_7H_{14}O$	111-71-7	114.18546	1.4326E-06	1.5896			426.15	0.02168	1000	0.08413
102	160	Heptane	C_7H_{16}	142-82-5	100.20194	−0.070028	0.38068	−7049.9	−2,400,500	339.15	0.01583	1000	0.11493
100	161	Heptanoic acid	$C_7H_{14}O_2$	111-14-8	130.185	−0.088162	0.00065022	−1.2803E-06	9.1349E-10	496.15	0.03085	643.11	0.04346
102	161	Heptanoic acid	$C_7H_{14}O_2$	111-14-8	130.185	4.449E-08	2.133			643.11	0.04349	1000	0.11150
102	162	1-Heptanol	$C_7H_{16}O$	111-70-6	116.20134	−0.061993	0.2792	−3336	−1,642,000	449.45	0.02345	1000	0.10722
102	163	2-Heptanol	$C_7H_{16}O$	543-49-7	116.20134	0.00018818	0.96338	696.02		432.9	0.02501	1000	0.08616
102	164	3-Heptanone	$C_7H_{14}O$	106-35-4	114.18546	1348.6	1.0313	14,832,000,000		420.55	0.01943	1000	0.11287
102	165	2-Heptanone	$C_7H_{14}O$	110-43-0	114.18546	2049.3	1.0323	22,983,000,000		424.18	0.01951	1000	0.11145
102	166	1-Heptene	C_7H_{14}	592-76-7	98.18606	0.00002133	1.2885	487.8		366.79	0.01845	1000	0.10518
102	167	Heptyl mercaptan	$C_7H_{16}S$	1639-09-4	132.26694	0.0083145	0.51862	2253	532,590	450.09	0.02289	1000	0.07899
102	168	1-Heptyne	C_7H_{12}	628-71-7	96.17018	0.0000607332	1.0586	−102.79	143,140	372.93	0.01827	1000	0.08751
102	169	Hexadecane	$C_{16}H_{34}$	544-76-3	226.44116	0.0000044338	1.4949	682		560.01	0.02568	1000	0.08055
102	170	Hexanal	$C_6H_{12}O$	66-25-1	100.15888	1.5427E-06	1.5824			401.15	0.02031	1000	0.08620
102	171	Hexane	C_6H_{14}	110-54-3	86.17536	−650.5	0.8053	−1,412,100,000		339.09	0.01704	1000	0.12003

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , *K*	Thermal cond. at *T*	*T* , *K*	Thermal cond. at *T*
102	172	Hexanoic acid	$C_6H_{12}O_2$	142-62-1	116.158	12,049,000	−4.0059	−1668.8	722,550	478.85	0.03317	641.42	0.04435
102	172	Hexanoic acid	$C_6H_{12}O_2$	142-62-1	116.158	6.1268E-08	2.0874			641.42	0.04435	1000	0.11206
102	173	1-Hexanol	$C_6H_{14}O$	111-27-3	102.17476	−4935500	−0.1653	1,563,100,000	−1.5752E+13	429.9	0.02220	1000	0.11104
102	174	2-Hexanol	$C_6H_{14}O$	626-93-7	102.175	0.00018361	0.97199	677.05		412.4	0.02421	1000	0.09022
102	175	2-Hexanone	$C_6H_{12}O$	591-78-6	100.15888	−1.2158	0.026637	−1711.6	−13,176,000	273	0.00775	1000	0.10523
102	176	3-Hexanone	$C_6H_{12}O$	589-38-8	100.15888	−0.33262	0.12054	−2472.6	−5,493,400	273	0.00800	1000	0.10980
102	177	1-Hexene	C_6H_{12}	592-41-6	84.15948	0.0006425 6	1.1355	445.15	64,810	336.63	0.01644	1000	0.10850
102	178	3-Hexyne	C_6H_{10}	928-49-4	82.1436	6.9682E-06	1.347	−214.35	110,480	354.35	0.01485	1000	0.08546
102	179	Hexyl mercaptan	$C_6H_{14}S$	111-31-9	118.24036	0.074318	0.30035	4470.1	1,775,800	425.81	0.02151	1000	0.08167
102	180	1-Hexyne	C_6H_{10}	693-02-7	82.1436	0.0000581116	1.0724	−77.165	123,900	344.48	0.01679	1000	0.09155
102	181	2-Hexyne	C_6H_{10}	764-35-2	82.1436	0.0000116331	1.2753	−202.84	122,990	357.67	0.01506	1000	0.08466
102	182	Hydrazine	H_4N_2	302-01-2	32.04516	0.00043196	0.86603	641.48		386.65	0.02828	1000	0.10430
102	183	Hydrogen	H_2	1333-74-0	2.01588	0.002653	0.7452	12		22	0.01718	1600	0.64299
102	184	Hydrogen bromide	BrH	10035-10-6	80.91194	0.00049725	0.63088	331.62		206.45	0.00551	600	0.01812

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , *K*	Thermal cond. at *T*	*T* , *K*	Thermal cond. at *T*
102	185	Hydrogen chloride	ClH	7647-01-0	36.46094	0.001865	0.49755	358		190	0.00880	700	0.03213
102	186	Hydrogen cyanide	CHN	74-90-8	27.02534	4.6496E-06	1.3669	−210.76	58,295	273.15	0.00985	673.15	0.04185
102	187	Hydrogen fluoride	FH	7664-39-3	20.0063432	0.00003462 9	1.1224	18.744		350	0.02356	450	0.03160
102	188	Hydrogen sulfide	H_2S	7783-06-4	34.08088	1.381E-07	1.8379	−352.09	46,041	212.8	0.00724	600	0.03258
102	189	Isobutyric acid	$C_4H_8O_2$	79-31-2	88.10512	0.000214	0.9248	698		427.85	0.02206	1000	0.07497
102	190	Isopropyl amine	C_3H_9N	75-31-0	59.11026	0.00028183	0.92094	619.17		304.92	0.01804	1000	0.10081
102	191	Malonic acid	$C_3H_4O_4$	141-82-2	104.06146	4.8284E-06	1.3599			580	0.02766	1000	0.05801
102	192	Methacrylic acid	$C_4H_6O_2$	79-41-4	86.08924	0.00019847	0.9284	678.69		434.15	0.02176	1000	0.07210
102	193	Methane	CH_4	74-82-8	16.04025	8.3983E-06	1.4268	−49.654		111.63	0.01263	600	0.08425
102	194	Methanol	CH_4O	67-56-1	32.04186	5.7992E-07	1.7862			273	0.01303	684.37	0.06726
102	195	*N*-Methylacetamide	C_3H_7NO	79-16-3	73.09378	0.034177	0.3312	2070	1,195,600	478.15	0.02498	1000	0.07895
102	196	Methyl acetate	$C_3H_6O_2$	79-20-9	74.07854	−25343	−0.1934	11,164,000	−67,259,000,000	330.09	0.01415	1000	0.11878
102	197	Methylacetylene	C_3H_4	74-99-7	40.06386	0.00026544	0.8921	222.19	79,869	249.94	0.01154	1000	0.09675

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	C	C	C	C	T ,K	Thermal cond. at T	T ,K	Thermal cond. at T
102	198	Methyl acrylate	$C_4H_6O_2$	96-33-3	86.08924	0.4734	−0.1111	533.57	1,649,600	353.35	0.01569	1000	0.06904
102	199	Methyl amine	CH_5N	74-89-5	31.0571	−55.13	1.065	−448,200,000		266.82	0.01259	650	0.07917
102	200	Methyl benzoate	$C_8H_8O_2$	93-58-3	136.14792	0.0002396 3	1.1308	−67.272	125,720	472.65	0.01784	1000	0.05588
102	201	3-Methyl-1,2-butadiene	C_5H_8	598-25-4	68.11702	0.0002509	0.899	253.4	149,500	314	0.01326	1000	0.08902
102	202	2-Methylbutane	C_5H_{12}	78-78-4	72.14878	0.0008968	0.7742	456	230,640	273.15	0.01198	1000	0.11176
102	203	2-Methylbutanoic acid	$C_5H_{10}O_2$	116-53-0	102.1317	0.0001799	0.9457	704.6		450.15	0.02266	1000	0.07253
102	204	3-Methyl-1-butanol	$C_5H_{12}O$	123-51-3	88.14882	2054.5	0.90109	8,760,500,000		404.15	0.02116	1000	0.11843
102	205	2-Methyl-1-butene	C_5H_{10}	563-46-2	70.13229	0.00019098	0.9341	84.07	155,720	304.3	0.01348	1000	0.09771
102	206	2-Methyl-2-butene	C_5H_{10}	513-35-9	70.13229	0.00021736	0.9171	112.3	177,690	311.71	0.01320	1000	0.09504
102	207	2-Methyl -1-butene-3-yne	C_5H_6	78-80-8	66.10114	0.00015498	0.9364	15.366	137,400	305.4	0.01304	1000	0.08664
102	208	Methylbutyl ether	$C_5H_{12}O$	628-28-4	88.14818	0.0002399 3	1.1976	58.59	35,667	273.15	0.01173	1000	0.08586

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , *K*	Thermal cond. at *T*	*T* , *K*	Thermal cond. at *T*
102	209	Methylbutyl sulfide	$C_5H_{12}S$	628-29-5	104.214	0.079414	0.23442	2671.9	1,366,100	396.58	0.01966	1000	0.07960
102	210	3-Methyl-1-butyne	C_5H_8	598-23-2	68.11702	0.00006585 5	1.072	−36.369	106,430	302.15	0.01468	1000	0.10120
102	211	Methyl butyrate	$C_5H_{10}O_2$	623-42-7	102.1317	1333.1	0.9962	12,317,000,000		375.9	0.01495	1000	0.10543
102	212	Methylchlorosilane	CH_5ClSi	993-00-0	80.5889	0.00037057	0.81367	609.17		281.85	0.01155	1000	0.06357
102	213	Methylcyclohexane	C_7H_{14}	108-87-2	98.18606	0.0000719	1.1274	667		374.08	0.02056	1000	0.10399
102	214	1-Methylcyclohexanol	$C_7H_{14}O$	590-67-0	114.18546	0.00011359	1.0311	709.27		441.15	0.02322	1000	0.08238
102	215	*cis*-2-Methylcyclohexanol	$C_7H_{14}O$	7443-70-1	114.18546	0.069565	0.1633	208.7	1,209,500	438.15	0.02415	1000	0.08888
102	216	*trans*-2-Methylcyclohexanol	$C_7H_{14}O$	7443-52-9	114.18546	0.075448	0.155	218.44	1,252,500	440.15	0.02435	1000	0.08908
102	217	Methylcyclopentane	C_6H_{12}	96-37-7	84.15948	0.0024385	0.61774	223.01	477,570	344.96	0.01592	1000	0.10227
102	218	1-Methylcyclopentene	C_6H_{10}	693-89-0	82.1436	0.0040082	0.54462	242.12	559,040	348.64	0.01544	1000	0.09578

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , *K*	Thermal cond. at *T*	*T* , *K*	Thermal cond. at *T*
102	219	3-Methylcyclopentene	C_6H_{10}	1120-62-3	82.1436	0.0019845	0.6393	227.11	434,120	338.05	0.01501	1000	0.09888
102	220	Methyldichlorosilane	CH_4Cl_2Si	75-54-7	115.03396	0.00041077	0.75688	591.5		314.7	0.01109	1000	0.04813
102	221	Methylethyl ether	C_3H_8O	540-67-0	60.09502	0.00024036	0.93177	588.14		273	0.01419	1000	0.09447
102	222	Methylethyl ketone	C_4H_8O	78-93-3	72.10572	−4202700	−0.1524	2,084,600,000	−1.4577E+13	352.79	0.01546	1000	0.11740
102	223	Methylethyl sulfide	C_3H_8S	624-89-5	76.1606	0.0034805	0.61906	1810.8	166,290	339.8	0.01653	1000	0.08415
102	224	Methyl formate	$C_2H_4O_2$	107-31-3	60.05196	−800040	−0.2285	248,100,000	−1.5034E+12	300	0.01369	1000	0.13148
102	225	Methylisobutyl ether	$C_5H_{12}O$	625-44-5	88.14818	0.00020053	0.95381	644.42		331.7	0.01729	1000	0.08863
102	226	Methylisobutyl ketone	$C_6H_{12}O$	108-10-1	100.15888	−2483300	−0.046517	1,313,100,000	−1.5798E+13	389.65	0.01869	1000	0.12433
102	227	Methyl Isocyanate	C_2H_3NO	624-83-9	57.05132	0.0026136	0.62	1631.7	126,720	312	0.01221	1000	0.06864
102	228	Methylisopropyl ether	$C_4H_{10}O$	598-53-8	74.1216	2.1191	−0.19015	1453.4	3,575,500	303.92	0.01606	1000	0.09451
102	229	Methylisopropyl ketone	$C_5H_{10}O$	563-80-4	86.1323	−5935000	−0.089497	3,098,800,000	−2.7994E+13	367.55	0.01760	1000	0.12847

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , *K*	Thermal cond. at *T*	*T* , *K*	Thermal cond. at *T*
102	230	Methylisopropyl sulfide	$C_4H_{10}S$	1551-21-9	90.1872	0.0071536	0.53907	2700.7	241,730	171.64	0.00459	1000	0.07516
102	231	Methyl mercaptan	CH_4S	74-93-1	48.10746	0.00002653	1.1631	29.996	32,519	273.15	0.01171	1000	0.07704
102	232	Methyl methacrylate	$C_5H_8O_2$	80-62-6	100.11582	0.00072502	0.7395	365.68	204,360	373.45	0.01680	1000	0.07637
102	233	2-Methyloctanoic acid	$C_9H_{18}O_2$	3004-93-1	158.23802	0.0001813	0.92912	793.45		518.15	0.02383	1000	0.06195
102	234	2-Methylpentane	C_6H_{14}	107-83-5	86.17536	0.000061119	1.0861	−59.592	141,260	333.41	0.01606	1000	0.10242
102	235	Methyl pentyl ether	$C_6H_{14}O$	628-80-8	102.17476	0.93312	−0.1172	1154.3	2,961,700	372	0.01828	1000	0.08117
102	236	2-Methylpropane	C_4H_{10}	75-28-5	58.1222	0.089772	0.18501	639.23	1,114,700	261.43	0.01273	1000	0.11701
102	237	2-Methyl-2-propanol	$C_4H_{10}O$	75-65-0	74.1216	1.1776E-06	1.6618			333.82	0.01839	766.87	0.07325
102	238	2-Methylpropene	C_4H_8	115-11-7	56.10632	−488.1	0.8877	−1,448,500,000		266.25	0.01276	1000	0.15513
102	239	Methyl propionate	$C_4H_8O_2$	554-12-1	88.10512	−200.9	−0.1321	104,000	−846,000,000	350	0.01402	1000	0.10886
102	240	Methylpropyl ether	$C_4H_{10}O$	557-17-5	74.1216	0.011136	0.4831	21,70.3	281,220	312.2	0.01648	1000	0.09079

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , *K*	Thermal cond. at *T*	*T* , *K*	Thermal cond. at *T*
102	241	Methylpropyl sulfide	$C_4H_{10}S$	3877-15-4	90.1872	0.0023574	0.67434	1804.1	155,660	368.69	0.01802	1000	0.08398
102	242	Methylsilane	CH_6Si	992-94-9	46.14384	12.248	−0.5611	−1067	2,715,200	216.25	0.01108	1000	0.09590
102	243	alpha-Methylstyrene	C_9H_{10}	98-83-9	118.1757	0.21276	−0.022299	−194.68	1,708,700	438.65	0.01969	1000	0.07255
102	244	Methyl tert-butyl ether	$C_5H_{12}O$	1634-04-4	88.1482	0.0002084	0.93034	364.832	73,041	328.2	0.01638	1000	0.08958
102	245	Methyl vinyl ether	C_3H_6O	107-25-5	58.07914	0.00032359	0.8892	623.22		278.65	0.01493	1000	0.09273
102	246	Naphthalene	$C_{10}H_8$	91-20-3	128.17052	0.000091828	1.0345	731.78		491.14	0.02243	1000	0.06730
102	247	Neon	Ne	7440-01-9	20.1797	0.0011385	0.6646	8.7		30	0.00846	3273.1	0.24616
102	248	Nitroethane	$C_2H_5NO_2$	79-24-3	75.0666	0.0011282	0.6895	679.11	238,800	387.22	0.01580	1000	0.06887
102	249	Nitrogen	N_2	7727-37-9	28.0134	0.00033143	0.7722	16.323	373.72	63.15	0.00602	2000	0.11638
102	250	Nitrogen trifluoride	F_3N	7783-54-2	71.00191	2.1443	−0.30545	1860.3	1,216,700	144.09	0.00648	1000	0.06377
102	251	Nitromethane	CH_3NO_2	75-52-5	61.04002	0.00003135	1.1119	−91.6	128,000	374.35	0.01365	1000	0.06553
102	252	Nitrous oxide	N_2O	10024-97-2	44.0128	0.001096	0.667	540		182.3	0.00891	1000	0.07133
102	253	Nitric oxide	NO	10102-43-9	30.0061	0.0004096	0.7509	45.6		121.38	0.01094	750	0.05567

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , *K*	Thermal cond. at *T*	*T* , *K*	Thermal cond. at *T*
102	254	Nonadecane	$C_{19}H_{40}$	629-92-5	268.5209	0.00004957 1	1.2652	3332.3		603.05	0.02502	1000	0.07147
102	255	Nonanal	$C_9H_{18}O$	124-19-6	142.23862	0.00000175	1.5534			465.52	0.02440	1000	0.08003
102	256	Nonane	C_9H_{20}	111-84-2	128.2551	−0.065771	0.27198	−3482.3	−1,580,300	423.97	0.02130	1000	0.10597
102	257	Nonanoic acid	$C_9H_{18}O_2$	112-05-0	158.238	46.08	−1.0037	−2460.2	1,867,000	528.75	0.02815	1000	0.11042
102	258	1-Nonanol	$C_9H_{20}O$	143-08-8	144.2545	−30.715	−0.1075	8107	−156,830,000	485.2	0.02436	1000	0.09895
102	259	2-Nonanol	$C_9H_{20}O$	628-99-9	144.255	0.00016806	0.96876	713.67		471.7	0.02603	1000	0.07904
102	260	1-Nonene	C_9H_{18}	124-11-8	126.23922	0.000021269	1.2943	662.21		420.02	0.02051	1000	0.09772
102	261	Nonylmercaptan	$C_9H_{20}S$	1455-21-6	160.3201	0.047041	0.29733	2460.6	1,367,200	492.95	0.02559	1000	0.07598
102	262	1-Nonyne	C_9H_{16}	3452-09-3	124.22334	0.000016681	1.218	−199.41	144,580	423.85	0.01981	1000	0.07956
102	263	Octadecane	$C_{18}H_{38}$	593-45-3	254.49432	−291.08	1.0615	−6,019,900,000		589.86	0.02491	1000	0.07395
102	264	Octanal	$C_8H_{16}O$	124-13-0	128.212	0.00000166	1.5669			445.15	0.02345	1000	0.08333
102	265	Octane	C_8H_{18}	111-65-9	114.22852	−8758	0.8448	−27,121,000,000		339	0.01503	1000	0.11053
100	266	Octanoic acid	$C_8H_{16}O_2$	124-07-2	144.211	−0.20973	0.0012201	−2.1843E-06	1.3942E-09	512.85	0.02955	637.35	0.04157
102	266	Octanoic acid	$C_8H_{16}O_2$	124-07-2	144.211	3.2003E-08	2.18			637.35	0.04157	1000	0.11097
102	267	1-Octanol	$C_8H_{18}O$	111-87-5	130.22792	−0.0030238	0.8745	−13352		468.35	0.02380	1000	0.10288

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , *K*	Thermal cond. at *T*	*T* , *K*	Thermal cond. at *T*
102	268	2-Octanol	$C_8H_{18}O$	123-96-6	130.228	0.00016915	0.97238	698.55		452.9	0.02545	1000	0.08229
102	269	2-Octanone	$C_8H_{16}O$	111-13-7	128.21204	−0.0020184	1.0027	−20406		446.15	0.02046	1000	0.10597
102	270	3-Octanone	$C_8H_{16}O$	106-68-3	128.21204	8.1833E-08	2.0418			440.65	0.02050	1000	0.10923
102	271	1-Octene	C_8H_{16}	111-66-0	112.21264	0.00000133	1.3554	504.59		394.41	0.01926	1000	0.10295
102	272	Octyl mercaptan	$C_8H_{18}S$	111-88-6	146.29352	−3965.5	0.5213	−1,851,900,000		472.19	0.02505	1000	0.07845
102	273	1-Octyne	C_8H_{14}	629-05-0	110.19676	0.000060734	1.0516	−124.91	158,300	399.35	0.01967	1000	0.08394
102	274	Oxalic acid	$C_2H_2O_4$	144-62-7	90.03488	2.7969E-06	1.3164			516	0.01041	1000	0.02488
102	275	Oxygen	O_2	7782-44-7	31.9988	0.00044994	0.7456	56.699		80	0.00691	2000	0.12655
102	276	Ozone	O_3	10028-15-6	47.9982	0.0043147	0.47999	700.09		161.85	0.00931	1000	0.06990
102	277	Pentadecane	$C_{15}H_{32}$	629-62-9	212.41458	4.7796E-06	1.4851	643.13		543.84	0.02529	1000	0.08299
102	278	Pentanal	$C_5H_{10}O$	110-62-3	86.1323	0.00000113	1.6323			375.15	0.01799	1000	0.08912
102	279	Pentane	C_5H_{12}	109-66-0	72.14878	−684.4	0.764	−1,055,000,000		273.15	0.01288	1000	0.12707
100	280	Pentanoic acid	$C_5H_{10}O_2$	109-52-4	102.132	0.44736	−0.0019667	2.9973E-06	−1.4141E-09	458.95	0.03938	706.95	0.05536
102	280	Pentanoic acid	$C_5H_{10}O_2$	109-52-4	102.132	7.5284E-08	2.0589			706.95	0.05537	1000	0.11308
102	281	1-Pentanol	$C_5H_{12}O$	71-41-0	88.14882	2896	0.8985	12,735,000,000		410.9	0.02084	990.95	0.11087

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , *K*	Thermal cond. at *T*	*T* , *K*	Thermal cond. at *T*
102	282	2-Pentanol	$C_5H_{12}O$	6032-29-7	88.1482	0.00019575	0.9692	664.04		392.2	0.02372	1000	0.09509
102	283	2-Pentanone	$C_5H_{10}O$	107-87-9	86.1323	−0.01719	0.4832	−3798	−1,235,000	273	0.00877	1000	0.12002
102	284	3-Pentanone	$C_5H_{10}O$	96-22-0	86.1323	22.775	1.0019	191,000,000		273	0.00898	1000	0.12082
102	285	1-Pentene	C_5H_{10}	109-67-1	70.1329	2.7081E-06	1.5493	41.075	8301.3	303.22	0.01546	1000	0.11472
102	286	2-Pentylmercaptan	$C_5H_{12}S$	2084-19-7	104.21378	0.00022307	0.93358	794.16		385.15	0.01890	1000	0.07858
102	287	Pentylmercaptan	$C_5H_{12}S$	110-66-7	104.21378	0.00011261	1.034	693.05		399.79	0.02019	1000	0.08412
102	288	1-Pentyne	C_5H_8	627-19-0	68.11702	0.000052415	1.0948	−51.09	101,160	313.33	0.01517	1000	0.09608
102	289	2-Pentyne	C_5H_8	627-21-4	68.11702	0.00025623	1.0073	1423.7		329.27	0.01653	1000	0.11119
102	290	Phenanthrene	$C_{14}H_{10}$	85-01-8	178.2292	0.00010167	0.988	797		610.03	0.02490	1000	0.05208
102	291	Phenol	C_6H_6O	108-95-2	94.11124	0.038846	0.2392	985.81	937,170	454.99	0.02183	1000	0.06936
102	292	Phenyl isocyanate	C_7H_5NO	103-71-9	119.1207	0.00016675	0.91777	730.1		439.43	0.01669	1000	0.05461
102	293	Phthalic anhydride	$C_8H_4O_3$	85-44-9	148.11556	0.00005930	1.046	765.5		557.65	0.01864	1000	0.04615
102	294	Propadiene	C_3H_4	463-49-0	40.06386	0.000061629	1.0731	1.8579	70,128	238.65	0.00980	1000	0.09526
102	295	Propane	C_3H_8	74-98-6	44.09562	−1.12	0.10972	−9834.6	−7,535,800	231.11	0.01114	1000	0.14599

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , *K*	Thermal cond. at *T*	*T* , *K*	Thermal cond. at *T*
102	296	1-Propanol	C_3H_8O	71-23-8	60.09502	−613.84	0.7927	−1,157,400,000		370.35	0.02135	720.25	0.07034
102	297	2-Propanol	C_3H_8O	67-63-0	60.095	7.3907E-07	1.7419			355.3	0.02049	1000	0.12428
102	298	Propenylcyclohexene	C_9H_{14}	13511-13-2	122.20746	0.00010242	1.0486	701.56		431.65	0.02262	1000	0.08421
102	299	Propionaldehyde	C_3H_6O	123-38-6	58.07914	9.0711E-07	1.6709			322.15	0.01407	1000	0.09340
100	300	Propionic acid	$C_3H_6O_2$	79-09-4	74.0785	1.0014	−0.0045954	7.1517E-06	−3.5878E-09	414.32	0.06993	616.15	0.04578
102	300	Propionic acid	$C_3H_6O_2$	79-09-4	74.0785	1.8905E-07	1.93			616.15	0.04578	1000	0.11657
102	301	Propionitrile	C_3H_5N	107-12-0	55.0785	1.1671E-06	1.6033			370.25	0.01532	1000	0.07534
102	302	Propylacetate	$C_5H_{10}O_2$	109-60-4	102.1317	1325.3	1	12,235,000,000		374.65	0.01520	1000	0.10832
102	303	Propylamine	C_3H_9N	107-10-8	59.11026	0.2833	0.055046	1325.9	1,817,600	321	0.01709	1000	0.10000
102	304	Propylbenzene	C_9H_{12}	103-65-1	120.19158	0.16992	0.021288	−54.484	1,624,800	432.39	0.02022	1000	0.07658
102	305	Propylene	C_3H_6	115-07-1	42.07974	0.0000449	1.2018	421		225.45	0.01054	1000	0.12737
102	306	Propylformate	$C_4H_8O_2$	110-74-7	88.10512	740.1	0.9732	5,646,000,000		353.97	0.01403	1000	0.10893
102	307	2-Propylmercaptan	C_3H_8S	75-33-2	76.16062	0.00018367	0.9627	646.01		325.71	0.01616	1000	0.08624
102	308	Propylmercaptan	C_3H_8S	107-03-9	76.16062	0.0087425	0.51733	2358.1	334,590	340.87	0.01654	1000	0.08439

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , *K*	Thermal cond. at *T*	*T* , *K*	Thermal cond. at *T*
102	309	1,2-Propylene glycol	$C_3H_8O_2$	57-55-6	76.09442	0.0001666	0.9765	706		460.75	0.02624	1000	0.08302
102	310	Quinone	$C_6H_4O_2$	106-51-4	108.09476	−5678600	−0.045252	2,615,700,000	−3.5415E+13	454	0.02593	1000	0.12665
102	311	Silicon tetrafluoride	F_4Si	7783-61-1	104.07911	0.0000955	0.928	63.6		333.55	0.01761	702.45	0.03837
102	312	Styrene	C_8H_8	100-42-5	104.14912	0.010048	0.4033	553.74	685,570	418.31	0.01837	1000	0.07276
102	313	Succinic acid	$C_4H_6O_4$	110-15-6	118.08804	5.5263E-06	1.344			591	0.02934	1000	0.05949
102	314	Sulfur dioxide	O_2S	7446-09-5	64.0638	10.527	−0.7732	−1333	1,506,400	250	0.00745	900	0.03969
102	315	Sulfur hexafluoride	F_6S	2551-62-4	146.055419 2	0.00048883	0.6518	−117.08	78,863	273.15	0.01163	1000	0.04587
102	316	Sulfur trioxide	O_3S	7446-11-9	80.0632	1.0702	−0.2348	2010.4	1,277,000	317.9	0.01386	1000	0.04930
102	317	Terephthalic acid	$C_8H_6O_4$	100-21-0	166.13084	3.4082E-06	1.3647			795.28	0.03097	1000	0.04233
102	318	*o*-Terphenyl	$C_{18}H_{14}$	84-15-1	230.30376	0.00007865 2	0.95174	−282.82	289,490	373.15	0.00950	1000	0.05598
102	319	Tetradecane	$C_{14}H_{30}$	629-59-4	198.388	−163.62	0.9193	−1,087,600,000		526.73	0.02517	1000	0.08615
102	320	Tetrahydrofuran	C_4H_8O	109-99-9	72.10572	9.5521E-06	1.4561	662.22		339.12	0.01564	1000	0.13419
102	321	1,2,3,4-Tetrahydronaphthalene	$C_{10}H_{12}$	119-64-2	132.20228	0.00007754	1.0778	729		480.77	0.02395	1000	0.07676

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , *K*	Thermal cond. at *T*	*T* , *K*	Thermal cond. at *T*
102	322	Tetrahydrothiophene	C_4H_8S	110-01-0	88.17132	0.00085604	0.7297	531.99	213,840	394.27	0.01801	1000	0.07579
102	323	2,2,3,3-Tetramethylbutane	C_8H_{18}	594-82-1	114.22852	0.0001523 5	1.2816	−111.88	124,120	379.44	0.01964	1000	0.10528
102	324	Thiophene	C_4H_4S	110-02-1	84.13956	0.00013384	0.98115	645.95		357.31	0.01525	1000	0.07139
102	325	Toluene	C_7H_8	108-88-3	92.13842	0.00002392	1.2694	537		383.78	0.01901	1000	0.10007
102	326	1,1,2-Trichloroethane	$C_2H_3Cl_3$	79-00-5	133.40422	0.0000952	1.0423	1243.3		387	0.01125	1000	0.05684
102	327	Tridecane	$C_{13}H_{28}$	629-50-5	184.36142	5.3701E-06	1.4751	599.09		508.62	0.02422	1000	0.08942
102	328	Triethyl amine	$C_6H_{15}N$	121-44-8	101.19	0.000106	1.0161	91	132,900	273.15	0.01018	1000	0.09680
102	329	Trimethyl amine	C_3H_9N	75-50-3	59.11026	0.00027648	0.901	167.68	132,200	273.15	0.01280	1000	0.10734
102	330	1,2,3-Trimethylbenzene	C_9H_{12}	526-73-8	120.19158	0.0000984 08	1.0452	720.49		449.27	0.02238	1000	0.07816
102	331	1,2,4-Trimethylbenzene	C_9H_{12}	95-63-6	120.19158	0.00008498	1.061	708		442.53	0.02098	1000	0.07583
102	332	2,2,4-Trimethylpentane	C_8H_{18}	540-84-1	114.22852	0.00001758	1.3114	392.9		355.15	0.01846	1000	0.10847
102	333	2,3,3-Trimethylpentane	C_8H_{18}	560-21-4	114.22852	0.0000202 48	1.2284	−174.72	147,800	387.91	0.02001	1000	0.10079

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*T* , *K*	Thermal cond. at *T*	*T* , *K*	Thermal cond. at *T*
102	334	1,3,5-Trinitrobenzene	$C_6H_3N_3O_6$	99-35-4	213.10452	0.00020544	0.87137	807.3		629.6	0.02474	1000	0.04675
102	335	2,4,6-Trinitrotoluene	$C_7H_5N_3O_6$	118-96-7	227.1311	0.00018189	0.88744	803.39		625	0.02410	1000	0.04635
102	336	Undecane	$C_{11}H_{24}$	1120-21-4	156.30826	0.038012	0.68615	34,663	8,721,900	469.08	0.02259	1000	0.09798
102	337	1-Undecanol	$C_{11}H_{24}O$	112-42-5	172.30766	2498.8	0.95209	20,167,000,000		520.3	0.02486	1000	0.08899
102	338	Vinyl acetate	$C_4H_6O_2$	108-05-4	86.08924	−3279500	−0.12941	1,710,400,000	−1.2727E+13	345.65	0.01515	1000	0.12177
102	339	Vinyl acetylene	C_4H_4	689-97-4	52.07456	0.000054197	1.0632	−70.589	90,617	278.25	0.01123	1000	0.08222
102	340	Vinyl chloride	C_2H_3Cl	75-01-4	62.49822	−229.41	0.59582	−169,430,000		259.25	0.00963	1000	0.08300
102	341	Vinyl trichlorosilane	$C_2H_3Cl_3Si$	75-94-5	161.48972	3510.8	0.225	401,720,000		363.85	0.01198	1000	0.04135
102	342	Water	H_2O	7732-18-5	18.01528	6.2041E-06	1.3973			273.16	0.01574	1073.15	0.10652
102	343	*m*-Xylene	C_8H_{10}	108-38-3	106.165	3.0593E-09	2.4182	−569.28	121,060	320	0.00867	1000	0.09965
102	344	*o*-Xylene	C_8H_{10}	95-47-6	106.165	4.9707E-06	1.3787	−225.64	66,786	320	0.01492	1000	0.08084
102	345	*p*-Xylene	C_8H_{10}	106-42-3	106.165	9.9305E-08	1.9229	−469.93	113,460	320	0.01019	1000	0.09060

Eqn	Cmpd. no.	Name	Formula	CAS	Mol. wt.	C	C	C	C	T , K	Thermal cond. at T	T , K	Thermal cond. at T

Except for acetic acid, butyric acid, formic acid, heptanoic acid, octanoic acid, pentanoic acid, propionic acid, the vapor thermal conductivity is calculated by Eqn 102: $k = C_1 T^{C2}/(1 + C_3/T + C_4/T^2)$ where k is the thermal conductivity in W/(m·K) and T is the temperature in K. Thermal conductivities are at either 1 atm or the vapor pressure, whichever is lower.

Eqn 100, used for the limited temperature ranges as noted for the associating compounds above, $k = C_1 + C_2 T + C_3 T^2 + C_4 T^3$

Values in this table were taken from the Design Institute for Physical Properties (DIPPR) of the American Institute of Chemical Engineers (AIChE), 801 Critically Evaluated Gold Standard™ Database, copyright 2016 AIChE, and reproduced with permission of AIChE and of the DIPPR Evaluated Process Design Data Project Steering Committee. Their source should be cited as "R. L. Rowley, W. V. Wilding, J. L. Oscarson, T. A. Knotts, N. F. Giles, *DIPPR® Data Compilation of Pure Chemical Properties*, Design Institute for Physical Properties, AIChE, New York, NY (2016)".

Table 2-146 Thermophysical Properties of Miscellaneous Saturated Liquids

Substance	Property	−50 °C	−40 °C	−30 °C	−20 °C	−10 °C	0°C	10° C	20° C	30° C	40° C	50° C	60° C	70° C	80° C	90° C	100 °C
Acetaldehyde	ρ (kg/m^3)	863	852	840	828	816	804	794	783								
	c_p (kJ/kg·K)	2.05	2.08	2.11	2.14	2.17	2.20	2.24	2.28								
	μ (10^{-6}Pa·s)	460	404	358	321	290	263	241	222								
	k (W/m·K)	0.211	0.206	0.200	0.195	0.189	0.184	0.182	0.180								
	Pr	4.47	4.08	3.78	3.52	3.33	3.14	2.97	2.81								
Acetic acid	ρ (kg/m^3)								1049	1039	1028	1018	1006	995	984	972	960
	c_p (kJ/kg·K)								2.031								
	μ (10^{-6}Pa·s)								1210	1102	1010	795	600				

Substance	Property	−50 °C	−40 °C	−30 °C	−20 °C	−10 °C	0°C	10° C	20° C	30° C	40° C	50° C	60° C	70° C	80° C	90° C	100 °C
	k (W/m·K)								0.173	0.170	0.168	0.167	0.165	0.163	0.161		
	Pr								14.2								
Aniline	ρ (kg/m^3)	—	—	—	—	—	1039	1030	1022	1013	1005	996	987	978	969	960	951
	c_p (kJ/kg·K)	—	—	—	—	—	2.024	2.047	2.071	2.093	2.113	2.132	2.17	2.20	2.23	2.27	2.32
	μ (10^{-6}Pa·s)	—	—	—	—	—	10200	6500	4400	3160	2370	1850	1510	1270	1090	935	825
	k (W/m·K)	—	—	—	—	—	0.186	0.184	0.182	0.180	0.177	0.174	0.171	0.169	0.168	0.167	0.167
	Pr	—	—	—	—	—	111	72	50	36.7	28.3	22.7	19.2	16.5	14.5	12.7	11.5
Butanol	ρ (kg/m^3)	845	841	837	833	829	825	817	810	803	797	791	784	776	768	760	753
	c_p (kJ/kg·K)	1.947	1.996	2.046	2.100	2.153	2.202	2.262	2.345	2.437	2.524	2.621					
	μ (10^{-6}Pa·s)	34700	22400	14700	10300	7400	5190	3870	2950	2300	1780	1410	1140	930	760	630	535
	k (W/m·K)	0.175	0.174	0.173	0.172	0.171	0.170	0.168	0.167	0.166	0.165	0.164	0.163	0.162	0.161	0.160	0.159
	Pr	3860	2570	1740	1260	930	670	120	41	33.8	27.2	22.5					

Substance	Property	−50 °C	−40 °C	−30 °C	−20 °C	−10 °C	0°C	10° C	20° C	30° C	40° C	50° C	60° C	70° C	80° C	90° C	100 °C
Carbon disulfide	ρ (kg/m^3)	1362	1348	1334	1320	1306	1292	1278	1263								
	c_p (kJ/kg·K)	0.988	0.989	0.990	0.991	0.993	0.996	1.004	1.017								
	μ (10^{-6}Pa·s)	630	580	535	496	463	435	405	375	350	330						
	k (W/m·K)	0.194	0.190	0.186	0.182	0.178	0.174	0.170	0.166	0.161	0.158	0.156	0.154	0.152	0.150		
	Pr	3.21	3.02	2.85	2.70	2.58	2.49	2.39	2.30								
Cyclohexane	ρ (kg/m^3)	—	—	—	—	—	—	789	779	769	759	750	740	731	721		
	c_p (kJ/kg·K)	—	—	—	—	—	—	2.068	2.081	2.094	2.106	2.119					
	μ (10^{-6}Pa·s)	—	—	—	—	—	—	1175	980	820	710	605	540				
	k (W/m·K)	—	—	—	—	—	—	0.122	0.120	0.119	0.118	0.117	0.116	0.114	0.112		
	Pr	—	—	—	—	—	—	19.9	17.0	14.4	12.7	11.0					
Ethanol	ρ (kg/m^3)						806	798	789	781	776	763	754	745	735	725	716
	c_p (kJ/kg·K)	2.01	2.04	2.08	2.13	2.19	2.27	2.35	2.43	2.52	2.62	2.73	2.83	2.93	3.03	3.19	3.30

Substance	Property	−50 °C	−40 °C	−30 °C	−20 °C	−10 °C	0°C	10° C	20° C	30° C	40° C	50° C	60° C	70° C	80° C	90° C	100 °C
	μ (10^{-6}Pa·s)	6400	4790	3650	2825	2220	1770	1470	1200	1000	835	700	590	500	435	370	314
	k (W/m·K)	0.188	0.186	0.184	0.181	0.179	0.177	0.175	0.173	0.171	0.168	0.165	0.162	0.159	0.156	0.153	0.151
	Pr	68.4	52.5	41.3	33.2	27.2	22.7	19.7	16.9	14.7	13.0	11.6	10.3	9.2	8.4	7.7	6.9
Ethyl	ρ (kg/m^3)				947	935	924	912	901	888	876	863	851	838	825	811	797
acetate	c_p (kJ/kg·K)								2.01								
	μ (10^{-6}Pa·s)	1090					580	510	455	400	370	345	310	280	250	230	220
	k (W/m·K)								0.145	0.142	0.139	0.136	0.133	0.130	0.127	0.123	0.119
	Pr								6.3								
Ethylamine	ρ (kg/m^3)	761	750	739	729	718	707	695	683	671	658	646	633	620	607		
	c_p (kJ/kg·K)	2.95	2.97	2.98	3.00	3.01	3.03										
	μ (10^{-6}Pa·s)	580	500	435	390	350	320										
	k (W/m·K)	0.204	0.201	0.199	0.196	0.194	0.191										
	Pr	8.39	7.39	6.51	5.97	5.43	5.08										

Substance	Property	−50 °C	−40 °C	−30 °C	−20 °C	−10 °C	0°C	10° C	20° C	30° C	40° C	50° C	60° C	70° C	80° C	90° C	100 °C
Ethyl	ρ (kg/m^3)	790	780	769	758	747	736	725	714	702	689	676	666	653	640	625	611
ether	c_p (kJ/kg·K)	2.135	2.156	2.179	2.205	2.233	2.265	2.299	2.332	2.36	2.39	2.43	2.47	2.51			
	μ (10^{-6}Pa·s)	550	470	410	365	330	290	265	233	214	197	181	166	153	140	129	118
	k (W/m·K)	0.159	0.155	0.151	0.147	0.144	0.140	0.139	0.134	0.129	0.125	0.120	0.116	0.112			
	Pr	7.39	6.54	5.92	5.48	5.12	4.69	4.38	4.05	3.92	3.77	3.67	3.54	3.43			
Ethyl	ρ (kg/m^3)																
iodide	c_p (kJ/kg·K)			0.656	0.663	0.670	0.677	0.684	0.691	0.698	0.705	0.712	0.718	0.724			
	μ (10^{-6}Pa·s)						730	655	590	539	495	455	420	390			
	k (W/m·K)						0.092	0.090	0.088	0.086	0.085	0.083	0.081	0.080			
	Pr						5.37	4.98	4.63	4.30	4.11	3.90	3.72	3.53			
Ethylene	ρ (kg/m^3)						1127	1120	1113	1106	1099	1092	1085	1077	1070	1063	1056
glycol	c_p (kJ/kg·K)						2.272	2.327	2.381	2.431	2.484	2.536	2.586	2.636	2.685	2.734	2.779

Substance	Property	−50 °C	−40 °C	−30 °C	−20 °C	−10 °C	0°C	10° C	20° C	30° C	40° C	50° C	60° C	70° C	80° C	90° C	100 °C
	μ (10^{-6}Pa·s)						57000	33300	20200	13400	9100	7070	4000	3450	3000	2440	2000
	k (W/m·K)						0.254	0.255	0.256	0.258	0.259	0.260					
	Pr						510	305	190	126	87.3	69.0					
Formic acid	ρ (kg/m^3)						1241	1231	1220	1209	1196	1184	1170	1156	1140	1124	1108
	c_p (kJ/kg·K)																
	μ (10^{-6}Pa·s)							2260	1800	1470	1220	1030	890	780	680	615	550
	k (W/m·K)						0.265	0.261	0.257	0.257	0.253	0.250	0.246	0.243	0.240	0.236	0.232
	Pr																
Gasoline	ρ (kg/m^3)				784	775	767	759	751	743	735	721	717	708	699	690	681
	c_p (kJ/kg·K)				1.88	1.92	1.97	2.02	2.06	2.11	2.15	2.20	2.25	2.30	2.35	2.41	2.46
	μ (10^{-6}Pa·s)	1710	1400	1170	990	850	735	645	530	464	410	367	330	298	270	246	225
	k (W/m·K)	0.131	0.128	0.125	0.123	0.121	0.120	0.118	0.116	0.114	0.112	0.110	0.108	0.106	0.104	0.102	0.100
	Pr				15.1	13.5	12.1	11.0	9.41	8.59	7.87	7.34	6.88	6.47	6.10	5.81	5.54

Substance	Property	−50 °C	−40 °C	−30 °C	−20 °C	−10 °C	0°C	10° C	20° C	30° C	40° C	50° C	60° C	70° C	80° C	90° C	100 °C
Glycerol	ρ (kg/m^3)	—	—	—	—	—	1276	1270	1260	1254	1248	1242					
	c_p (kJ/kg·K)								2.393	2.406	2.457	2.504	2.548	2.588	2.625	2.657	2.686
	μ (10^{-6}Pa·s)						1.2.+7	4.0.+6	1.5.+6								
	k (W/m·K)								0.284	0.285	0.287	0.288	0.289	0.291	0.293	0.294	0.295
	Pr								12650								
Kerosene	ρ (kg/m^3)						781	774	767	760	754	748	742				
	c_p (kJ/kg·K)						1.91	1.96	2.02	2.07	2.13	2.18	2.23	2.28	2.32	2.35	2.38
	μ (10^{-6}Pa·s)	1150	725	500	360	275	215	173	149	126	108	95	83	73	66	60	55
	k (W/m·K)						0.140	0.139	0.139	0.138	0.138	0.137	0.137				
	Pr						2.93	2.44	2.17	1.89	1.67	1.51	1.35				
Methanol	ρ (kg/m^3)									783	774	766	756	746	736	725	711
	c_p (kJ/kg·K)	2.30	2.32	2.35	2.37	2.40	2.42	2.45	2.47	2.49	2.52	2.55	2.65	2.78	2.94	3.13	3.30

Substance	Property	−50 °C	−40 °C	−30 °C	−20 °C	−10 °C	0°C	10° C	20° C	30° C	40° C	50° C	60° C	70° C	80° C	90° C	100 °C
	μ (10^{-6}Pa·s)	2305	1800	1410	1170	975	820	692	590	510	455	400	355	315	271	240	218
	k(W/m·K)	0.225	0.222	0.219	0.216	0.212	0.209	0.206	0.203	0.199	0.195	0.192	0.189	0.187	0.184	0.182	0.180
	Pr	23.6	18.8	15.1	12.9	11.0	9.53	8.23	7.18	6.38	5.88	5.31	4.98	4.68	4.34	4.13	3.99
Methyl	ρ (kg/m^3)	1069	1056	1043	1030	1017	1003	989	975	960	944	929	913	897	880	863	845
formate	c_p (kJ/kg·K)	1.84	1.86	1.88	1.90	1.92	1.95	1.99	2.03	2.08							
	μ (10^{-6}Pa·s)	830	711	618	544	481	430	380	345	315							
	k (W/m·K)	0.217	0.213	0.209	0.205	0.200	0.195	0.191	0.186	0.180							
	Pr	7.04	6.21	5.56	5.04	4.62	4.30	3.96	3.77	3.64							
Oil,	ρ (kg/m^3)																
castor	c_p (kJ/kg·K)																
	μ (10^{-6}Pa·s)							2,420,000	986,000	451,000	231,000	125,000	74,000	43,000			
	k (W/m·K)							0.182	0.181	0.180	0.179	0.178	0.177	0.176	0.175	0.174	0.17
	Pr																

Substance	Property	−50 °C	−40 °C	−30 °C	−20 °C	−10 °C	0°C	10° C	20° C	30° C	40° C	50° C	60° C	70° C	80° C	90° C	100 °C
Oil,	ρ (kg/m^3)								914								
olive	c_p (kJ/kg·K)								1.633								
	μ (10^{-6}Pa·s)							138,000	84,000	52,000	36,300	24,500	17,000	12,400			
	k (W/m·K)							0.170	0.169	0.168	0.167	0.166	0.166	0.165	0.165	0.164	0.164
	Pr								810								
Pentane	ρ (kg/m^3)	693	684	674	665	656	646	636	626	616	606	596	585	574	562	550	538
	c_p (kJ/kg·K)	2.060	2.084	2.110	2.137	2.167	2.206	2.239	2.273								
	μ (10^{-6}Pa·s)	489	428	379	339	307	279	254	234	209	190	175	161	148	137	124	113
	k (W/m·K)	0.142	0.139	0.136	0.132	0.128	0.125	0.122	0.119	0.115	0.112	0.108	0.105	0.101	0.098	0.095	0.091
	Pr	7.14	6.42	5.88	5.49	5.20	4.92	4.66	4.47								
Propanol	ρ (kg/m^3)	849					819	811	814	796	788	779	770	761	752	747	743
	c_p (kJ/kg·K)	1.955					2.219										
	μ (10^{-6}Pa·s)	20,200	13,500	9500	6900	5110	3900	2900	2245	1720	1400	1130	921	760	630	508	447

Substance	Property	−50 °C	−40 °C	−30 °C	−20 °C	−10 °C	0°C	10° C	20° C	30° C	40° C	50° C	60° C	70° C	80° C	90° C	100 °C
	k (W/m·K)	0.167	0.166	0.165						0.171	0.169	0.168	0.167	0.165	0.164	0.163	0.162
	Pr	236															
Sulfuric	ρ (kg/m^3)								1834								
acid	c_p (kJ/kg·K)								1.382								
	μ (10^{-6}Pa·s)						48,400	35,200	25,400	15,700	11,500	8820	7220	6090	5190		
	k (W/m·K)						0.314										
	Pr																
Toluene	ρ (kg/m^3)	932	923	913	904	895	886	876	867	858	848	839	829	820	810	800	790
	c_p (kJ/kg·K)	1.514	1.535	1.556	1.579	1.602	1.633	1.652	1.675	1.701	1.73	1.76	1.80	1.83	1.87	1.92	1.97
	μ (10^{-6}Pa·s)	2120	1670	1345	1100	915	770	670	590	520	470	420	380	355	325	295	270
	k (W/m·K)	0.152	0.149	0.147	0.144	0.142	0.139	0.137	0.134	0.132	0.129	0.126	0.124	0.122	0.119	0.117	0.114
	Pr	21.1	17.8	14.2	12.1	10.3	9.0	8.1	7.4	6.7	6.3	5.9	5.5	5.3	5.1	4.8	4.7
Turpentine	ρ (kg/m^3)																

Substance	Property	−50 °C	−40 °C	−30 °C	−20 °C	−10 °C	0°C	10° C	20° C	30° C	40° C	50° C	60° C	70° C	80° C	90° C	100 °C
	c_p (kJ/kg·K)						1.72	1.76	1.80			1.93					
	μ (10^{-6}Pa·s)						2250	1780	1490	1270	1070	925	820	730	675		
	k (W/m·K)						0.130	0.129	0.128	0.127	0.126	0.125					
	Pr						29.8	24.3	20.9	18.4	16.1	14.3					

□	Click here for the **Natural Convection Heat Transfer Coefficients** spreadsheet calculator.
□	Click here for the **Forced Convection Heat Transfer Coefficients** spreadsheet calculator.
□	Click here for the **Thermal Design of Double Pipe Heat Exchangers** spreadsheet calculator.

Table 2-147 Thermal Conductivity of Inorganic and Organic Liquids [W/(m·K)]

Cmpd. no.	Name	Formula	CAS	Mol. wt.	C_1	C_2	C_3	C_4	C_5	T_{min}, K	Thermal cond. at T_{min}	T_{max}, K	Thermal cond. at T_{max}
1	Acetaldehyde	C_2H_4O	75-07-0	44.05256	0.33515	−0.000555227				149.78	0.2524	294.15	0.1727
2	Acetamide	C_2H_5NO	60-35-5	59.0672	0.39363	−0.000370533				353.33	0.2627	494.3	0.2105
3	Acetic acid	$C_2H_4O_2$	64-19-7	60.052	0.214	−0.0001834				289.81	0.1608	391.05	0.1423
4	Acetic anhydride	$C_4H_6O_3$	108-24-7	102.08864	0.23638	−0.000242623				200.15	0.1878	412.7	0.1362
5	Acetone	C_3H_6O	67-64-1	58.07914	0.2878	−0.000427				178.45	0.2116	343.15	0.1413
6	Acetonitrile	C_2H_3N	75-05-8	41.05519	0.30755	−0.000402				229.32	0.2154	354.81	0.1649

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*C*	*T* , K	Thermal cond. at *T*	*T* , K	Thermal cond. at *T*
7	Acetylene	C_2H_2	74-86-2	26.03728	0.33363	−0.000836555				192.4	0.1727	250	0.1245
8	Acrolein	C_3H_4O	107-02-8	56.06326	0.2703	−0.0003764				185.45	0.2005	325.84	0.1477
9	Acrylic acid	$C_3H_4O_2$	79-10-7	72.06266	0.2441	−0.0002904				286.15	0.1610	484.5	0.1034
10	Acrylonitrile	C_3H_3N	107-13-1	53.06626	0.30751	−0.000487				189.63	0.2152	350.45	0.1368
11	Air	Mixture	132259-10-0	28.96	0.28472	−0.0017393				75	0.1543	125	0.0673
12	Ammonia	H_3N	7664-41-7	17.03052	1.169	−0.002314				195.41	0.7168	400.05	0.2433
13	Anisole	C_7H_8O	100-66-3	108.13782	0.23494	−0.0026477				235.65	0.1725	512.5	0.0993
14	Argon	Ar	7440-37-1	39.948	0.1819	−0.0003176	−0.0000041			83.78	0.1264	150	0.0418
15	Benzamide	C_7H_7NO	55-21-0	121.13658	0.28485	−0.0025225				403	0.1832	563.15	0.1428
16	Benzene	C_6H_6	71-43-2	78.11184	0.23444	−0.0003057 2				278.68	0.1492	413.1	0.1081
17	Benzenethiol	C_6H_6S	108-98-5	110.17684	0.20996	−0.0002146				258.27	0.1545	442.29	0.1150
18	Benzoic acid	$C_7H_6O_2$	65-85-0	122.12134	0.2391	−0.0002325				395.45	0.1472	596	0.1005
19	Benzonitrile	C_7H_5N	100-47-0	103.1213	0.20603	−0.0002102 3				260.28	0.1513	464.15	0.1085
20	Benzophenone	$C_{13}H_{10}O$	119-61-9	182.2179	0.25867	−0.0002251 6				321.35	0.1863	664	0.1092
21	Benzyl alcohol	C_7H_8O	100-51-6	108.13782	0.17847	−0.0006584 3				257.85	0.1615	478.6	0.1470

Cmpd. no.	Name	Formula	CAS	Mol. wt.	C	C	C	C	C	T , K	Thermal cond. at T	T , K	Thermal cond. at T
22	Benzyl ethyl ether	$C_9H_{12}O$	539-30-0	136.19098	0.2029	−0.00 02226				275.65	0.1415	528.6	0.0852
23	Benzyl mercaptan	C_7H_8S	100-53-8	124.20342	0.203 16	−0.00 01991 2				243.95	0.1546	472.03	0.1092
24	Biphenyl	$C_{12}H_{10}$	92-52-4	154.2078	0.190 53	−0.00 01514 5				342.2	0.1387	723.15	0.0810
25	Bromine	Br_2	7726-95-6	159.808	−0.21 85	0.004 2143	−0.00 00177 53	3.104 1E-08	−2.01 08E-11	266	0.1299	584	0.0316
26	Bromobenzene	C_6H_5Br	108-86-1	157.0079	0.169 83	−0.00 01981				242.43	0.1218	429.24	0.0848
27	Bromoethane	C_2H_5Br	74-96-4	108.965	0.162 9	−0.00 02119 8				154.25	0.1302	327	0.0936
28	Bromomethane	CH_3Br	74-83-9	94.93852	0.161 43	−0.00 02128 7				179.44	0.1232	413.15	0.0735
29	1,2-Butadiene	C_4H_6	590-19-2	54.09044	0.219 66	−0.00 03436				136.95	0.1726	284	0.1221
30	1,3-Butadiene	C_4H_6	106-99-0	54.09044	0.222 31	−0.00 03664				164.25	0.1621	268.74	0.1238
31	Butane	C_4H_{10}	106-97-8	58.1222	0.273 49	−0.00 07126 7	5.155 5E-07			134.86	0.1868	400	0.0709
32	1,2-Butanediol	$C_4H_{10}O_2$	584-03-2	90.121	0.064 621	0.000 67625	−1.04 91E-06			220	0.1626	469.57	0.1508
33	1,3-Butanediol	$C_4H_{10}O_2$	107-88-0	90.121	−0.00 32865	0.001 1463	−1.55 25E-06			196.15	0.1618	481.38	0.1888
34	1-Butanol	$C_4H_{10}O$	71-36-3	74.1216	0.228 88	−0.00 025				183.85	0.1829	391	0.1311
35	2-Butanol	$C_4H_{10}O$	78-92-2	74.1216	0.185 99	−0.00 01722 7				158.45	0.1587	372.9	0.1218

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*C*	*T* , K	Thermal cond. at *T*	*T* , K	Thermal cond. at *T*
36	1-Butene	C_4H_8	106-98-9	56.10632	0.22153	−0.0003502 3				87.8	0.1908	266.91	0.1281
37	*cis*-2-Butene	C_4H_8	590-18-1	56.10632	0.21378	−0.0003544 5				134.26	0.1662	276.87	0.1156
38	*trans*-2-Butene	C_4H_8	624-64-6	56.10632	0.21153	−0.0003505 6				167.62	0.1528	274.03	0.1155
39	Butyl acetate	$C_6H_{12}O_2$	123-86-4	116.15828	0.21721	−0.0002656 3				199.65	0.1642	453.75	0.0967
40	Butylbenzene	$C_{10}H_{14}$	104-51-8	134.21816	0.18707	−0.0002003 7				185.3	0.1499	473.15	0.0923
41	Butyl mercaptan	$C_4H_{10}S$	109-79-5	90.1872	0.21143	−0.000258				157.46	0.1708	371.61	0.1156
42	*sec*-Butyl mercaptan	$C_4H_{10}S$	513-53-1	90.1872	0.2069	−0.0002568				133.02	0.1727	358.13	0.1149
43	1-Butyne	C_4H_6	107-00-6	54.09044	0.22334	−0.0003515				147.43	0.1715	281.22	0.1245
44	Butyraldehyde	C_4H_8O	123-72-8	72.10572	0.24962	−0.000325				176.8	0.1922	347.94	0.1365
45	Butyric acid	$C_4H_8O_2$	107-92-6	88.1051	0.1967	−0.000168				267.95	0.1517	573.15	0.1004
46	Butyronitrile	C_4H_7N	109-74-0	69.1051	0.24077	−0.0002866 5				161.3	0.1945	390.74	0.1288
47	Carbon dioxide	CO_2	124-38-9	44.0095	0.4406	−0.0012175				216.58	0.1769	300	0.0754
48	Carbon disulfide	CS_2	75-15-0	76.1407	0.2333	−0.000275				161.11	0.1890	319.37	0.1455

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*C*	*T* , K	Thermal cond. at *T*	*T* , K	Thermal cond. at *T*
49	Carbon monoxide	CO	630-08-0	28.0101	0.2855	−0.001784				68.15	0.1639	125	0.0625
50	Carbon tetrachloride	CCl_4	56-23-5	153.8227	0.1589	−0.001987				250.33	0.1092	349.79	0.0894
51	Carbon tetrafluoride	CF_4	75-73-0	88.0043	0.20771	−0.0007888 3				89.56	0.1371	145.1	0.0933
52	Chlorine	Cl_2	7782-50-5	70.906	0.2246	−0.0000064	−0.00000788			172.12	0.1902	410	0.0659
53	Chlorobenzene	C_6H_5Cl	108-90-7	112.5569	0.1841	−0.001917				227.95	0.1404	404.87	0.1065
54	Chloroethane	C_2H_5Cl	75-00-3	64.5141	0.23779	−0.0003952 09				136.75	0.1837	348.15	0.1002
55	Chloroform	$CHCl_3$	67-66-3	119.37764	0.1778	−0.002023				209.63	0.1354	400	0.0969
56	Chloromethane	CH_3Cl	74-87-3	50.4875	0.25381	−0.0004318 03				175.43	0.1781	333	0.1100
57	1-Chloropropane	C_3H_7Cl	540-54-5	78.54068	0.21851	−0.0003376 2				150.35	0.1677	393.15	0.0858
58	2-Chloropropane	C_3H_7Cl	75-29-6	78.54068	0.21232	−0.003149				155.97	0.1632	386.7	0.0906
59	*m*-Cresol	C_7H_8O	108-39-4	108.13782	0.18241	−0.0001110 9				285.39	0.1507	475.43	0.1296
60	*o*-Cresol	C_7H_8O	95-48-7	108.13782	0.19186	−0.001303				304.19	0.1522	464.15	0.1314
61	*p*-Cresol	C_7H_8O	106-44-5	108.13782	0.17971	−0.0001203 7				307.93	0.1426	475.13	0.1225

Cmpd. no.	Name	Formula	CAS	Mol. wt.	C	C	C	C	C	T , K	Thermal cond. at T	T , K	Thermal cond. at T
62	Cumene	C_9H_{12}	98-82-8	120.19158	0.1855	−0.000208955				177.14	0.1485	413.15	0.0992
63	Cyanogen	C_2N_2	460-19-5	52.0348	0.37845	−0.000699455				245.25	0.2069	251.9	0.2023
64	Cyclobutane	C_4H_8	287-23-0	56.10632	0.22262	−0.000340822				182.48	0.1604	285.66	0.1253
65	Cyclohexane	C_6H_{12}	110-82-7	84.15948	0.19813	−0.0002505				279.69	0.1281	353.87	0.1095
66	Cyclohexanol	$C_6H_{12}O$	108-93-0	100.15888	0.1715	−0.0001255				296.6	0.1343	563.15	0.1008
67	Cyclohexanone	$C_6H_{10}O$	108-94-1	98.143	0.17557	−0.000123922				242	0.1456	428.58	0.1225
68	Cyclohexene	C_6H_{10}	110-83-8	82.1436	0.20926	−0.000260337				169.67	0.1651	356.12	0.1165
69	Cyclopentane	C_5H_{10}	287-92-3	70.1329	0.2066	−0.0002696				179.28	0.1583	322.4	0.1197
70	Cyclopentene	C_5H_8	142-29-0	68.11702	0.21776	−0.000277783				138.13	0.1794	333.15	0.1252
71	Cyclopropane	C_3H_6	75-19-4	42.07974	0.24348	−0.000425668				145.59	0.1815	240.37	0.1412
72	Cyclohexylmercaptan	$C_6H_{12}S$	1569-69-3	116.22448	0.18374	−0.0001925				189.64	0.1472	431.95	0.1006
73	Decanal	$C_{10}H_{20}O$	112-31-2	156.2652	0.21363	−0.000230004				285	0.1481	481.65	0.1028
74	Decane	$C_{10}H_{22}$	124-18-5	142.28168	0.2063	−0.000025				243.51	0.1454	447.3	0.0945
75	Decanoic acid	$C_{10}H_{20}O_2$	334-48-5	172.265	0.206	−0.0002				304.75	0.1451	543.15	0.0974

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*C*	*T* , K	Thermal cond. at *T*	*T* , K	Thermal cond. at *T*
76	1-Decanol	$C_{10}H_{22}O$	112-30-1	158.28108	0.236171	−0.00025				280.05	0.1662	503	0.1104
77	1-Decene	$C_{10}H_{20}$	872-05-9	140.2658	0.20237	−0.000241837				206.89	0.1523	443.75	0.0950
78	Decyl mercaptan	$C_{10}H_{22}S$	143-10-2	174.34668	0.20134	−0.000208226				247.56	0.1498	512.35	0.0946
79	1-Decyne	$C_{10}H_{18}$	764-93-2	138.24992	0.20839	−0.000236222				229.15	0.1543	447.15	0.1028
80	Deuterium	D_2	7782-39-0	4.0316	1.264					20.4	1.2640	20.4	1.2640
81	1,1-Dibromoethane	$C_2H_4Br_2$	557-91-5	187.86116	0.1426	−0.000164022				210.15	0.1081	498.4	0.0609
82	1,2-Dibromoethane	$C_2H_4Br_2$	106-93-4	187.86116	0.13622	−0.00001179				282.85	0.1029	404.51	0.0885
83	Dibromomethane	CH_2Br_2	74-95-3	173.83458	0.17558	−0.000224999				220.6	0.1259	370.1	0.0923
84	Dibutyl ether	$C_8H_{18}O$	142-96-1	130.22792	0.19418	−0.000222246				175.3	0.1552	523.15	0.0778
85	*m*-Dichlorobenzene	$C_6H_4Cl_2$	541-73-1	147.00196	0.16694	−0.00001667				248.39	0.1255	446.23	0.0926
86	*o*-Dichlorobenzene	$C_6H_4Cl_2$	95-50-1	147.00196	0.16994	−0.00001637				262.87	0.1269	351.71	0.1124
87	*p*-Dichlorobenzene	$C_6H_4Cl_2$	106-46-7	147.00196	0.16977	−0.00001799				326.14	0.1111	548	0.0712
88	1,1-Dichloroethane	$C_2H_4Cl_2$	75-34-3	98.95916	0.18881	−0.000260823				176.19	0.1429	416.9	0.0801

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*C*	*T* , K	Thermal cond. at *T*	*T* , K	Thermal cond. at *T*
89	1,2-Dichloroethane	$C_2H_4Cl_2$	107-06-2	98.95916	0.214	−0.000266				253.15	0.1467	356.59	0.1191
90	Dichloromethane	CH_2Cl_2	75-09-2	84.93258	0.23847	−0.0003336				178.01	0.1791	325	0.1300
91	1,1-Dichloropropane	$C_3H_6Cl_2$	78-99-9	112.98574	0.18	−0.0002314				192.5	0.1354	438	0.0786
92	1,2-Dichloropropane	$C_3H_6Cl_2$	78-87-5	112.98574	0.19653	−0.0002501				172.71	0.1533	457.6	0.0821
93	Diethanolamine	$C_4H_{11}NO_2$	111-42-2	105.13564	0.0218	0.0010315	−0.00000135			301.15	0.2095	673.15	0.1022
94	Diethylamine	$C_4H_{11}N$	109-89-7	73.13684	0.2587	−0.0005434	4.2097E-07			223.35	0.1583	453.15	0.0989
95	Diethyl ether	$C_4H_{10}O$	60-29-7	74.1216	0.2495	−0.000407				156.85	0.1857	433.15	0.0732
96	Diethyl sulfide	$C_4H_{10}S$	352-93-2	90.1872	0.21065	−0.0002623				169.2	0.1663	365.25	0.1148
97	1,1-Difluoroethane	$C_2H_4F_2$	75-37-6	66.04997	0.27019	−0.000661	3.443E-07			154.56	0.1763	363.15	0.0756
98	1,2-Difluoroethane	$C_2H_4F_2$	624-72-6	66.04997	0.23171	−0.0003850 3				179.6	0.1626	372.8	0.0882
99	Difluoromethane	CH_2F_2	75-10-5	52.02339	0.37296	−0.0008870 7	2.5762E-07			136.95	0.2563	302.56	0.1282
100	Di-isopropylamine	$C_6H_{15}N$	108-18-9	101.19	0.1844	−0.000239				176.85	0.1421	357.05	0.0991
101	Di-isopropyl ether	$C_6H_{14}O$	108-20-3	102.17476	0.19162	−0.0002762				187.65	0.1398	400.1	0.0811

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*C*	*T* , K	Thermal cond. at *T*	*T* , K	Thermal cond. at *T*
102	Di–isopropyl ketone	$C_7H_{14}O$	565-80-0	114.18546	0.22076	−0.000276 24				204.81	0.1642	460	0.0937
103	1,1-Dimethoxyethane	$C_4H_{10}O_2$	534-15-6	90.121	0.22078	−0.000312 71				159.95	0.1708	337.45	0.1153
104	1,2-Dimethoxypropane	$C_5H_{12}O_2$	7778-85-0	104.14758	0.22998	−0.000303 72				226.1	0.1613	366.15	0.1188
105	Dimethyl acetylene	C_4H_6	503-17-3	54.09044	0.22773	−0.000348 04				240.91	0.1439	300.13	0.1233
106	Dimethyl amine	C_2H_7N	124-40-3	45.08368	0.2454	−0.00 0338				180.96	0.1842	403.15	0.1091
107	2,3-Dimethylbutane	C_6H_{14}	79-29-8	86.17536	0.1774	−0.000 2436				145.19	0.1420	331.15	0.0967
108	1,1-Dimethylcyclohexane	C_8H_{16}	590-66-9	112.21264	0.1807	−0.000 2177				239.66	0.1285	392.7	0.0952
109	*cis*-1,2-Dimethylcyclohexane	C_8H_{16}	2207-01-4	112.21264	0.18092	−0.000 2108				223.16	0.1339	402.94	0.0960
110	*trans*-1,2-Dimethylcyclohexane	C_8H_{16}	6876-23-9	112.21264	0.17675	−0.000 2077				184.99	0.1383	596.15	0.0529
111	Dimethyl disulfide	$C_2H_6S_2$	624-92-0	94.19904	0.21373	−0.000 2447				188.44	0.1676	382.9	0.1200

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*C*	*T* , K	Thermal cond. at *T*	*T* , K	Thermal cond. at *T*
112	Dimethyl ether	C_2H_6O	115-10-6	46.06844	0.31174	−0.00 05638				131.65	0.2375	320.03	0.1313
113	*N,N*-Dimethylformamide	C_3H_7NO	68-12-2	73.09378	0.26	−0.00 0255				250	0.1963	425.15	0.1516
114	2,3-Dimethylpentane	C_7H_{16}	565-59-3	100.20194	0.17964	−0.00 0246				160	0.1403	362.93	0.0904
115	Dimethyl phthalate	$C_{10}H_{10}O_4$	131-11-3	194.184	0.13905	0.000 1509	−3.97 8E-07			273.15	0.1506	556.85	0.0997
116	Dimethylsilane	C_2H_8Si	1111-74-6	60.17042	0.25547	−0.00 04411				122.93	0.2012	253.55	0.1436
117	Dimethyl sulfide	C_2H_6S	75-18-3	62.134	0.23942	−0.00 03311				174.88	0.1815	310.48	0.1366
118	Dimethyl sulfoxide	C_2H_6OS	67-68-5	78.13344	0.3142	−0.00 030809				291.67	0.2243	464	0.1712
119	Dimethyl terephthalate	$C_{10}H_{10}O_4$	120-61-6	194.184	0.21956	−0.00 0209955				413.79	0.1327	559.2	0.1022
120	1,4-Dioxane	$C_4H_8O_2$	123-91-1	88.10512	0.3027	−0.00 04827				284.95	0.1652	374.47	0.1219
121	Diphenyl ether	$C_{12}H_{10}O$	101-84-8	170.2072	0.18686	−0.00 014953				300.03	0.1420	531.46	0.1074
122	Dipropylamine	$C_6H_{15}N$	142-84-7	101.19	0.2224	−0.00 0314				210.15	0.1564	382	0.1025
123	Dodecane	$C_{12}H_{26}$	112-40-3	170.33484	0.2047	−0.00 02326				263.57	0.1434	489.47	0.0909
124	Eicosane	$C_{20}H_{42}$	112-95-8	282.54748	0.2178	−0.00 02233				309.58	0.1487	616.93	0.0800

Cmpd. no.	Name	Formula	CAS	Mol. wt.	C	C	C	C	C	T , K	Thermal cond. at T	T , K	Thermal cond. at T
125	Ethane	C_2H_6	74-84-0	30.069	0.35758	−0.00011458	6.1866E-07			90.35	0.2591	300	0.0695
126	Ethanol	C_2H_6O	64-17-5	46.06844	0.2468	−0.000264				159.05	0.2048	353.15	0.1536
127	Ethyl acetate	$C_4H_8O_2$	141-78-6	88.10512	0.2501	−0.00003563				189.6	0.1825	350.21	0.1253
128	Ethylamine	C_2H_7N	75-04-7	45.08368	0.30059	−0.000581	6.602E-07			192.15	0.2133	293.15	0.1870
129	Ethylbenzene	C_8H_{10}	100-41-4	106.165	0.1999	−0.000238823				178.2	0.1574	413.1	0.1015
130	Ethyl benzoate	$C_9H_{10}O_2$	93-89-0	150.1745	0.20771	−0.000212665				238.45	0.1570	549.4	0.0909
131	2-Ethylbutanoic acid	$C_6H_{12}O_2$	88-09-5	116.15828	0.2175	−0.00002407				258.15	0.1554	516.5	0.0932
132	Ethyl butyrate	$C_6H_{12}O_2$	105-54-4	116.15828	0.21043	−0.000249023				175.15	0.1668	453.15	0.0976
133	Ethylcyclohexane	C_8H_{16}	1678-91-7	112.21264	0.17662	−0.00002014				161.84	0.1440	404.94	0.0951
134	Ethylcyclopentane	C_7H_{14}	1640-89-7	98.18606	0.18334	−0.00002228				134.71	0.1533	376.62	0.0994
135	Ethylene	C_2H_4	74-85-1	28.05316	0.4194	−0.001591	0.00000130 6			104	0.2681	280	0.0763
136	Ethylenediamine	$C_2H_8N_2$	107-15-3	60.09832	0.36434	−0.00004433				284.29	0.2383	390.41	0.1913
137	Ethylene glycol	$C_2H_6O_2$	107-21-1	62.06784	0.088067	0.00094712	−1.3114E-06			260.15	0.2457	470.45	0.2434
138	Ethyleneimine	C_2H_5N	151-56-4	43.0678	0.3097	−0.00004023				195.2	0.2312	329	0.1773

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*C*	*T* , K	Thermal cond. at *T*	*T* , K	Thermal cond. at *T*
139	Ethylene oxide	C_2H_4O	75-21-8	44.05256	0.26957	−0.00003984				160.65	0.2056	283.85	0.1565
140	Ethyl formate	$C_3H_6O_2$	109-94-4	74.07854	0.2587	−0.00033				193.55	0.1948	433.15	0.1158
141	2-Ethylhexanoic acid	$C_8H_{16}O_2$	149-57-5	144.211	0.20954	−0.000222251				155.15	0.1750	500.66	0.0981
142	Ethylhexyl ether	$C_8H_{18}O$	5756-43-4	130.22792	0.19356	−0.000241022				180	0.1502	466.4	0.0812
143	Ethyli sopropyl ether	$C_5H_{12}O$	625-54-7	88.14818	0.21928	−0.000325688				140	0.1737	391.2	0.0919
144	Ethyli sopropyl ketone	$C_6H_{12}O$	565-69-5	100.15888	0.22873	−0.00002913				204.15	0.1693	450.1	0.0976
145	Ethyl mercaptan	C_2H_6S	75-08-1	62.13404	0.23392	−0.00003206				125.26	0.1938	308.15	0.1351
146	Ethyl propionate	$C_5H_{10}O_2$	105-37-3	102.1317	0.2137	−0.00002515				199.25	0.1636	495	0.0892
147	Ethylpropyl ether	$C_5H_{12}O$	628-32-0	88.14818	0.22717	−0.00003298				145.65	0.1791	400.07	0.0952
148	Ethyltrichlorosilane	$C_2H_5Cl_3Si$	115-21-9	163.506	0.19653	−0.000016907	−1.6698E-07			167.55	0.1635	371.05	0.1108
149	Fluorine	F_2	7782-41-4	37.99968064	0.2758	−0.00016297				53.48	0.1886	130	0.0639
150	Fluorobenzene	C_6H_5F	462-06-6	96.1023032	0.20962	−0.000280334				238.15	0.1429	353.15	0.1106
151	Fluoroethane	C_2H_5F	353-36-6	48.0595	0.25866	−0.000498				129.95	0.1939	235.45	0.1414

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*C*	*T* , K	Thermal cond. at *T*	*T* , K	Thermal cond. at *T*
152	Fluoromethane	CH_3F	593-53-3	34.03292	0.48162	−0.00010709	0	0		131.35	0.3410	194.82	0.2730
153	Formaldehyde	CH_2O	50-00-0	30.02598	0.336003243	−0.00054				155.15	0.2522	253.85	0.1989
154	Formamide	CH_3NO	75-12-7	45.04062	0.3847	−0.00001065				275.7	0.3553	493	0.3322
155	Formic acid	CH_2O_2	64-18-6	46.0257	0.302	−0.000108				281.45	0.2716	373.71	0.2616
156	Furan	C_4H_4O	110-00-9	68.07396	0.2198	−0.000314005				187.55	0.1609	304.5	0.1242
157	Helium-4	He	7440-59-7	4.0026	−0.013833	0.022913	−0.00054872	0.0004585		2.2	0.0149	4.8	0.0204
158	Heptadecane	$C_{17}H_{36}$	629-78-7	240.46774	0.20926	−0.00002215				295.13	0.1439	575.3	0.0818
159	Heptanal	$C_7H_{14}O$	111-71-7	114.18546	0.22841	−0.000262723				229.8	0.1680	426.15	0.1164
160	Heptane	C_7H_{16}	142-82-5	100.20194	0.215	−0.000303				182.57	0.1597	371.58	0.1024
161	Heptanoic acid	$C_7H_{14}O_2$	111-14-8	130.185	0.202	−0.00002				265.83	0.1488	496.15	0.1028
162	1-Heptanol	$C_7H_{16}O$	111-70-6	116.20134	0.234063	−0.000025				239.15	0.1743	573.15	0.0908
163	2-Heptanol	$C_7H_{16}O$	543-49-7	116.20134	0.21142	−0.000247993				220	0.1569	432.9	0.1041
164	3-Heptanone	$C_7H_{14}O$	106-35-4	114.18546	0.2026	−0.00002234				234.15	0.1503	553.15	0.0790
165	2-Heptanone	$C_7H_{14}O$	110-43-0	114.18546	0.2108	−0.000246				238.15	0.1522	424.05	0.1065
166	1-Heptene	C_7H_{14}	592-76-7	98.18606	0.19664	−0.000166623	−2.5241E-07			154.12	0.1650	366.79	0.1017

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*C*	*T* , K	Thermal cond. at *T*	*T* , K	Thermal cond. at *T*
167	Heptyl mercaptan	$C_7H_{16}S$	1639-09-4	132.26694	0.2037	−0.00002252				229.92	0.1519	450.09	0.1023
168	1-Heptyne	C_7H_{12}	628-71-7	96.17018	0.21098	−0.000026652				192.22	0.1597	372.93	0.1116
169	Hexadecane	$C_{16}H_{34}$	544-76-3	226.44116	0.20749	−0.000219177				291.31	0.1436	560.01	0.0848
170	Hexanal	$C_6H_{12}O$	66-25-1	100.15888	0.22832	−0.000264822				214.93	0.1714	401.15	0.1221
171	Hexane	C_6H_{14}	110-54-3	86.17536	0.22492	−0.00003533				177.83	0.1621	370	0.0942
172	Hexanoic acid	$C_6H_{12}O_2$	142-62-1	116.158	0.1855	−0.000146				269.25	0.1462	603.15	0.0974
173	1-Hexanol	$C_6H_{14}O$	111-27-3	102.17476	0.230656	−0.000025				228.55	0.1735	575	0.0869
174	2-Hexanol	$C_6H_{14}O$	626-93-7	102.175	0.21391	−0.000260422				223	0.1558	412.4	0.1065
175	2-Hexanone	$C_6H_{12}O$	591-78-6	100.15888	0.21076	−0.000024				217.35	0.1586	400.85	0.1146
176	3-Hexanone	$C_6H_{12}O$	589-38-8	100.15888	0.23493	−0.00002912				217.5	0.1716	466	0.0992
177	1-Hexene	C_6H_{12}	592-41-6	84.15948	0.19112	−0.000008351	−5.1407E-07			133.39	0.1708	336.63	0.1048
178	3-Hexyne	C_6H_{10}	928-49-4	82.1436	0.20996	−0.00002692				170.05	0.1642	354.35	0.1146
179	Hexyl mercaptan	$C_6H_{14}S$	111-31-9	118.24036	0.2058	−0.00002324				192.62	0.1610	425.81	0.1068
180	1-Hexyne	C_6H_{10}	693-02-7	82.1436	0.21492	−0.00002899				141.25	0.1740	344.48	0.1151

Cmpd. no.	Name	Formula	CAS	Mol. wt.	C	C	C	C	C	T , K	Thermal cond. at T	T , K	Thermal cond. at T
181	2-Hexyne	C_6H_{10}	764-35-2	82.1436	0.2119	−0.000270 48				183.65	0.1622	357.67	0.1152
182	Hydrazine	H_4N_2	302-01-2	32.04516	1.3675	−0.0015895				274.69	0.9309	623.15	0.3770
183	Hydrogen	H_2	1333-74-0	2.01588	−0.0917	0.017678	−0.000382	−3.3324E-06	1.0266E-07	13.95	0.0754	31	0.0848
184	Hydrogen bromide	BrH	10035-10-6	80.91194	0.234	−0.0004636				185.15	0.1482	290.62	0.0993
185	Hydrogen chloride	ClH	7647-01-0	36.46094	0.8045	−0.002102				273.15	0.2303	323.15	0.1252
186	Hydrogen cyanide	CHN	74-90-8	27.02534	0.43454	−0.0007008				259.83	0.2525	298.85	0.2251
187	Hydrogen fluoride	FH	7664-39-3	20.006 3432	0.7516	−0.0010874				189.79	0.5452	394.45	0.3227
188	Hydrogen sulfide	H_2S	7783-06-4	34.08088	0.4842	−0.001184				193.15	0.2555	292.42	0.1380
189	Isobutyric acid	$C_4H_8O_2$	79-31-2	88.10512	0.216 68	−0.0002556				227.15	0.1586	482.75	0.0933
190	Isopropylamine	C_3H_9N	75-31-0	59.11026	0.237	−0.000332				177.95	0.1779	305.55	0.1356
191	Malonic acid	$C_3H_4O_4$	141-82-2	104.06146	0.282 31	−0.0002401 9				409.15	0.1840	580	0.1430
192	Methacrylic acid	$C_4H_6O_2$	79-41-4	86.08924	0.2306	−0.0002520 1				288.15	0.1580	530	0.0970
193	Methane	CH_4	74-82-8	16.04 25	0.417 68	−0.0024528	3.5588E-06			90.69	0.2245	180	0.0915

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*C*	*T* , K	Thermal cond. at *T*	*T* , K	Thermal cond. at *T*
194	Methanol	CH_4O	67-56-1	32.04186	0.2837	−0.000281				175.47	0.2344	337.85	0.1888
195	*N*-Methylacetamide	C_3H_7NO	79-16-3	73.09378	0.23743	−0.002362				301.15	0.1663	478.15	0.1245
196	Methyl acetate	$C_3H_6O_2$	79-20-9	74.07854	0.2777	−0.00417				175.15	0.2047	386.15	0.1167
197	Methyl acetylene	C_3H_4	74-99-7	40.06386	0.23648	−0.0041639				170.45	0.1655	249.94	0.1324
198	Methyl acrylate	$C_4H_6O_2$	96-33-3	86.08924	0.26082	−0.003506				196.32	0.1920	421	0.1132
199	Methyl amine	CH_5N	74-89-5	31.05571	0.33446	−0.0006742	8.033E-07			179.69	0.2392	283.15	0.2079
200	Methyl benzoate	$C_8H_8O_2$	93-58-3	136.14792	0.22142	−0.0022759				260.75	0.1621	547.9	0.0967
201	3-Methyl-1,2-butadiene	C_5H_8	598-25-4	68.11702	0.1983	−0.002822				159.53	0.1533	314	0.1097
202	2-Methylbutane	C_5H_{12}	78-78-4	72.14878	0.21246	−0.0033581				113.25	0.1744	368.13	0.0888
203	2-Methylbutanoic acid	$C_5H_{10}O_2$	116-53-0	102.1317	0.22284	−0.002516				357.15	0.1330	480.9	0.1018
204	3-Methyl-1-butanol	$C_5H_{12}O$	123-51-3	88.14182	0.17471	−0.001256				155.95	0.1551	404.15	0.1239

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*C*	*T* , K	Thermal cond. at *T*	*T* , K	Thermal cond. at *T*
205	2-Methyl-1-butene	C_5H_{10}	563-46-2	70.1329	0.19447	−0.002901				135.58	0.1551	304.3	0.1062
206	2-Methyl-2-butene	C_5H_{10}	513-35-9	70.1329	0.19636	−0.00291				139.39	0.1558	311.7	0.1057
207	2-Methyl -1-buten e-3-yne	C_5H_6	78-80-8	66.10114	0.20385	−0.002874				160.15	0.1578	305.4	0.1161
208	Methylbutyl ether	$C_5H_{12}O$	628-28-4	88.14818	0.22235	−0.003044				157.48	0.1744	463.15	0.0814
209	Methylbutyl sulfide	$C_5H_{12}S$	628-29-5	104.214	0.20698	−0.0024439				175.3	0.1641	396.58	0.1101
210	3-Methyl-1-butyne	C_5H_8	598-23-2	68.11702	0.20348	−0.003106				183.45	0.1465	302.15	0.1096
211	Methyl butyrate	$C_5H_{10}O_2$	623-42-7	102.1317	0.21748	−0.0025913				187.35	0.1689	493.15	0.0897
212	Methylchlorosilane	CH_5ClSi	993-00-0	80.5889	0.24683	−0.003885 4				139.05	0.1928	281.85	0.1373
213	Methylcyclohexane	C_7H_{14}	108-87-2	98.18606	0.1791	−0.002291				273.15	0.1165	374.08	0.0934
214	1-Methylcyclohexanol	$C_7H_{14}O$	590-67-0	114.18546	0.21558	−0.002272 8				299.15	0.1476	548.8	0.0909

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*C*	*T* , K	Thermal cond. at *T*	*T* , K	Thermal cond. at *T*
215	*cis*-2-Methylcyclohexanol	$C_7H_{14}O$	7443-70-1	114.18546	0.21839	−0.000257776				280.15	0.1462	484.2	0.0936
216	*trans*-2-Methylcyclohexanol	$C_7H_{14}O$	7443-52-9	114.18546	0.21828	−0.00002557				269.15	0.1495	484.8	0.0943
217	Methylcyclopentane	C_6H_{12}	96-37-7	84.15948	0.1929	−0.00002492				130.73	0.1603	344.95	0.1069
218	1-Methylcyclopentene	C_6H_{10}	693-89-0	82.1436	0.20023	−0.000255581				146.62	0.1627	348.64	0.1110
219	3-Methylcyclopentene	C_6H_{10}	1120-62-3	82.1436	0.1994	−0.000261449				168.54	0.1553	338.05	0.1110
220	Methyldichlorosilane	CH_4Cl_2Si	75-54-7	115.03396	0.21956	−0.000321533				182.55	0.1609	314.7	0.1184
221	Methylethyl ether	C_3H_8O	540-67-0	60.09502	0.27304	−0.00004518				160	0.2008	341.34	0.1188
222	Methylethylketone	C_4H_8O	78-93-3	72.10572	0.2197	−0.00002505				186.48	0.1730	352.79	0.1313
223	Methylethylsulfide	C_3H_8S	624-89-5	76.1606	0.22136	−0.000289338				167.23	0.1730	339.8	0.1230
224	Methylformate	$C_2H_4O_2$	107-31-3	60.05196	0.3246	−0.000468				174.15	0.2431	373.15	0.1500
225	Methylisobutylether	$C_5H_{12}O$	625-44-5	88.14818	0.222	−0.000322117				188	0.1614	390	0.0964

Cmpd. no.	Name	Formula	CAS	Mol. wt.	C	C	C	C	C	T , K	Thermal cond. at T	T , K	Thermal cond. at T
226	Methylisobutylketone	$C_6H_{12}O$	108-10-1	100.15888	0.2301	−0.0002889				189.15	0.1754	451.42	0.0996
227	Methyl Isocyanate	C_2H_3NO	624-83-9	57.05132	0.2822	−0.0004203 7				256.15	0.1745	312	0.1510
228	Methylisopropyl ether	$C_4H_{10}O$	598-53-8	74.1216	0.24154	−0.0003774				127.93	0.1933	370	0.1019
229	Methylisopropylketone	$C_5H_{10}O$	563-80-4	86.1323	0.2332	−0.0003044				180.15	0.1784	435.9	0.1005
230	Methylisopropylsulfide	$C_4H_{10}S$	1551-21-9	90.1872	0.20978	−0.0002646 8				171.64	0.1644	357.91	0.1150
231	Methylmercaptan	CH_4S	74-93-1	48.10746	0.26119	−0.0003834 5				150.18	0.2036	279.11	0.1542
232	Methylmethacrylate	$C_5H_8O_2$	80-62-6	100.11582	0.2583	−0.000379				290.15	0.1483	363.45	0.1206
233	2-Methyloctanoic acid	$C_9H_{18}O_2$	3004-93-1	158.23802	0.20911	−0.0002185 2				208.2	0.1636	555.2	0.0878
234	2-Methylpentane	C_6H_{14}	107-83-5	86.17536	0.19334	−0.0002803 8				119.55	0.1598	389.25	0.0842
235	Methylpentylether	$C_6H_{14}O$	628-80-8	102.17476	0.21698	−0.0002899 8				176	0.1659	432.3	0.0916
236	2-Methylpropane	C_4H_{10}	75-28-5	58.1222	0.20455	−0.0003658 9				113.54	0.1630	400	0.0582

Cmpd. no.	Name	Formula	CAS	Mol. wt.	C	C	C	C	C	T , K	Thermal cond. at T	T , K	Thermal cond. at T
237	2-Methyl-2-propanol	$C_4H_{10}O$	75-65-0	74.1216	0.21258	−0.0002986 4				298.97	0.1233	404.96	0.0916
238	2-Methylpropene	C_4H_8	115-11-7	56.10632	0.2802	−0.000786	6.516E-07			132.81	0.1873	395.2	0.0713
239	Methyl propionate	$C_4H_8O_2$	554-12-1	88.10512	0.22534	−0.0002683				185.65	0.1755	475	0.0979
240	Methylpropyl ether	$C_4H_{10}O$	557-17-5	74.1216	0.24817	−0.0003774				133.97	0.1976	373	0.1074
241	Methylpropyl sulfide	$C_4H_{10}S$	3877-15-4	90.1872	0.21103	−0.0002598 5				160.17	0.1694	368.69	0.1152
242	Methylsilane	CH_6Si	992-94-9	46.14384	0.2774	−0.0005460 8				116.34	0.2139	216.25	0.1593
243	alpha-Methylstyrene	C_9H_{10}	98-83-9	118.1757	0.19657	−0.0002118				249.95	0.1436	438.65	0.1037
244	Methyl tert-butyl ether	$C_5H_{12}O$	1634-04-4	88.1482	0.22526	−0.0003723 5	1.1689E-07	0	0	164.55	0.1672	328.2	0.1156
245	Methyl vinyl ether	C_3H_6O	107-25-5	58.07914	0.28035	−0.0004646				151.15	0.2101	341.1	0.1219
246	Naphthalene	$C_{10}H_8$	91-20-3	128.17052	0.17096	−0.0001005 9				353.43	0.1354	646.97	0.1059
247	Neon	Ne	7440-01-9	20.1797	0.2971	−0.017356	0.0005911	−0.00000742 1		25	0.1167	44	0.0457
248	Nitroethane	$C_2H_5NO_2$	79-24-3	75.0666	0.247	−0.0002814				183.63	0.1953	387.22	0.1380

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*C*	*T* , K	Thermal cond. at *T*	*T* , K	Thermal cond. at *T*
249	Nitrogen	N_2	7727-37-9	28.0134	0.2654	−0.001677				63.15	0.1595	124	0.0575
250	Nitrogen trifluoride	F_3N	7783-54-2	71.00191									
251	Nitromethane	CH_3NO_2	75-52-5	61.04002	0.3276	−0.000405				244.6	0.2285	374.35	0.1760
252	Nitrous oxide	N_2O	10024-97-2	44.0128	0.10112					277.59	0.1011	277.59	0.1011
253	Nitric oxide	NO	10102-43-9	30.0061	0.1878	0.0010293	−0.0000943			110	0.1869	176.4	0.0759
254	Nonadecane	$C_{19}H_{40}$	629-92-5	268.5209	0.21229	−0.00022				305.04	0.1452	603.05	0.0796
255	Nonanal	$C_9H_{18}O$	124-19-6	142.23862	0.21905	−0.0002401 3				267.3	0.1549	465.52	0.1073
256	Nonane	C_9H_{20}	111-84-2	128.2551	0.209	−0.000264				219.66	0.1510	423.97	0.0971
257	Nonanoic acid	$C_9H_{18}O_2$	112-05-0	158.2238	0.204	−0.0002				285.55	0.1469	528.75	0.0983
258	1-Nonanol	$C_9H_{20}O$	143-08-8	144.2545	0.240538	−0.000025				268.15	0.1735	578.65	0.0959
259	2-Nonanol	$C_9H_{20}O$	628-99-9	144.255	0.2081	−0.0002286 9				238.15	0.1536	471.7	0.1002
260	1-Nonene	C_9H_{18}	124-11-8	126.23922	0.20468	−0.0002573 8				191.91	0.1553	420.02	0.0966
261	Nonylmercaptan	$C_9H_{20}S$	1455-21-6	160.3201	0.20244	−0.0002134 3				253.05	0.1484	492.95	0.0972
262	1-Nonyne	C_9H_{16}	3452-09-3	124.22334	0.20954	−0.0002458 8				223.15	0.1547	423.85	0.1053

Cmpd. no.	Name	Formula	CAS	Mol. wt.	C	C	C	C	C	T , K	Thermal cond. at T	T , K	Thermal cond. at T
263	Octadecane	$C_{18}H_{38}$	593-45-3	254.49432	0.2137	−0.00002252				301.31	0.1458	589.86	0.0809
264	Octanal	$C_8H_{16}O$	124-13-0	128.212	0.22273	−0.000025037				251.65	0.1597	445.15	0.1113
265	Octane	C_8H_{18}	111-65-9	114.22852	0.2156	−0.000029483				216.38	0.1518	398.83	0.0980
266	Octanoic acid	$C_8H_{16}O_2$	124-07-2	144.211	0.203	−0.00002				289.65	0.1451	512.85	0.1004
267	1-Octanol	$C_8H_{18}O$	111-87-5	130.22792	0.235281	−0.000025				257.65	0.1709	570.15	0.0927
268	2-Octanol	$C_8H_{18}O$	123-96-6	130.228	0.20955	−0.000237333				241.55	0.1522	452.9	0.1021
269	2-Octanone	$C_8H_{16}O$	111-13-7	128.21204	0.2132	−0.00002494				252.85	0.1501	499	0.0888
270	3-Octanone	$C_8H_{16}O$	106-68-3	128.21204	0.21732	−0.000024969				255.55	0.1535	440.65	0.1073
271	1-Octene	C_8H_{16}	111-66-0	112.21264	0.20467	−0.00002675				171.45	0.1588	394.41	0.0992
272	Octyl mercaptan	$C_8H_{18}S$	111-88-6	146.29352	0.2012	−0.00002142				223.95	0.1532	472.19	0.1001
273	1-Octyne	C_8H_{14}	629-05-0	110.19676	0.2095	−0.000025334				193.55	0.1605	399.35	0.1083
274	Oxalic acid	$C_2H_2O_4$	144-62-7	90.03488	0.26335	−0.000022461				462.65	0.1594	516	0.1475
275	Oxygen	O_2	7782-44-7	31.9988	0.2741	−0.00138				60	0.1913	150	0.0671
276	Ozone	O_3	10028-15-6	47.9982	0.17483	0.00075288	−2.5228E-06			77.35	0.2180	161.85	0.2306

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*C*	*T* , K	Thermal cond. at *T*	*T* , K	Thermal cond. at *T*
277	Pentadecane	$C_{15}H_{32}$	629-62-9	212.41458	0.20649	−0.0002191 1				283.07	0.1445	543.84	0.0873
278	Pentanal	$C_5H_{10}O$	110-62-3	86.1323	0.23894	−0.0002972 4				191.59	0.1820	375.15	0.1274
279	Pentane	C_5H_{12}	109-66-0	72.14878	0.2537	−0.000576	0.0000003 44			143.42	0.1782	445	0.0655
280	Pentanoic acid	$C_5H_{10}O_2$	109-52-4	102.132	0.1848	−0.0001434				239.15	0.1505	458.65	0.1190
281	1-Pentanol	$C_5H_{12}O$	71-41-0	88.14182	0.223042	−0.000025				273.15	0.1548	353.15	0.1348
282	2-Pentanol	$C_5H_{12}O$	6032-29-7	88.14182	0.21875	−0.0002784 9				200	0.1631	392.2	0.1095
283	2-Pentanone	$C_5H_{10}O$	107-87-9	86.1323	0.2161	−0.0002486 6				196.29	0.1673	375.46	0.1227
284	3-Pentanone	$C_5H_{10}O$	96-22-0	86.1323	0.21569	−0.0002408 1				234.18	0.1593	375.14	0.1254
285	1-Pentene	C_5H_{10}	109-67-1	70.1329	0.21361	−0.0003077 7				108.02	0.1804	303.22	0.1203
286	2-Pentylmercaptan	$C_5H_{12}S$	2084-19-7	104.21378	0.20597	−0.0002451 8				160.75	0.1666	385.15	0.1115
287	Pentylmercaptan	$C_5H_{12}S$	110-66-7	104.21378	0.2086	−0.0002453 6				197.45	0.1602	399.79	0.1105
288	1-Pentyne	C_5H_8	627-19-0	68.11702	0.22102	−0.000322				167.45	0.1671	313.33	0.1201
289	2-Pentyne	C_5H_8	627-21-4	68.11702	0.21282	−0.0002856				163.83	0.1660	329.27	0.1188
290	Phenanthrene	$C_{14}H_{10}$	85-01-8	178.2292	0.13753	−0.0000252 47				372.38	0.1281	610.03	0.1221

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*C*	*T* , K	Thermal cond. at *T*	*T* , K	Thermal cond. at *T*
291	Phenol	C_6H_6O	108-95-2	94.11124	0.18831	−0.0001				314.06	0.1569	454.99	0.1428
292	Phenyl isocyanate	C_7H_5NO	103-71-9	119.1207	0.16326	−0.0001777				243.15	0.1200	439.43	0.0851
293	Phthalic anhydride	$C_8H_4O_3$	85-44-9	148.11556	0.22946	−0.0002134				404.15	0.1432	557.65	0.1104
294	Propadiene	C_3H_4	463-49-0	40.06386	0.23081	−0.0004078				136.87	0.1750	238.65	0.1335
295	Propane	C_3H_8	74-98-6	44.09562	0.26755	−0.0006645	2.774E-07			85.47	0.2128	350	0.0689
296	1-Propanol	C_3H_8O	71-23-8	60.09502	0.23144	−0.000025				200	0.1814	370.35	0.1389
297	2-Propanol	C_3H_8O	67-63-0	60.095	0.20161	−0.0002152				185.26	0.1617	425	0.1101
298	Propenylcyclohexene	C_9H_{14}	13511-13-2	122.20746	0.1831	−0.0002027				199	0.1428	431.65	0.0956
299	Propionaldehyde	C_3H_6O	123-38-6	58.07914	0.31721	−0.000528				165	0.2301	322.15	0.1471
300	Propionic acid	$C_3H_6O_2$	79-09-4	74.0785	0.1954	−0.000164				252.45	0.1540	543.15	0.1063
301	Propionitrile	C_3H_5N	107-12-0	55.0785	0.26743	−0.0003341				180.37	0.2072	370.25	0.1437
302	Propyl acetate	$C_5H_{10}O_2$	109-60-4	102.1317	0.2332	−0.0003096				178.15	0.1780	434.82	0.0986
303	Propylamine	C_3H_9N	107-10-8	59.11026	0.2632	−0.0004278	0.0000004112			188.36	0.1972	333.15	0.1664
304	Propylbenzene	C_9H_{12}	103-65-1	120.19158	0.18707	−0.0001984				173.55	0.1526	583.15	0.0713

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*C*	*T* , K	Thermal cond. at *T*	*T* , K	Thermal cond. at *T*
305	Propylene	C_3H_6	115-07-1	42.07974	0.24719	−0.000488824				87.89	0.2043	340.49	0.0810
306	Propyl formate	$C_4H_8O_2$	110-74-7	88.10512	0.2247	−0.000264				180.25	0.1771	483.15	0.0972
307	2-Propyl mercaptan	C_3H_8S	75-33-2	76.16062	0.21706	−0.000289522				142.61	0.1758	325.71	0.1228
308	Propyl mercaptan	C_3H_8S	107-03-9	76.16062	0.2202	−0.000288535				159.95	0.1746	340.87	0.1229
309	1,2-Propylene glycol	$C_3H_8O_2$	57-55-6	76.09442	0.2152	−0.00000497				213.15	0.2046	460.75	0.1923
310	Quinone	$C_6H_4O_2$	106-51-4	108.09476	0.26524	−0.000286676				388.85	0.1537	545	0.1090
311	Silicon tetrafluoride	F_4Si	7783-61-1	104.07911									
312	Styrene	C_8H_8	100-42-5	104.14912	0.20215	−0.000222201				242.54	0.1488	418.31	0.1101
313	Succinic acid	$C_4H_6O_4$	110-15-6	118.08804	0.27216	−0.000223183				460.85	0.1653	591	0.1351
314	Sulfur dioxide	O_2S	7446-09-5	64.0638	0.38218	−0.000206254				197.67	0.2586	400	0.1320
315	Sulfur hexafluoride	F_6S	2551-62-4	146.055419 2	0.2544	−0.000206595				223.15	0.1072	318.69	0.0442
316	Sulfur trioxide	O_3S	7446-11-9	80.0632	0.92882	−0.000308 03	0.000 00266			289.95	0.2593	481.47	0.0624
317	Terephthalic acid	$C_8H_6O_4$	100-21-0	166.13084	0.3063	−0.000285421				700.15	0.1065	795.28	0.0793
318	o-Terphenyl	$C_{18}H_{14}$	84-15-1	230.30376	0.16853	−0.000108117				329.35	0.1329	723.15	0.0903

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*C*	*T* , K	Thermal cond. at *T*	*T* , K	Thermal cond. at *T*
319	Tetradecane	$C_{14}H_{30}$	629-59-4	198.388	0.20293	−0.000217978				279.01	0.1421	526.73	0.0881
320	Tetrahydrofuran	C_4H_8O	109-99-9	72.10572	0.19428	−0.000249				164.65	0.1533	339.12	0.1098
321	1,2,3,4-Tetrahydronaphthalene	$C_{10}H_{12}$	119-64-2	132.20228	0.14563	−0.000000536				237.38	0.1329	480.77	0.1199
322	Tetrahydrothiophene	C_4H_8S	110-01-0	88.17132	0.20414	−0.000212117				176.98	0.1666	394.27	0.1205
323	2,2,3,3-Tetramethylbutane	C_8H_{18}	594-82-1	114.22852	0.17835	−0.000237004				373.96	0.0897	426	0.0774
324	Thiophene	C_4H_4S	110-02-1	84.13956	0.20571	−0.000200028				234.94	0.1587	357.31	0.1341
325	Toluene	C_7H_8	108-88-3	92.13842	0.20463	−0.000242552				178.18	0.1614	474.85	0.0895
326	1,1,2-Trichloroethane	$C_2H_3Cl_3$	79-00-5	133.40422	0.20731	−0.000249997				236.5	0.1482	482	0.0868
327	Tridecane	$C_{13}H_{28}$	629-50-5	184.36142	0.20447	−0.000226122				267.76	0.1439	508.62	0.0895
328	Triethylamine	$C_6H_{15}N$	121-44-8	101.19	0.1918	−0.000002453				158.45	0.1529	483.15	0.0733
329	Trimethylamine	C_3H_9N	75-50-3	59.11026	0.23813	−0.000383937				156.08	0.1782	276.02	0.1321
330	1,2,3-Trimethylbenzene	C_9H_{12}	526-73-8	120.19158	0.18854	−0.000001963				247.79	0.1399	449.27	0.1003

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*C*	*T* , K	Thermal cond. at *T*	*T* , K	Thermal cond. at *T*
331	1,2,4-Trimethylbenzene	C_9H_{12}	95-63-6	120.19158	0.19216	−0.00002105				229.33	0.1439	442.53	0.0990
332	2,2,4-Trimethylpentane	C_8H_{18}	540-84-1	114.22852	0.1659	−0.000226826				165.78	0.1283	372.39	0.0814
333	2,3,3-Trimethylpentane	C_8H_{18}	560-21-4	114.22852	0.16815	−0.000205335				172.22	0.1328	387.91	0.0885
334	1,3,5-Trinitrobenzene	$C_6H_3N_3O_6$	99-35-4	213.10452	0.18421	−0.000160917				398.4	0.1201	629.6	0.0829
335	2,4,6-Trinitrotoluene	$C_7H_5N_3O_6$	118-96-7	227.1311	0.19898	−0.000176559				354	0.1365	625	0.0886
336	Undecane	$C_{11}H_{24}$	1120-21-4	156.30826	0.20515	−0.000239333				247.57	0.1459	469.08	0.0929
337	1-Undecanol	$C_{11}H_{24}O$	112-42-5	172.30766	0.218744	−0.000025				281	0.1485	561.2	0.0784
338	Vinyl acetate	$C_4H_6O_2$	108-05-4	86.08924	0.256	−0.000003542				180.35	0.1921	410	0.1108
339	Vinyl acetylene	C_4H_4	689-97-4	52.07456	0.22838	−0.000035173				173.15	0.1675	278.25	0.1305
340	Vinyl chloride	C_2H_3Cl	75-01-4	62.49822	0.2333	−0.000039223				119.36	0.1865	345.6	0.0978
341	Vinyl trichlorosilane	$C_2H_3Cl_3Si$	75-94-5	161.48972	0.21831	−0.000029122				178.35	0.1664	434.52	0.0918
342	Water	H_2O	7732-18-5	18.01528	−0.432	0.0057255	−0.00000008078	1.861E-09		273.16	0.5672	633.15	0.4272
343	*m*-Xylene	C_8H_{10}	108-38-3	106.165	0.20044	−0.000235444				225.3	0.1474	413.1	0.1032

Cmpd. no.	Name	Formula	CAS	Mol. wt.	*C*	*C*	*C*	*C*	*C*	*T*, K	Thermal cond. at *T*	*T*, K	Thermal cond. at *T*
344	*o*-Xylene	C_8H_{10}	95-47-6	106.165	0.19989	−0.00002299				247.98	0.1429	417.58	0.1039
345	*p*-Xylene	C_8H_{10}	106-42-3	106.165	0.20003	−0.000023573				286.41	0.1325	413.1	0.1026

The liquid thermal conductivity is calculated by $k = C_1 + C_2T + C_3T_2 + C_4T_3 + C_5T_4$ where k is the thermal conductivity in W/(m·K) and T is the temperature in K. Thermal conductivities are at either 1 atm or the vapor pressure, whichever is higher.

Values in this table were taken from the Design Institute for Physical Properties (DIPPR) of the American Institute of Chemical Engineers (AIChE), 801 Critically Evaluated Gold Standard™ Database, copyright 2016 AIChE, and reproduced with permission of AIChE and of the DIPPR Evaluated Process Design Data Project Steering Committee. Their source should be cited as "R. L. Rowley, W. V. Wilding, J. L. Oscarson, T. A. Knotts, N. F. Giles, *DIPPR® Data Compilation of Pure Chemical Properties*, Design Institute for Physical Properties, AIChE, New York, NY (2016)".

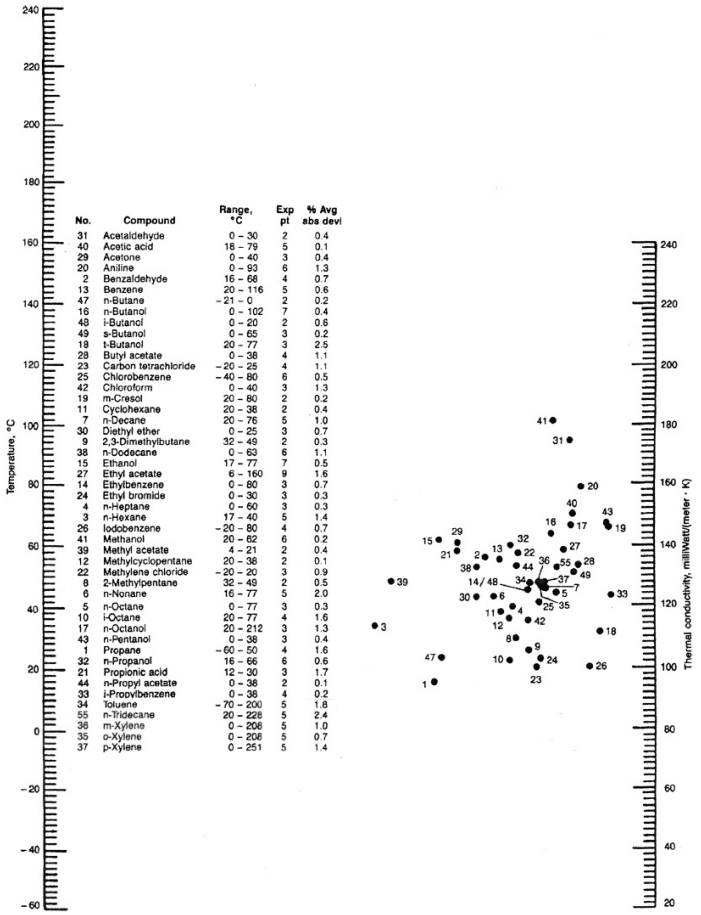

FIG. 2-20 and TABLE 2-148 Nomograph (*right*) for thermal conductivity of organic liquids. (From B.V. Mallu and Y.J. Rao, *Hydroc. Proc.* 78, 1988.)

Table 2-149 Thermal-Conductivity-Temperature Table for Metals and Nonmetals*, Temperature, K

Substance	10**	20	40	60	80	100	200	300	400	500	600	800	1000	1200	1400
Alumina	7	32	121	174	160	125	55	36	26	20	16	10	8	7	6
Aluminum	38,000	13,500	2,300	850	380	300	237	273	240	237	232	220	93	99	105
Antimony	470	230	110	80	60	48	32	26	22	20					
Berylliumoxide	47	196	810	1,400	1,650	1,490	480	272	196	146	111	70	47	33	25
Bismuth	240	100	45	31	24	22	18	16	14	12					
Boron	165	305	400	327	230	170	45	25	15	12					
Cadmium	900	250	150	120	110	110	105	104	101	99					
Chromium	400	570	450	250	180	158	111	90	87	85	81	71	65	62	61
Cobalt	250	450	380	250	190	160	120	100	85	70					
Constantan	4	9	16	18	19	20	23	25	27	30					
Copper	19,000	10,700	2,100	850	570	483	413	398	392	388	383	371	357	342	
Gallium	2,200	640	250	200	170	140	100	85							
Gold	2,800	1,500	520	380	350	345	327	315	312	309	304	292	278	262	
Graphite†	27	108	135	81	54	39	15	10	7	5	4	3	3	2	2
Graphite‡	81	420	1,630	2,980	4,290	4,980	3,250	2,000	1,460	1,140	930	680	530	440	370
Hastelloy	1	3	4	5	6	7	9	10	11	13					

Substance	10**	20	40	60	80	100	200	300	400	500	600	800	1000	1200	1400
Inconel	2	4	8	10	11	11	14	15							
Iridium	1,300	1,900	750	360	230	172	147	145	143	140					
Iron	710	1,000	560	270	170	132	94	80	69	61	55	43	33	28	31
Lead	175	57	43	42	41	40	37	35	34	33	31	19	22	24	26
Magnesium	1,200	1,300	620	290	190	169	159	156	153	151	149	146	84	98	112
Magnesium oxide	1,100	3,100	2,200	950	460	260	75	48	36	27	21	13	10	8	7
Manganese	2	2	4	5	5	6	7	8	9	9					
Manganin	2	4	9	11	13	13	17	22	28	34	40				
Mercury	54	40	35	33	33	32	32	8	10	11	12	13	14		
Molybdenum	150	280	350	250	210	179	143	138	134	130	126	118	112	105	100
Nickel	2,600	1,700	570	290	200	158	106	91	80	72	66	67	72	76	80
Nylon	0.04	0.10	0.17	0.20	0.23	0.25	0.28	0.30							
Palladium	1,200	610	160	100	88	80	78	78	78	80					
Platinum	1,200	490	130	92	82	79	75	73	72	72	72	73	78	78	81
PTFE§	0.94	1.43	1.94	2.1	2.15	2.16	2.20	2.25	2.3	2.5					
Pyrex	0.12	0.20	0.33	0.42	0.51	0.57	0.88	1.1	1.6	2.1					
Quartz	1,200	480	82	40	30										

Substance	10**	20	40	60	80	100	200	300	400	500	600	800	1000	1200	1400
Rhodium	2,900	3,900	1,000	370	250	190	160	150	145	140					
Rubber			0.13	0.15	0.16	0.17	0.20	0.22	0.24	0.25					
Selenium (axis)	140	57	25	15	10	8	6	4	3	2					
Silica								1.34	1.52	1.70	1.87	2.22	2.60		
Silver	16,500	5,200	1,100	630	500	430	425	424	420	413	405	389	374	358	
Tantalum	108	146	88	68	62	59	58	57	58	58	59	59	60	61	62
Tellurium	300	93	29	17	13	11	6	4	3	3					
Tin		320	130	101	90	84	72	67	62	60					
Titanium	14	28	39	37	33	31	26	21	20	20	19				
Tungsten			880	330	310	280	190	180	170	150	140				
Uranium				20	22	23	26	28	30	32					
Zinc				150	135	130	123	120	116	110	110				
Zirconium	100	110	59	42	38	34	25	23	22	21	21				

*Especially at low temperatures, the thermal conductivity can often be markedly reduced by even small traces of impurities. This table, for the highest-purity specimens available, should thus be used with caution in applications with commercial materials. From Perry, *Engineering Manual,* 3d ed., McGraw-Hill, New York, 1976. A more detailed table appears as Section 5.5.6 in the *Heat Exchanger Design Handbook,* Hemisphere Pub. Corp., Washington, DC, 1983.

†Parallel to basal plane.

‡Perpendicular to basal plane.

§Also known as Teflon, etc.

**Thermal conductivities tabulated in watts per meter-kelvin

Table 2-150 Thermal Conductivity of Chromium Alloys*, k = Btu/(h·ft^2)(°F/ft)

American iron and steel institute type no.	k at 212°F	k at 932°F
301, 302, 302B, 303, 304, 316†	9.4	12.4
308	8.8	12.5
309, 310	8.0	10.8
321, 347	9.3	12.8
403, 406, 410, 414, 416†	14.4	16.6
430, 430F†	15.1	15.2
442	12.5	14.2
501, 502†	21.2	19.5
*Table 2-150 is based on information from manufacturers.		
†Shelton and Swanger (National Bureau of Standards), *Trans. Am. Soc. Steel Treat.*, **21,** 1061–1078 (1933).		

Table 2-151 Thermal Conductivity of Some Alloys at High Temperature*, Thermal conductivity, Btu/(ft)(hr)(°R)

°R	Kovar	Advance	Monel	Hastelloy A	Inconel	Nichrome V
500	7.8		9.0	5.6	6.0	5.5
600	8.3	11.4	10.2	6.2	6.5	6.1
700	8.6	12.6	11.2	6.8	7.0	6.7
800	8.7	13.9	12.3	7.3	7.6	7.3
900	8.7	15.1	13.4	7.8	8.1	7.8
1000	8.9	16.4	14.4	8.4	8.6	8.4
1100	9.2	17.6	15.4	9.0	9.1	9.0
1200	9.5	18.8	16.5	9.5	9.7	9.5
1300	9.8	20.0	17.6	10.1	10.2	10.1
1400	10.2	21.2	18.7	10.7	10.8	10.7
1500	10.5	22.5	19.8	11.3	11.3	11.3
1600	10.8	23.8	20.8	11.8	11.8	11.9
1700	11.1	25.0	21.9	12.3	12.4	12.4
1800	11.3	26.2	23.0	12.9	13.0	13.0
1900	11.5	27.4	24.0	13.4	13.6	13.5
2000	11.8	28.7	25.1	14.0	14.0	14.1
2100	12.1	30.0	26.1	14.6	14.5	14.7
2200	12.3		27.2	15.1	15.0	15.3

*Silverman, *J. Metals,* **5,** 631 (1953). Copyright American Institute of Mining, Metallurgical and Petroleum Engineers, Inc.

Table 2-152 Thermophysical Properties of Selected Nonmetallic Solid Substances

Material	Density, kg/m^3	Emissivity	Specific heat, kJ/(kg·K)	Thermal conductivity, W/(m·K)	Thermal diffusivity, m^2/s × 10^6
Alumina	3975		0.765	36	11.9
Asphalt	2110		0.920	0.06	0.03
Bakelite	1300		1.465	1.4	0.74
Beryllia	3000	0.82	1.030	270	88

Material	Density, kg/m	Emissivity	Specific heat, kJ/(kg·K)	Thermal conductivity, W/(m·K)	Thermal diffusivity, m /s × 10
Brick	1925	0.93	0.835	0.72	0.45
Brick, fireclay	2640	0.93	0.960	1.0	0.39
Carbon, amorphous	1950	0.86	0.724	1.6	1.13
Clay	1460	0.91	0.880	1.3	1.01
Coal	1350	0.80	1.26	0.26	0.15
Cotton	80		1.30	0.06	0.58
Diamond	3500		0.509	2300	1290
Granite	2630		0.775	2.79	1.37
Hardboard	1000		1.38	0.15	0.11
Magnesite	3025	0.38	1.13	4.0	1.2
Magnesia	3635	0.72	0.943	48	14
Oak	770	0.90	2.38	0.18	0.10
Paper	930	0.83	1.34	0.011	0.01
Pine	525	0.84	2.75	0.12	0.54
Plaster board	800	0.91		0.17	
Plywood	540		1.22	0.12	0.18
Pyrex	2250	0.92	0.835	1.4	0.74
Rubber	1150	0.92	2.00	0.2	0.09
Rubber, foam	70	0.90		0.03	
Salt		0.34	0.854	7.1	
Sandstone	2150	0.59	0.745	2.9	1.8
Silica		0.79	0.743	1.3	
Sapphire	3975	0.48	0.765	46	15
Silicon carbide	3160	0.86	0.675	110	230
Soil	2050	0.38	1.84	0.52	0.14
Teflon	2200	0.92	0.35	0.26	0.34

Material	Density, kg/m	Emissivity	Specific heat, kJ/(kg·K)	Thermal conductivity, W/(m·K)	Thermal diffusivity, m /s × 10
Thoria	4160	0.28	0.71	14	4.7
Urethane foam	70		1.05	0.03	0.36
Vermiculite	120		0.84	0.06	0.60

NOTE: Difficulties of accurately characterizing many of the specimens mean that many of the values presented here must be regarded as being of order of magnitude only. For some materials, actual measurement may be the only way to obtain data of the required accuracy. To convert kilograms per cubic meter to pounds per cubic foot, multiply by 0.062428; to convert kilojoules per kilogram-kelvin to British thermal units per pound-degree Fahrenheit, multiply by 0.23885.

Table 2-153 Lower and Upper Flammability Limits, Flash Points, and Autoignition Temperatures for Selected Hydrocarbons

Group	Compound	CAS	Formula	LFL	UFL	Flash point (K)	Autoignition *T* (K)
Paraffin hydrocarbons	Methane	74-82-8	CH_4	5.00	15.00	87.12	810.00
Paraffin hydrocarbons	Ethane	74-84-0	C_2H_6	3.00	12.40	139.00	745.00
Paraffin hydrocarbons	Propane	74-98-6	C_3H_8	2.10	9.50	171.00	723.00
Paraffin hydrocarbons	*n*-Butane	106-97-8	C_4H_{10}	1.60	8.40	199.15	561.00
Paraffin hydrocarbons	Isobutane	75-28-5	C_4H_{10}	1.80	8.40	191.00	733.15
Paraffin hydrocarbons	*n*-Pentane	109-66-0	C_5H_{12}	1.40	7.80	224.15	516.00
Paraffin hydrocarbons	Isopentane	78-78-4	C_5H_{12}	1.40	7.60	218.00	693.15
Paraffin hydrocarbons	Neopentane	463-82-1	C_5H_{12}	1.40	7.50	205.00	723.15
Paraffin hydrocarbons	*n*-Hexane	110-54-3	C_6H_{14}	1.20	7.20	250.15	498.00
Paraffin hydrocarbons	*n*-Heptane	142-82-5	C_7H_{16}	1.05	6.70	269.00	477.00
Paraffin hydrocarbons	2,3-Dimethylpentane	565-59-3	C_7H_{16}	1.10	6.70	261.00	608.15
Paraffin hydrocarbons	*n*-Octane	111-65-9	C_8H_{18}	0.96	6.50	287.15	479.00
Paraffin hydrocarbons	2,2,4-Trimethylpentane	540-84-1	C_8H_{18}	0.95	6.00	265.00	684.15

Group	Compound	CAS	Formula	LFL	UFL	Flash point (K)	Autoignition *T* (K)
Paraffin hydrocarbons	*n*-Nonane	111-84-2	C_9H_{20}	0.85	5.60	304.15	478.00
Paraffin hydrocarbons	*n*-Decane	124-18-5	$C_{10}H_{22}$	0.75	5.40	322.85	474.00
Olefins	Ethylene	74-85-1	C_2H_4	2.70	36.00	129.00	723.15
Olefins	Propylene	115-07-1	C_3H_6	2.15	11.20	169.00	728.15
Olefins	1-Butene	106-98-9	C_4H_8	1.60	10.00	198.00	657.00
Olefins	*cis*-2-Butene	590-18-1	C_4H_8	1.70	9.70	205.00	598.00
Olefins	*trans*-2-Butene	624-64-6	C_4H_8	1.70	9.70	203.00	597.00
Olefins	1-Pentene	109-67-1	C_5H_{10}	1.40	8.70	222.00	546.00
Acetylenes	Acetylene	74-86-2	C_2H_2	2.50	80.00	151.00	578.15
Acetylenes	Vinylacetylene	689-97-4	C_4H_4	2.20	31.70	211.00	Decomposes violently on heating. Forms explosive peroxides with air or oxygen.
Acetylenes	Methylacetylene	74-99-7	C_3H_4	1.70	57.30	192.00	613.15
Aromatics	Benzene	71-43-2	C_6H_6	1.20	8.00	262.00	833.15
Aromatics	Toluene	108-88-3	C_7H_8	1.10	7.10	279.15	753.15
Aromatics	*o*-Xylene	95-47-6	C_8H_{10}	1.10	6.40	305.15	736.15
Aromatics	Ethylbenzene	100-41-4	C_8H_{10}	1.00	6.70	296.15	703.15
Aromatics	Cumene	98-82-8	C_9H_{12}	0.88	6.50	309.15	697.00
Aromatics	Anthracene	120-12-7	$C_{14}H_{10}$	0.60	5.20	458.15	813.15
Cyclic hydrocarbons	Cyclopropane	75-19-4	C_3H_6	2.40	10.40	180.00	771.00
Cyclic hydrocarbons	Furan	110-00-9	C_4H_4O	2.00	23.00	237.00	663.15
Cyclic hydrocarbons	Cyclopentadiene	542-92-7	C_5H_6	1.70	14.60	227.00	913.15

Group	Compound	CAS	Formula	LFL	UFL	Flash point (K)	Autoignition *T* (K)
Cyclic hydrocarbons	Cyclohexane	110-82-7	C_6H_{12}	1.30	7.80	255.93	518.15
Cyclic hydrocarbons	Methylcyclohexane	108-87-2	C_7H_{14}	1.15	6.70	269.15	523.15
Cyclic hydrocarbons	Phenol	108-95-2	C_6H_6O	1.70	8.60	352.15	988.00
Cyclic hydrocarbons	Dicyclopentadiene	77-73-6	$C_{10}H_{12}$	0.80	6.30	318.15	783.15
Alcohols	Methanol	67-56-1	CH_4O	7.18	36.50	284.15	737.00
Alcohols	Ethanol	64-17-5	C_2H_6O	3.30	19.00	286.15	696.00
Alcohols	Allyl Alcohol	107-18-6	C_3H_6O	2.50	18.00	294.00	651.00
Alcohols	1-Propanol	71-23-8	C_3H_8O	2.10	14.00	297.59	644.00
Alcohols	Isopropanol	67-63-0	C_3H_8O	2.00	12.70	285.15	728.75
Alcohols	1-Butanol	71-36-3	$C_4H_{10}O$	1.70	11.30	310.50	616.00
Alcohols	2-Butanol	78-92-2	$C_4H_{10}O$	1.70	9.80	296.15	663.15
Alcohols	2-Methyl-1-propanol	78-83-1	$C_4H_{10}O$	1.70	11.00	302.32	681.15
Alcohols	2-Methyl-2-propanol	75-65-0	$C_4H_{10}O$	1.84	9.00	284.26	751.00
Alcohols	Cyclohexanol	108-93-0	$C_6H_{12}O$	1.20	11.10	334.15	573.15
Aldehydes	Formaldehyde	50-00-0	CH_2O	7.00	73.00	219.80	697.15
Aldehydes	Acetaldehyde	75-07-0	C_2H_4O	4.00	30.00	232.00	449.15
Aldehydes	Acrolein	107-02-8	C_3H_4O	2.80	31.00	247.15	507.00
Aldehydes	Propanal	123-38-6	C_3H_6O	2.60	17.00	243.15	500.15
Aldehydes	*trans*-Crotonaldehyde	123-73-9	C_4H_6O	2.10	15.50	286.15	505.00
Aldehydes	*cis*-Crotonaldehyde	15798-64-8	C_4H_6O	2.10	15.50	285.93	505.00
Aldehydes	2-Methylpropanal	78-84-2	C_4H_8O	1.60	11.00	254.15	478.00
Aldehydes	Butanal	123-72-8	C_4H_8O	1.90	12.50	262.15	503.15

Group	Compound	CAS	Formula	LFL	UFL	Flash point (K)	Autoignition *T* (K)
Aldehydes	Furfural	98-01-1	$C_5H_4O_2$	2.10	19.30	333.15	589.00
Ethers	Dimethyl ether	115-10-6	C_2H_6O	3.30	26.20	193.00	499.15
Ethers	Methyl vinyl ether	107-25-5	C_3H_6O	2.60	39.00	217.15	560.15
Ethers	Diethyl ether	60-29-7	$C_4H_{10}O$	1.70	46.00	228.15	433.15
Ethers	Diphenyl ether	101-84-8	$C_{12}H_{10}O$	0.80	6.00	388.15	891.15
Ketones	Acetone	67-64-1	C_3H_6O	2.60	13.00	253.15	738.15
Ketones	Methyl ethyl ketone	78-93-3	C_4H_8O	1.80	11.00	264.15	789.00
Ketones	Acetophenone	98-86-2	C_8H_8O	1.10	6.70	350.15	843.15
Acids	Acetic acid	64-19-7	$C_2H_4O_2$	4.00	19.90	312.04	700.00
Acids	Hydrogen cyanide	74-90-8	CHN	5.60	40.00	255.00	811.00
Acids	Formic acid	64-18-6	CH_2O_2	12.00	38.00	323.15	753.00
Esters	Methyl formate	107-31-3	$C_2H_4O_2$	5.20	23.00	247.00	729.00
Esters	Ethyl formate	109-94-4	$C_3H_6O_2$	2.76	15.70	254.15	728.15
Esters	Methyl acetate	79-20-9	$C_3H_6O_2$	3.13	14.00	260.15	775.00
Esters	Vinyl acetate	108-05-4	$C_4H_6O_2$	2.60	13.40	265.37	700.00
Esters	Ethyl acetate	141-78-6	$C_4H_8O_2$	2.18	11.50	269.00	700.00
Esters	*n*-Propyl acetate	109-60-4	$C_5H_{10}O_2$	1.80	8.00	283.71	723.00
Esters	Isopropyl acetate	108-21-4	$C_5H_{10}O_2$	1.76	7.20	274.82	733.15
Esters	*n*-Butyl acetate	123-86-4	$C_6H_{12}O_2$	1.40	7.60	298.15	694.00
Esters	Isobutyl acetate	110-19-0	$C_6H_{12}O_2$	1.42	8.00	291.00	696.00
Esters	*n*-Pentyl acetate	628-63-7	$C_7H_{14}O_2$	1.10	7.10	310.15	633.15

Group	Compound	CAS	Formula	LFL	UFL	Flash point (K)	Autoignition *T* (K)
Inorganic	Hydrogen	1333-74-0	H_2	4.00	75.00	14.00	793.15
Inorganic	Ammonia	7664-41-7	H_3N	15.00	28.00	209.00	924.00
Inorganic	Cyanogen	460-19-5	C_2N_2	6.60	32.00	214.00	984.00
Oxides	Carbon monoxide	630-08-0	CO	12.50	74.20	71.00	882.00
Oxides	Ethylene oxide	75-21-8	C_2H_4O	3.00	100.00	225.00	702.00
Oxides	1,2-Propylene oxide	75-56-9	C_3H_6O	2.20	35.50	236.00	703.15
Oxides	1,4-Dioxane	123-91-1	$C_4H_8O_2$	2.00	22.00	284.15	453.15
Oxides	Mesityl oxide	141-79-7	$C_6H_{10}O$	1.30	8.80	301.00	618.00
Peroxides	Di-*t*-Butyl peroxide	110-05-4	$C_8H_{18}O_2$	0.74	8.20	277.15	Organic peroxides can ignite easily
Sulfur containing	Carbon disulfide	75-15-0	CS_2	1.30	50.00	243.15	363.15
Sulfur containing	Hydrogen sulfide	7783-06-4	H_2S	4.00	44.00	167.00	533.15
Sulfur containing	Carbonyl sulfide	463-58-1	COS	12.00	29.00	186.00	477.00
Sulfur containing	Dimethyl sulfide	75-18-3	C_2H_6S	2.20	19.70	237.15	478.15
Chlorine containing	Methyl chloride	74-87-3	CH_3Cl	8.10	17.20	203.00	905.00
Chlorine containing	Ethyl chloride	75-00-3	C_2H_5Cl	3.80	15.40	223.15	802.00
Chlorine containing	Isopropyl chloride	75-29-6	C_3H_7Cl	2.80	10.70	238.15	866.00
Chlorine containing	1,2-Dichloroethane	107-06-2	$C_2H_4Cl_2$	4.50	16.00	286.00	686.00
Chlorine containing	1,2-Dichloropropane	78-87-5	$C_3H_6Cl_2$	3.30	14.50	286.15	830.00
Chlorine containing	Dichloromethane	75-09-2	CH_2Cl_2	14.00	22.00	265.00	888.15

Group	Compound	CAS	Formula	LFL	UFL	Flash point (K)	Autoignition *T* (K)
Chlorine containing	2-Chloroethanol	107-07-3	C_2H_5ClO	4.90	15.90	328.15	698.15
Chlorine containing	Trichloroethylene	79-01-6	C_2HCl_3	12.00	29.00	305.15	683.15
Chlorine containing	Hexachloro-1,3-Butadiene	87-68-3	C_4Cl_6	2.90	15.70	389.00	883.15
Chlorine containing	Vinyl chloride	75-01-4	C_2H_3Cl	3.60	33.00	205.00	745.00
Chlorine containing	Monochlorobenzene	108-90-7	C_6H_5Cl	1.30	9.60	301.15	911.00
Chlorine containing	Benzyl chloride	100-44-7	C_7H_7Cl	1.10	7.10	333.15	858.15
Bromides	Bromomethane	74-83-9	CH_3Br	10.10	16.00	230.00	800.00
Glycols	Ethylene glycol	107-21-1	$C_2H_6O_2$	3.10	42.00	384.15	669.00
Glycols	Diethylene glycol	111-46-6	$C_4H_{10}O_3$	1.70	37.00	413.15	636.15
Glycols	Triethylene glycol	112-27-6	$C_6H_{14}O_4$	0.90	9.20	429.15	644.00
Amines	Methylamine	74-89-5	CH_5N	4.90	20.70	217.00	703.15
Amines	Ethylamine	75-04-7	C_2H_7N	2.70	14.00	227.00	657.00
Amines	Dimethylamine	124-40-3	C_2H_7N	2.80	14.40	223.15	595.00
Amines	Isopropylamine	75-31-0	C_3H_9N	2.00	10.40	236.15	673.15
Amines	Trimethylamine	75-50-3	C_3H_9N	2.00	11.60	207.00	463.15
Amines	Allylamine	107-11-9	C_3H_7N	2.03	24.30	252.00	647.039
Amines	Diethylamine	109-89-7	$C_4H_{11}N$	1.70	10.10	245.15	583.15
Amines	Tert-Butylamine	75-64-9	$C_4H_{11}N$	1.70	8.90	236.00	648.15
Amines	Triethylamine	121-44-8	$C_6H_{15}N$	1.20	8.00	262.15	522.15
Amines	Cyclohexylamine	108-91-8	$C_6H_{13}N$	0.66	9.40	299.65	566.15

Group	Compound	CAS	Formula	LFL	UFL	Flash point (K)	Autoignition *T* (K)
Amines	Monoethanolamine	141-43-5	C_2H_7NO	3.00	13.10	366.55	683.15
Amines	Diethanolamine	111-42-2	$C_4H_{11}NO_2$	1.70	9.80	445.15	935.00
Amines	Dimethylethanolamine	108-01-0	$C_4H_{11}NO$	1.40	12.20	312.15	568.15
Miscellaneous	Acrylonitrile	107-13-1	C_3H_3N	3.05	17.00	268.15	754.00
Miscellaneous	Aniline	62-53-3	C_6H_7N	1.30	11.00	344.15	890.00
Miscellaneous	Diborane	19287-45-7	B_2H_6	0.80	88.00	142.00	325.00
Miscellaneous	Methyl methacrylate	80-62-6	$C_5H_8O_2$	1.70	12.50	284.15	708.15
Miscellaneous	Styrene	100-42-5	C_8H_8	1.10	6.10	305.00	763.15
Miscellaneous	Biphenyl	92-52-4	$C_{12}H_{10}$	0.70	5.80	383.15	813.15
Miscellaneous	Methyl acrylate	96-33-3	$C_4H_6O_2$	2.18	14.40	270.00	741.15
Miscellaneous	Phthalic anhydride	85-44-9	$C_8H_4O_3$	1.20	9.20	425.00	857.00

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