
Appendix C

PHYSICAL PROPERTIES OF LIQUIDS AND GASES

TABLES OF PHYSICAL PROPERTIES OF LIQUIDS AND GASES

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FURTHER READING

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2. Yaws, C.L., J.R. Hopper, and R.W. Pike, "Calculating Solubility and Henry's Law Constants for Gases in Water", *Chem. Eng.*, Jun 1999, p. 102.
3. Yaws, C.L., J.R. Hopper, Sunil R. Mishra, and R.W. Pike, "Solubility and Henry's Law Constants for Amines in Water", *Chem. Eng.*, Aug 2001, p. 84.
4. Yaws, C.L., P. Bajaj, H. Singh, and R.W. Pike, "Solubility and Henry's Law Constants for Sulfur Compounds in Water", *Chem. Eng.*, Aug 2003, p. 60.

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TABLE C-1 Density of Liquids

No.	Formula	Substance	$\rho_L = A B^{-(1-T/T_c)^n}$			$(\rho_L - \text{g/ml}, T - \text{K})$			ρ_L at 25° C
			A	B	n	T_c	T_{\min}	T_{\max}	
1	C ₂ H ₃ Cl ₃	1,1,1-Trichloroethane	0.47476	0.27258	0.29333	545.00	242.75	545.00	1.330
2	C ₂ H ₃ Cl ₃	1,1,2-Trichloroethane	0.47455	0.25475	0.31000	602.00	236.50	602.00	1.435
3	C ₂ H ₄ Cl ₂	1,1-Dichloroethane	0.41231	0.26533	0.28700	523.00	176.19	523.00	1.168
4	C ₂ H ₄ Cl ₂	1,2-Dichloroethane	0.46501	0.28742	0.31041	561.00	237.49	561.00	1.246
5	C ₄ H ₆	1,3-Butadiene	0.24597	0.27227	0.29074	425.37	164.25	425.37	0.615
6	C ₄ H ₈ O ₂	1,4-Dioxane	0.37018	0.28130	0.30470	587.00	284.95	587.00	1.029
7	C ₄ H ₁₀ O	1-Butanol (<i>n</i> -Butanol)	0.26891	0.26674	0.24570	562.93	183.85	562.93	0.806
8	C ₄ H ₈	1-Butene	0.23224	0.26630	0.28530	419.59	87.80	419.59	0.588
9	C ₁₀ H ₂₀	1-Decene	0.23981	0.25776	0.28562	617.05	206.89	617.05	0.737
10	C ₉ H ₂₀	1-Nonane (<i>n</i> -Nonane)	0.23364	0.25556	0.28571	595.65	219.63	595.65	0.715
11	C ₈ H ₁₆	1-Octene	0.23682	0.25649	0.28571	566.60	171.45	566.60	0.711
12	C ₃ H ₈ O	1-Propanol (<i>n</i> -Propanol)	0.27684	0.27200	0.24940	536.71	146.95	536.71	0.802
13	C ₂ H ₄ O	Acetaldehyde	0.28207	0.26004	0.27760	461.00	150.15	461.00	0.774
14	C ₂ H ₄ O ₂	Acetic acid	0.35182	0.26954	0.26843	592.71	289.81	592.71	1.043
15	C ₄ H ₆ O ₃	Acetic anhydride	0.33578	0.24080	0.26990	569.15	200.15	569.15	1.077
16	C ₃ H ₆ O	Acetone	0.27728	0.25760	0.29903	508.20	178.45	508.20	0.786
17	C ₃ H ₄ O ₂	Acrylic acid	0.34645	0.25822	0.30701	615.00	286.65	615.00	1.046
18	NH ₃	Ammonia	0.23689	0.25471	0.28870	405.65	195.41	405.65	0.602
19	C ₆ H ₇ N	Aniline	0.31190	0.25000	0.28571	699.00	267.13	699.00	1.018
20	C ₆ H ₆	Benzene	0.30090	0.26770	0.28180	562.16	278.68	562.16	0.873
21	C ₄ H ₈ O ₂	Butyric acid	0.31132	0.26192	0.27997	628.00	267.95	628.00	0.953
22	CS ₂	Carbon disulfide	0.47589	0.28749	0.32260	552.00	161.58	552.00	1.256
23	CO ₂	Carbon dioxide	0.46382	0.26160	0.29030	304.19	216.58	304.19	0.713
24	CO	Carbon monoxide	0.29818	0.27655	0.29053	132.92	68.15	132.92	–
25	CCl ₄	Carbon tetrachloride	0.56607	0.27663	0.29000	556.35	250.33	556.35	1.583
26	Cl ₂	Chlorine	0.56600	0.27315	0.28830	417.15	172.12	417.15	1.398
27	CHCl ₃	Chloroform	0.49807	0.25274	0.28766	536.40	209.63	536.40	1.480
28	C ₆ H ₁₂	Cyclohexane	0.27376	0.27408	0.28511	553.54	279.69	553.54	0.773
29	C ₆ H ₁₂ O	Cyclohexanol	0.29681	0.24340	0.28570	625.15	296.60	625.15	0.960
30	C ₃ H ₆	Cyclopropane	0.25880	0.27400	0.28571	397.91	145.73	397.91	0.619
31	CH ₂ Cl ₂	Dichloromethane	0.45965	0.25678	0.29020	510.00	178.01	510.00	1.318
32	C ₄ H ₁₀ O	Diethyl ether	0.27267	0.27608	0.29358	466.70	156.85	466.70	0.708
33	C ₅ H ₁₀ O	Diethyl ketone	0.25635	0.24291	0.27364	560.95	234.18	560.95	0.810
34	C ₂ H ₇ N	Dimethylamine	0.24110	0.26785	0.24800	437.65	180.96	437.65	0.650
35	C ₂ H ₆	Ethane	0.20087	0.27330	0.28330	305.42	90.35	305.42	0.315
36	C ₂ H ₆ O	Ethanol	0.26570	0.26395	0.23670	516.25	159.05	516.25	0.787
37	C ₄ H ₈ O ₂	Ethyl acetate	0.30654	0.25856	0.27800	523.30	189.60	523.30	0.894
38	C ₂ H ₅ Cl	Ethyl chloride	0.32259	0.27464	0.23140	460.35	136.75	460.35	0.890
39	C ₈ H ₁₀	Ethylbenzene	0.28889	0.26438	0.29210	617.17	178.20	617.17	0.865
40	C ₂ H ₄	Ethylene	0.21428	0.28061	0.28571	282.36	104.01	282.36	–
41	C ₂ H ₆ O ₂	Ethylene glycol	0.32503	0.25499	0.17200	645.00	260.15	645.00	1.110
42	C ₂ H ₄ O	Ethylene oxide	0.31402	0.26089	0.28253	469.15	161.45	469.15	0.862
43	F ₂	Fluorine	0.57092	0.28518	0.29000	144.31	53.48	144.31	–
44	C ₃ H ₈ O ₃	Glycerol	0.34908	0.24902	0.15410	723.00	291.33	723.00	1.257
45	H ₂	Hydrogen	0.03125	0.34730	0.27560	33.18	13.95	33.18	–
46	HCl	Hydrogen chloride	0.44134	0.26957	0.31870	324.65	159.97	324.65	0.796
47	CHN	Hydrogen cyanide	0.19501	0.18589	0.28206	456.65	259.91	456.65	0.680
48	H ₂ O ₂	Hydrogen peroxide	0.43776	0.24982	0.28770	730.15	272.74	730.15	1.443
49	C ₄ H ₁₀	<i>i</i> -Butane (<i>iso</i> -Butane)	0.22281	0.27294	0.27301	408.14	113.54	408.14	0.552
50	CH ₄	Methane	0.15998	0.28810	0.27700	190.58	90.67	190.58	–
51	CH ₄ O	Methanol	0.27197	0.27192	0.23310	512.58	175.47	512.58	0.787

TABLE C-1—(continued)

No.	Formula	Substance	$\rho_L = A B^{-(1-T/T_c)^n}$			$(\rho_L - \text{g/ml}, T - \text{K})$			
			A	B	n	T_c	T_{\min}	T_{\max}	ρ_L at 25° C
52	CH ₃ Br	Methyl bromide	0.60859	0.26292	0.28030	467.00	179.55	467.00	1.662
53	CH ₃ Cl	Methyl chloride	0.35821	0.26109	0.28690	416.25	175.45	416.25	0.913
54	C ₆ H ₁₂ O	Methyl isobutyl ketone	0.26654	0.25887	0.28571	571.40	189.15	571.40	0.796
55	CH ₅ N	Methylamine	0.20168	0.21405	0.22750	430.05	179.69	430.05	0.655
56	C ₈ H ₁₀	<i>m</i> -Xylene	0.27866	0.25925	0.27243	617.05	225.30	617.05	0.861
57	C ₁₀ H ₈	Naphthalene	0.30619	0.25037	0.28300	748.35	353.43	748.35	–
58	C ₄ H ₁₀	<i>n</i> -Butane	0.22827	0.27240	0.28630	425.18	134.86	425.18	0.573
59	C ₁₀ H ₂₂	<i>n</i> -Decane	0.23276	0.25240	0.28570	618.45	243.49	618.45	0.728
60	C ₇ H ₁₆	<i>n</i> -Heptane	0.23237	0.26020	0.27910	540.26	182.57	540.26	0.682
61	C ₆ H ₁₄	<i>n</i> -Hexane	0.23242	0.26500	0.27810	507.43	177.84	507.43	0.656
62	C ₆ H ₅ NO ₂	Nitrobenzene	0.36140	0.24731	0.28570	719.00	278.91	719.00	1.199
63	N ₂	Nitrogen	0.31205	0.28479	0.29250	126.10	63.15	126.10	–
64	C ₉ H ₂₀	<i>n</i> -Nonane	0.23364	0.25556	0.28571	595.65	219.63	595.65	0.715
65	C ₈ H ₁₈	<i>n</i> -Octane	0.22807	0.25476	0.26940	568.83	216.38	568.83	0.699
66	C ₅ H ₁₂	<i>n</i> -Pentane	0.23143	0.26923	0.28215	469.65	143.42	469.65	0.621
67	O ₂	Oxygen	0.43533	0.28772	0.29240	154.58	54.35	154.58	–
68	C ₈ H ₁₀	<i>o</i> -Xylene	0.28381	0.26083	0.27410	630.37	247.98	630.37	0.876
69	C ₆ H ₆ O	Phenol	0.41476	0.32162	0.32120	694.25	314.06	694.25	–
70	C ₈ H ₁₀	<i>p</i> -Xylene	0.27984	0.26003	0.27900	616.26	286.41	616.26	0.858
71	C ₅ H ₅ N	Pyridine	0.30752	0.24333	0.30450	619.95	231.53	619.95	0.979
72	C ₈ H ₈	Styrene	0.29383	0.26315	0.28570	648.00	242.54	648.00	0.900
73	C ₇ H ₈	Toluene	0.29999	0.27108	0.29889	591.79	178.18	591.79	0.865
74	C ₄ H ₆ O ₂	Vinyl acetate	0.31843	0.25803	0.28270	524.00	180.35	524.00	0.926
75	H ₂ O	Water	0.34710	0.27400	0.28571	647.13	273.16	647.13	1.027
ρ_L – density of liquid, g/ml									
A, B, n, and T_c – regression coefficients of chemical compound									
T – temperature, K									
T_{\min} – minimum temperature, K									
T_{\max} – maximum temperature, K									

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TABLE C-2 Viscosity of Gas

$\mu_G = A + BT + CT^2$										
No.	Formula	Substance	A	B	C	T_{min}	T_{max}	μ_G at 25°C	μ_G at T_{min}	μ_G at T_{max}
1	C ₂ H ₃ Cl ₃	1,1,1-Trichloroethane	-19.216	4.0308E-01	-6.8618E-05	347	997	-	112.39	314.45
2	C ₂ H ₃ Cl ₃	1,1,2-Trichloroethane	-8.293	3.3989E-01	-5.3678E-05	387	987	-	115.21	274.89
3	C ₂ H ₄ Cl ₂	1,1-Dichloroethane	-12.991	4.0085E-01	-1.1779E-04	320	472	-	103.22	149.97
4	C ₂ H ₄ Cl ₂	1,2-Dichloroethane	1.025	3.1792E-01	-4.1853E-05	322	561	-	99.06	166.21
5	C ₄ H ₆	1,3-Butadiene	10.256	2.6833E-01	-4.1148E-05	250	650	86.60	74.77	167.28
6	C ₄ H ₈ O ₂	1,4-Dioxane	-16701	3.4988E-01	-5.3736E-05	374	994	-	106.64	277.99
7	C ₄ H ₁₀ O	1-Butanol (<i>n</i> -Butanol)	-11.144	2.8790E-01	-5.6275E-05	391	1000	-	92.82	220.48
8	C ₄ H ₈	1-Butene	-9.143	3.1562E-01	-8.4164E-05	175	800	77.48	43.51	189.49
9	C ₁₀ H ₂₀	1-Decene	4.015	1.8083E-01	-3.8216E-05	444	1000	-	76.77	146.63
10	C ₉ H ₂₀	1-Nonane (<i>n</i> -Nonane)	-6.802	1.8688E-01	3.4929E-07	273	773	48.95	44.24	137.86
11	C ₈ H ₁₆	1-Octene	2.722	2.0327E-01	-4.3879E-05	394	994	-	76.00	161.42
12	C ₃ H ₈ O	1-Propanol (<i>n</i> -Propanol)	-14.894	3.2171E-01	-5.8021E-05	200	1000	75.87	47.13	248.80
13	C ₂ H ₄ O	Acetaldehyde	0.069	3.0246E-01	-4.2372E-05	294	1000	86.48	85.33	260.16
14	C ₂ H ₄ O ₂	Acetic acid	-28.660	2.3510E-01	2.2087E-04	366	523	-	86.97	154.71
15	C ₄ H ₆ O ₃	Acetic anhydride	-1.485	2.8869E-01	-2.3391E-05	295	993	82.51	81.64	262.12
16	C ₃ H ₆ O	Acetone	-4.055	2.6655E-01	-5.6936E-06	300	650	-	75.40	166.80
17	C ₃ H ₄ O ₂	Acrylic acid	-6.532	3.0600E-01	-4.6620E-05	287	1000	80.56	77.45	252.85
18	NH ₃	Ammonia	-7.874	3.6700E-01	-4.4700E-06	195	1000	101.28	63.61	355.10
19	C ₆ H ₇ N	Aniline	-6.918	2.5935E-01	-3.4348E-05	458	1000	-	104.66	218.08
20	C ₆ H ₆	Benzene	-0.151	2.5706E-01	-8.9797E-06	287	628	75.69	72.89	157.74
21	C ₄ H ₈ O ₂	Butyric acid	-5.781	2.6159E-01	-3.4903E-05	268	1000	69.11	61.82	220.91
22	CS ₂	Carbon disulfide	-7.700	3.6594E-01	-2.5416E-05	273	583	99.15	90.31	197.00
23	CO ₂	Carbon dioxide	11.811	4.9838E-01	-1.0851E-04	195	1500	150.76	104.87	515.23
24	CO	Carbon monoxide	23.811	5.3944E-01	-1.5411E-04	68	1250	170.95	59.78	457.31
25	CCl ₄	Carbon tetrachloride	-7.745	3.9481E-01	-1.1150E-04	280	800	100.06	94.06	236.74
26	CHCl ₃	Chloroform	-4.392	3.7309E-01	-5.1696E-05	250	700	102.25	85.65	231.44
27	Cl ₂	Chlorine	-3.571	4.8700E-01	-8.5300E-05	200	1000	134.03	90.41	398.09
28	C ₆ H ₁₂	Cyclohexane	1.190	2.4542E-01	-3.8334E-05	315	600	-	74.69	134.64
29	C ₆ H ₁₂ O	Cyclohexanol	-13.542	2.9086E-01	-3.9472E-05	400	1000	-	96.49	237.85
30	C ₃ H ₆	Cyclopropane	-9.521	3.7037E-01	-1.3138E-04	240	446	89.23	71.80	129.53
31	CH ₂ Cl ₂	Dichloromethane	-20.372	4.3745E-01	-7.7549E-05	273	993	103.16	93.27	337.55
32	C ₄ H ₁₀ O	Diethyl ether	-7.932	3.0235E-01	-7.3858E-05	200	1000	75.65	49.58	220.56
33	C ₅ H ₁₀ O	Diethyl ketone	-3.593	2.4308E-01	-3.7613E-05	234	1000	65.54	51.23	201.87
34	C ₂ H ₇ N	Dimethylamine	-9.275	2.8958E-01	-1.3875E-06	250	450	76.94	63.03	120.75
35	C ₂ H ₆	Ethane	0.514	3.3449E-01	-7.1071E-05	150	1000	93.92	49.09	263.93
36	C ₂ H ₆ O	Ethanol	1.499	3.0741E-01	-4.4479E-05	200	1000	89.20	61.20	264.43
37	C ₄ H ₈ O ₂	Ethyl acetate	-9.259	3.0725E-01	-7.1069E-05	190	1000	76.03	46.55	226.92
38	C ₂ H ₅ Cl	Ethyl chloride	0.458	3.2827E-01	-1.2467E-05	213	523	97.22	69.81	168.73
39	C ₈ H ₁₀	Ethylbenzene	-4.267	2.4735E-01	-5.4264E-05	409	1000	-	87.82	188.82
40	C ₂ H ₄	Ethylene	-3.985	3.8726E-01	-1.1227E-04	150	1000	101.50	51.58	271.00
41	C ₂ H ₆ O ₂	Ethylene glycol	-7.178	3.1246E-01	-4.4028E-05	260	1000	82.07	71.09	261.25
42	C ₂ H ₄ O	Ethylene oxide	-12.180	3.7672E-01	-7.7599E-05	250	1000	93.24	77.15	286.94
43	F ₂	Fluorine	-0.811	8.9800E-01	-3.9600E-04	90	500	231.59	76.76	348.97
44	C ₃ H ₈ O ₃	Glycerol	-23.119	2.8879E-01	-3.4277E-05	563	993	-	128.61	229.85
45	H ₂	Hydrogen	27.758	2.1200E-01	-3.2800E-05	150	1500	88.03	58.81	271.76
46	HCl	Hydrogen chloride	-9.118	5.5500E-01	-1.1100E-04	200	1000	146.44	97.42	434.55
47	CHN	Hydrogen cyanide	-8.486	9.0368E-02	7.9146E-05	300	425	-	25.75	44.22
48	H ₂ O ₂	Hydrogen peroxide	8.039	2.7000E-01	8.2900E-05	373	600	-	120.24	199.81
49	C ₄ H ₁₀	<i>i</i> -Butane (<i>iso</i> -Butane)	-4.731	2.9131E-01	-8.0995E-05	150	1000	74.92	37.14	205.58
50	CH ₄	Methane	3.844	4.0112E-01	-1.4303E-04	91	850	110.72	39.15	241.46
51	CH ₃ OH	Methanol	-14.236	3.8935E-01	-6.2762E-05	240	1000	96.27	75.59	312.35

TABLE C-2—(continued)

$\mu_G = A + BT + CT^2$										
No.	Formula	Substance	A	B	C	T_{\min}	T_{\max}	μ_G at 25° C	μ_G at T_{\min}	μ_G at T_{\max}
52	CH ₃ Br	Methyl bromide	-27.740	5.5901E-01	-7.0942E-05	260	440	132.62	112.81	204.49
53	CH ₃ Cl	Methyl chloride	-1.374	3.8627E-01	-4.8650E-05	230	700	109.47	84.90	245.18
54	C ₆ H ₁₂ O	Methyl isobutyl ketone	-3.237	2.3310E-01	-3.5612E-05	189	1000	63.10	39.55	194.25
55	CH ₅ N	Methylamine	-5.334	3.4181E-01	-7.4297E-05	267	1000	89.97	80.63	262.18
56	C ₈ H ₁₀	<i>m</i> -Xylene	-21.620	2.7820E-01	-6.0531E-05	250	1000	55.94	44.15	196.05
57	C ₁₀ H ₈	Naphthalene	-16.789	2.5406E-01	-3.5495E-05	353	1000	—	68.47	201.78
58	C ₄ H ₁₀	<i>n</i> -Butane	-4.946	2.9001E-01	-6.9665E-05	150	1200	75.33	36.99	242.75
59	C ₁₀ H ₂₂	<i>n</i> -Decane	-7.297	1.8506E-01	-4.8008E-06	287	783	47.45	43.78	134.66
60	C ₇ H ₁₆	<i>n</i> -Heptane	-10.378	2.4401E-01	-5.4003E-05	338	700	—	65.93	133.97
61	C ₆ H ₁₄	<i>n</i> -Hexane	-8.222	2.6229E-01	-5.7366E-05	300	1000	—	65.30	196.70
62	C ₆ H ₅ NO ₂	Nitrobenzene	-16.569	2.9184E-01	-2.5523E-05	450	1000	—	109.59	249.75
63	N ₂	Nitrogen	42.606	4.7500E-01	-9.8800E-05	150	1500	175.52	111.67	533.12
64	C ₉ H ₂₀	<i>n</i> -Nonane	-6.802	1.8688E-01	3.4929E-07	273	773	48.95	44.24	137.86
65	C ₈ H ₁₈	<i>n</i> -Octane	3.940	1.6640E-01	1.4470E-05	374	670	—	68.20	121.92
66	C ₅ H ₁₂	<i>n</i> -Pentane	-3.202	2.6746E-01	-6.6178E-05	303	900	—	71.76	183.91
67	O ₂	Oxygen	44.224	5.6200E-01	-1.1300E-04	150	1500	201.85	126.04	633.08
68	C ₈ H ₁₀	<i>o</i> -Xylene	-19.763	2.8022E-01	-5.9293E-05	250	1000	58.51	46.59	201.16
69	C ₆ H ₆ O	Phenol	-7.185	2.7179E-01	-3.6205E-05	455	1000	—	108.98	228.40
70	C ₃ H ₈	Propane	-5.462	3.2722E-01	-1.0672E-04	193	750	82.61	53.72	179.92
71	C ₈ H ₁₀	<i>p</i> -Xylene	-17.226	2.5098E-01	-2.8232E-05	286	1000	55.09	52.25	205.52
72	C ₅ H ₅ N	Pyridine	-5.739	2.7135E-01	-1.7202E-05	369	998	—	92.05	247.93
73	C ₈ H ₈	Styrene	-10.035	2.5191E-01	-3.7932E-05	243	1000	61.70	48.94	203.94
74	SO ₂	Sulfur dioxide	-11.103	5.0200E-01	-1.0800E-04	200	1000	129.10	85.07	383.30
75	C ₇ H ₈	Toluene	1.787	2.3566E-01	-9.3508E-06	275	600	71.22	65.89	139.82
76	C ₄ H ₆ O ₂	Vinyl acetate	-7.462	3.0466E-01	-5.7544E-05	346	1000	—	91.06	239.65
77	H ₂ O	Water	-36.826	4.2900E-01	-1.6200E-05	280	1073	89.68	82.07	404.97

μ_G – viscosity of gas, μP

A, B, and C – regression coefficients for chemical compound

T – temperature, K

T_{\min} – minimum temperature, K

T_{\max} – maximum temperature, K

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TABLE C-3 Viscosity of Liquids

$\log_{10}\mu_{\text{liq}} = A + B/T + CT + CT^2$										
No.	Formula	Substance	A	B	C	D	T_{min}	T_{max}	μ_{liq} at 25° C	μ_{liq} at T_{max}
1	C ₂ H ₃ Cl ₃	1,1,1-Trichloroethane	-3.9096	7.0709E+02	7.5847E-03	-9.1662E-06	243	545	0.810	0.063
2	C ₂ H ₃ Cl ₃	1,1,2-Trichloroethane	-3.2716	6.8810E+02	4.8932E-03	-5.4671E-06	237	602	1.021	0.069
3	C ₂ H ₄ Cl ₂	1,1-Dichloroethane	-3.8388	5.9046E+02	8.0953E-03	-9.9210E-06	176	523	0.471	0.065
4	C ₂ H ₄ Cl ₂	1,2-Dichloroethane	-0.1656	2.7576E+02	-3.3493E-03	1.4093E-06	245	561	0.769	0.078
5	C ₄ H ₆	1,3-Butadiene	0.3772	7.9658E+01	-5.8889E-03	2.9221E-06	250	425	0.141	0.039
6	C ₄ H ₈ O ₂	1,4-Dioxane	-7.5724	1.3813E+03	1.3556E-02	-1.1464E-05	288	587	1.211	0.061
7	C ₄ H ₁₀ O	1-Butanol (<i>n</i> -Butanol)	-5.3970	1.3256E+03	6.2223E-03	-5.5062E-06	250	563	2.599	0.052
8	C ₄ H ₈	1-Butene	-4.9218	4.9503E+02	1.4390E-02	-2.0853E-05	160	420	0.150	0.042
9	C ₁₀ H ₂₀	1-Decene	-6.8845	1.1003E+03	1.4341E-02	-1.3520E-05	273	617	0.758	0.040
10	C ₉ H ₂₀	1-Nonane (<i>n</i> -Nonane)	-6.0742	9.6861E+02	1.2677E-02	-1.2675E-05	220	596	0.672	0.040
11	C ₈ H ₁₆	1-Octene	-5.6209	8.1305E+02	1.2523E-02	-1.3384E-05	250	567	0.447	0.041
12	C ₃ H ₈ O	1-Propanol (<i>n</i> -Propanol)	-3.7702	9.9151E+02	4.0836E-03	-5.4586E-06	220	537	1.939	0.05
13	C ₂ H ₄ O	Acetaldehyde	-6.6171	6.8123E+02	1.9979E-02	-2.5563E-05	260	461	0.225	0.043
14	C ₂ H ₄ O ₂	Acetic acid	-3.8937	7.8482E+02	6.6650E-03	-7.5606E-06	290	593	1.132	0.053
15	C ₄ H ₆ O ₃	Acetic anhydride	-17.3580	2.3611E+03	4.2734E-02	-3.8202E-05	265	569	0.806	0.055
16	C ₃ H ₆ O	Acetone	-7.2126	9.0305E+02	1.8385E-02	-2.0353E-05	223	508	0.308	0.045
17	C ₃ H ₄ O ₂	Acrylic acid	-15.9215	2.4408E+03	3.4383E-02	-2.7677E-05	293	615	1.138	0.053
18	NH ₃	Ammonia	-8.5910	8.7640E+02	2.6810E-02	-3.6120E-05	195	406	0.135	0.032
19	C ₆ H ₇ N	Aniline	-13.8625	2.5109E+03	2.5681E-02	-1.8281E-05	268	699	3.898	0.056
20	C ₆ H ₆	Benzene	-7.4005	1.1815E+03	1.4888E-02	-1.3713E-05	285	562	0.606	0.055
21	C ₄ H ₈ O ₂	Butyric acid	-7.9846	1.3636E+03	1.6315E-02	-1.4511E-05	268	628	1.457	0.051
22	CS ₂	Carbon disulfide	-9.1108	1.1216E+03	2.3216E-02	-2.2648E-05	235	552	0.363	0.068
23	CO ₂	Carbon dioxide	-19.4921	1.5948E+03	7.9274E-02	-1.2025E-04	219	304	0.064	0.055
24	CO	Carbon monoxide	-1.1224	5.7858E+01	-4.9174E-03	8.2233E-06	69	133	-	0.064
25	CCl ₄	Carbon tetrachloride	-6.4564	1.0379E+03	1.4021E-02	-1.4107E-05	265	556	0.893	0.070
26	Cl ₂	Chlorine	-0.7681	1.5140E+02	-8.0650E-04	4.0750E-07	172	417	0.343	0.214
27	CHCl ₃	Chloroform	-47831	6.9902E+02	1.0929E-02	-1.2244E-05	210	536	0.539	0.073
28	C ₆ H ₁₂	Cyclohexane	4.7423	-2.5322E+02	-1.6927E-02	1.2472E-05	285	554	0.901	0.054
29	C ₆ H ₁₂ O	Cyclohexanol	-5.3792	1.8793E+03	1.7011E-03	1.0187E-07	303	625	-	0.054
30	C ₃ H ₆	Cyclopropane	-3.2541	3.2192E+02	9.9766E-03	-1.8191E-05	146	398	0.152	0.044
31	CH ₂ Cl ₂	Dichloromethane	-5.1043	6.8653E+02	1.2459E-02	-1.4540E-05	208	510	0.417	0.065
32	C ₄ H ₁₀ O	Diethyl ether	-8.5060	1.0020E+03	2.2753E-02	-2.5780E-05	233	467	0.222	0.044
33	C ₅ H ₁₀ O	Diethyl ketone	-9.2905	1.2716E+03	2.1925E-02	-2.1036E-05	274	561	0.438	0.045
34	C ₂ H ₇ N	Dimethylamine	-11.5558	1.2126E+03	3.4999E-02	-4.1253E-05	240	438	0.190	0.042
35	C ₂ H ₆	Ethane	-4.2694	2.8954E+02	1.7111E-02	-3.6092E-05	98	305	0.039	0.035
36	C ₂ H ₆ O	Ethanol	-6.4406	1.1176E+03	1.3721E-02	-1.5465E-05	240	516	1.057	0.049
37	C ₄ H ₈ O ₂	Ethyl acetate	-3.6861	5.5228E+02	8.0018E-03	-1.0439E-05	220	523	0.421	0.050
38	C ₂ H ₅ Cl	Ethyl chloride	-4.4279	5.1891E+02	1.2035E-02	-1.6620E-05	150	460	0.265	0.052
39	C ₈ H ₁₀	Ethylbenzene	-5.2585	8.3065E+02	1.0784E-02	-1.0618E-05	210	617	0.629	0.050
40	C ₂ H ₄	Ethylene	-4.5611	3.0811E+02	1.8030E-02	-3.8145E-05	105	282	-	0.038
41	C ₂ H ₆ O ₂	Ethylene glycol	-16.9728	3.1886E+03	3.2537E-02	-2.4480E-05	261	645	17.645	0.059
42	C ₂ H ₄ O	Ethylene oxide	-5.7794	6.7020E+02	1.5686E-02	-1.9462E-05	190	469	0.260	0.053
43	F ₂	Fluorine	-1.5760	8.5630E+01	-4.0730E-04	-2.7250E-06	54	145	-	0.079
44	C ₃ H ₈ O ₃	Glycerol	-18.2152	4.2305E+03	2.8705E-02	-1.8648E-05	293	723	749.338	0.044
45	H ₂	Hydrogen	-7.0154	4.0791E+01	2.3714E-01	-4.0830E-03	14	33	-	0.004
46	HCl	Hydrogen chloride	-1.5150	1.9460E+02	3.0670E-03	-1.3760E-05	159	325	0.067	0.042
47	CHN	Hydrogen cyanide	-12.0812	1.3183E+03	3.5234E-02	-4.0185E-05	260	457	0.188	0.033
48	H ₂ O ₂	Hydrogen peroxide	-1.6150	5.0380E+02	3.5010E-04	-1.1680E-06	273	728	1.189	0.052
49	C ₄ H ₁₀	<i>i</i> -Butane (<i>iso</i> -Butane)	-13.4207	1.3131E+03	4.4329E-02	-5.5793E-05	190	408	0.174	0.039
50	CH ₄	Methane	-7.3801	3.1925E+02	4.7934E-02	-1.4120E-04	91	191	-	0.020

TABLE C-3--(continued)

$\log_{10}\mu_{\text{liq}} = A + B/T + CT + CT^2$										
No.	Formula	Substance	A	B	C	D	T_{min}	T_{max}	μ_{liq} at 25° C	μ_{liq} at T_{max}
51	CH ₃ Br	Methyl bromide	-9.5533	1.0306E+03	2.8322E-02	-3.1920E-05	193	467	0.324	0.083
52	CH ₃ Cl	Methyl chloride	-7.3473	8.5395E+02	1.9485E-02	-2.3484E-05	249	416	0.173	0.056
53	C ₆ H ₁₂ O	Methyl isobutyl ketone	-3.0570	5.0050E+02	6.5038E-03	-8.8243E-06	246	571	0.598	0.045
54	CH ₅ N	Methylamine	-9.4670	9.8286E+02	2.8918E-02	-3.5672E-05	180	430	0.191	0.045
55	C ₈ H ₁₀	<i>m</i> -Xylene	-6.0517	9.2460E+02	1.2583E-02	-1.1850E-05	225	617	0.559	0.050
56	C ₁₀ H ₈	Naphthalene	-10.3716	1.8572E+03	1.9320E-02	-1.4012E-05	353	748	-	0.053
57	C ₄ H ₁₀	<i>n</i> -Butane	-6.8590	6.7393E+02	2.1973E-02	-3.0686E-05	180	425	0.168	0.033
58	C ₁₀ H ₂₂	<i>n</i> -Decane	-6.0716	1.0177E+03	1.2247E-02	-1.1892E-05	243	618	0.863	0.040
59	C ₇ H ₁₆	<i>n</i> -Heptane	-5.7782	8.0587E+02	1.3355E-02	-1.4794E-05	183	540	0.390	0.041
60	C ₆ H ₁₄	<i>n</i> -Hexane	-5.0715	6.5536E+02	1.2349E-02	-1.5042E-05	178	507	0.296	0.041
61	C ₆ H ₅ NO ₂	Nitrobenzene	-7.7710	1.4019E+03	1.4653E-02	-1.1512E-05	273	719	1.890	0.058
62	N ₂	Nitrogen	-15.6104	4.6505E+02	1.6259E-01	-6.3353E-04	63	125	-	0.034
63	C ₉ H ₂₀	<i>n</i> -Nonane	-6.0742	9.6861E+02	1.2677E-02	-1.2675E-05	220	596	0.672	0.040
64	C ₈ H ₁₈	<i>n</i> -Octane	-5.9245	8.8809E+02	1.2955E-02	-1.3596E-05	216	569	0.511	0.040
65	C ₅ H ₁₂	<i>n</i> -Pentane	-7.1711	7.4736E+02	2.1697E-02	-2.7176E-05	143	470	0.245	0.041
66	O ₂	Oxygen	-5.0957	1.7983E+02	3.9779E-02	-1.4664E-04	54	150	-	0.059
67	C ₈ H ₁₀	<i>o</i> -Xylene	-7.8805	1.2500E+03	1.6116E-02	-1.3993E-05	268	630	0.747	0.050
68	C ₆ H ₆ O	Phenol	1.5349	4.2620E+02	-9.1577E-03	6.2322E-06	318	694	-	0.062
69	C ₈ H ₁₀	<i>p</i> -Xylene	-9.4655	1.4400E+03	1.9910E-02	-1.6994E-05	288	616	0.616	0.049
70	C ₅ H ₅ N	Pyridine	-6.8100	1.1496E+03	1.3229E-02	-1.1661E-05	232	620	0.898	0.058
71	C ₈ H ₈	Styrene	-8.0291	1.2666E+03	1.6127E-02	-1.3475E-05	243	648	0.675	0.052
72	SO ₂	Sulfur dioxide	-2.6700	4.0670E+02	6.1440E-03	-1.2540E-05	200	431	0.257	0.039
73	C ₇ H ₈	Toluene	-5.1649	8.1068E+02	1.0454E-02	-1.0488E-05	200	592	0.548	0.052
74	C ₄ H ₆ O ₂	Vinyl acetate	-9.0671	1.1863E+03	2.2663E-02	-2.3208E-05	250	524	0.403	0.050
75	H ₂ O	Water	-10.2158	1.7925E+03	1.7730E-02	-1.2631E-05	273	643	0.911	0.056

μ_{liq} - viscosity of gas, μP

A, B, and C - regression coefficients for chemical compound

T - temperature, K

T_{min} - minimum temperature, K

T_{max} - maximum temperature, K

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TABLE C-4 Heat Capacity of Gas

No.	Formula	Substance	$C_p = A + BT + CT^2 + DT^3 + ET^4$			$(C_p - \text{joule}/(\text{mol K}), T - \text{K})$			
			A	B	C	D	E	T_{\min}	T_{\max}
1	C ₂ H ₃ Cl ₃	1,1,1-Trichloroethane	18.674	3.3443E-01	-3.4963E-04	1.8764E-07	-4.0744E-11	100	1500
2	C ₂ H ₃ Cl ₃	1,1,2-Trichloroethane	28.881	2.4893E-01	-1.7639E-04	5.2632E-08	-3.5668E-12	200	1500
3	C ₂ H ₄ Cl ₂	1,1-Dichloroethane	15.730	2.6124E-01	-2.1489E-04	9.5761E-08	-1.8004E-11	200	1500
4	C ₂ H ₄ Cl ₂	1,2-Dichloroethane	37.275	1.4362E-01	1.0378E-05	-7.8305E-08	2.8872E-11	200	1500
5	C ₄ H ₆	1,3-Butadiene	18.835	2.0473E-01	6.2485E-05	-1.7148E-07	6.0858E-11	100	1500
6	C ₄ H ₈ O ₂	1,4-Dioxane	-46.223	5.7263E-01	-3.8800E-04	1.1392E-07	-9.0669E-12	298	1500
7	C ₄ H ₁₀ O	1-Butanol (<i>n</i> -Butanol)	8.157	4.1032E-01	-2.2645E-04	6.0372E-08	-6.2802E-12	200	2980
8	C ₄ H ₈	1-Butene	24.915	2.0648E-01	5.9828E-05	-1.4166E-07	4.7053E-11	200	1500
9	C ₁₀ H ₂₀	1-Decene	121.553	2.0974E-01	7.8760E-04	-8.6982E-07	2.6033E-10	150	1500
10	C ₉ H ₁₀	1-Nonane (<i>n</i> -Nonane)	29.687	6.6821E-01	-9.6492E-05	-2.0014E-07	8.2200E-11	200	1500
11	C ₈ H ₁₆	1-Octene	56.266	4.0665E-01	1.5805E-04	-3.2277E-07	1.0600E-10	200	1500
12	C ₃ H ₈ O	1-Propanol (<i>n</i> -Propanol)	31.507	2.3082E-01	-7.8983E-05	6.3696E-09	8.6908E-13	100	2980
13	C ₂ H ₄ O	Acetaldehyde	34.140	4.0020E-02	1.5634E-04	-1.6445E-07	4.7248E-11	100	1500
14	C ₂ H ₄ O ₂	Acetic acid	34.850	3.7626E-02	2.8311E-04	-3.0767E-07	9.2646E-11	50	1500
15	C ₄ H ₆ O ₃	Acetic anhydride	9.500	3.4425E-01	-8.6736E-05	-7.6769E-08	3.6721E-11	200	1500
16	C ₃ H ₆ O	Acetone	35.918	9.3896E-02	1.8730E-04	-2.1643E-07	6.3174E-11	100	1500
17	C ₃ H ₄ O ₂	Acrylic acid	7.755	2.9386E-01	-2.0878E-04	7.1591E-08	-9.0960E-12	250	1500
18	NH ₃	Ammonia	33.573	-1.2581E-02	8.8906E-05	-7.1783E-08	1.8569E-11	100	1500
19	C ₆ H ₇ N	Aniline	-22.062	5.7313E-01	-4.5651E-04	1.8410E-07	-2.9867E-11	200	1500
20	C ₆ H ₆	Benzene	-31.368	4.7460E-01	-3.1137E-04	8.5237E-08	-5.0524E-12	200	1500
21	C ₄ H ₈ O ₂	Butyric acid	14.368	3.9591E-01	-1.8906E-04	-7.6462E-09	2.0812E-11	298	1200
22	CS ₂	Carbon disulfide	20.461	1.2299E-01	-1.6184E-04	1.0199E-07	-2.4444E-11	100	1500
23	CO ₂	Carbon dioxide	27.437	4.2315E-02	-1.9555E-05	3.9968E-09	-2.9872E-13	50	5000
24	CO	Carbon monoxide	29.556	-6.5807E-03	2.0130E-05	-1.2227E-08	2.2617E-12	60	1500
25	CCl ₄	Carbon tetrachloride	19.816	3.3311E-01	-5.0511E-04	3.4057E-07	-8.4249E-11	100	1500
26	Cl ₂	Chlorine	27.213	3.0426E-02	-3.3353E-05	1.5961E-08	-2.7021E-12	50	1500
27	CHCl ₃	Chloroform	22.487	1.9823E-01	-2.1676E-04	1.1636E-07	-2.4555E-11	100	1500
28	C ₆ H ₁₂	Cyclohexane	13.783	2.0742E-01	5.3682E-04	-6.3012E-07	1.8988E-10	100	1500
29	C ₆ H ₁₂ O	Cyclohexanol	17.124	3.3700E-01	2.8176E-04	-4.2713E-07	1.3215E-10	200	1500
30	C ₃ H ₆	Cyclopropane	21.172	6.3106E-02	2.9197E-04	-3.2708E-07	9.9730E-11	100	1500
31	CH ₂ Cl ₂	Dichloromethane	26.694	8.3984E-02	8.9712E-06	-5.0924E-08	1.8726E-11	100	1500
32	C ₄ H ₁₀ O	Diethyl ether	35.979	2.8444E-01	-1.2673E-06	-1.0128E-07	3.4529E-11	200	1500
33	C ₅ H ₁₀ O	Diethyl ketone	49.800	2.6897E-01	5.0669E-05	-1.5227E-07	4.9510E-11	200	1500
34	C ₂ H ₇ N	Dimethylamine	30.638	1.0737E-01	1.5824E-04	-1.9418E-07	5.8509E-11	200	1500
35	C ₂ H ₆	Ethane	28.146	4.3447E-02	1.8946E-04	-1.9082E-07	5.3349E-11	100	1500
36	C ₂ H ₆ O	Ethanol	27.091	1.1055E-01	1.0957E-04	-1.5046E-07	4.6601E-11	100	1500
37	C ₄ H ₈ O ₂	Ethyl acetate	69.848	8.2338E-02	3.7159E-04	-4.1129E-07	1.2369E-10	200	1500
38	C ₂ H ₅ Cl	Ethyl chloride	35.946	5.2294E-02	2.0321E-04	-2.2795E-07	6.9123E-11	100	1500
39	C ₈ H ₁₀	Ethylbenzene	-20.527	5.9578E-01	-3.0849E-04	3.5621E-08	1.2409E-11	200	1500
40	C ₂ H ₄	Ethylene	32.083	-1.4831E-02	2.4774E-04	-2.3766E-07	6.8274E-11	60	1500
41	C ₂ H ₆ O ₂	Ethylene glycol	48.218	1.9073E-01	-6.6117E-08	-1.8834E-08	1.2555E-11	200	1500
42	C ₂ H ₄ O	Ethylene oxide	30.827	-7.6041E-03	3.2347E-04	-3.2747E-07	9.7271E-11	50	1500
43	F ₂	Fluorine	27.408	1.2928E-02	7.0701E-06	-1.6302E-08	5.9789E-12	100	1500
44	C ₃ H ₈ O ₃	Glycerol	9.656	4.2826E-01	-2.6797E-04	3.1794E-08	2.7745E-11	298	1200
45	H ₂	Hydrogen	25.399	2.0178E-02	-3.8549E-05	3.1880E-08	-8.7585E-12	250	1500
46	HCl	Hydrogen chloride	29.244	-1.2615E-03	1.1210E-06	4.9676E-09	-2.4963E-12	50	1500
47	CHN	Hydrogen cyanide	25.766	3.7969E-02	-1.2416E-05	-3.2240E-09	2.2610E-12	100	1500
48	H ₂ O ₂	Hydrogen peroxide	36.181	8.2657E-03	6.6420E-05	-6.9944E-08	2.0951E-11	100	1500
49	C ₄ H ₁₀	<i>i</i> -Butane (<i>iso</i> -Butane)	6.772	3.1447E-01	-1.0271E-04	-3.6849E-08	2.0429E-11	200	1500
50	CH ₄	Methane	34.942	-3.9957E-02	1.9184E-04	-1.5303E-07	3.9321E-11	50	1500
51	CH ₄ O	Methanol	40.046	-3.8287E-02	2.4529E-04	-2.1679E-07	5.9909E-11	100	1500

TABLE C-4--(continued)

$C_p = A + BT + CT^2 + DT^3 + ET^4$						$(C_p - \text{joule}/(\text{mol K}), T - \text{K})$			
No.	Formula	Substance	A	B	C	D	E	T_{\min}	T_{\max}
52	CH ₃ Br	Methyl bromide	29.146	2.4374E-02	1.0655E-04	-1.1324E-07	3.3241E-11	100	1500
53	C ₆ H ₁₂ O	Methyl isobutyl ketone	2.404	5.8495E-01	-3.7647E-04	1.2418E-07	-1.7051E-11	298	1500
54	CH ₅ N	Methylamine	40.039	-1.5108E-02	2.5012E-04	-2.3336E-07	6.5582E-11	100	1500
55	C ₈ H ₁₀	<i>m</i> -Xylene	-16.725	5.6424E-01	-2.6465E-04	1.3381E-08	1.5869E-11	200	1500
56	C ₁₀ H ₈	Naphthalene	67.099	4.3239E-02	9.1740E-04	-1.0019E-06	3.0896E-10	50	1500
57	C ₄ H ₁₀	<i>n</i> -Butane	20.056	2.8153E-01	-1.3143E-05	-9.4571E-08	3.4149E-11	200	1500
58	C ₁₀ H ₂₂	<i>n</i> -Decane	31.780	7.4489E-01	-1.0945E-04	-2.2668E-07	9.3458E-11	200	1500
59	C ₇ H ₁₆	<i>n</i> -Heptane	26.984	5.0387E-01	-4.4748E-05	-1.6835E-07	6.5183E-11	200	1500
60	C ₆ H ₁₄	<i>n</i> -Hexane	25.924	4.1927E-01	-1.2491E-05	-1.55916E-07	5.8784E-11	200	1500
61	C ₆ H ₅ NO ₂	Nitrobenzene	-16.202	5.6182E-01	-3.9302E-04	1.0043E-07	-1.2252E-12	200	1500
62	N ₂	Nitrogen	29.342	-3.5395E-03	1.0076E-05	-4.3116E-09	2.5935E-13	50	1500
63	C ₉ H ₂₀	<i>n</i> -Nonane	29.687	6.6821E-01	-9.6492E-05	-2.0014E-07	8.2200E-11	200	1500
64	C ₈ H ₁₈	<i>n</i> -Octane	29.053	5.8016E-01	-5.7103E-05	-1.9548E-07	7.6614E-11	200	1500
65	C ₅ H ₁₂	<i>n</i> -Pentane	26.671	3.2324E-01	4.2820E-05	-1.6639E-07	5.6036E-11	200	1500
66	O ₂	Oxygen	29.526	-8.8999E-03	3.8083E-05	-3.2629E-08	8.8607E-12	50	1500
67	C ₈ H ₁₀	<i>o</i> -Xylene	0.182	5.1344E-01	-2.0212E-04	-2.1615E-08	2.3212E-11	200	1500
68	C ₆ H ₆ O	Phenol	4.408	3.6338E-01	-6.0417E-05	-1.2794E-07	5.5287E-11	100	1500
69	C ₈ H ₁₀	<i>p</i> -Xylene	-17.360	5.6470E-01	-2.6293E-04	1.1217E-08	1.6544E-11	200	1500
70	C ₅ H ₅ N	Pyridine	23.262	1.1251E-01	3.7351E-04	-4.5402E-07	1.4286E-10	50	1500
71	C ₈ H ₈	Styrene	71.201	5.4767E-02	6.4793E-04	-6.9875E-07	2.1232E-10	100	1500
72	SO ₂	Sulfur dioxide	29.637	3.4735E-02	9.2903E-06	-2.9885E-08	1.0937E-11	100	1500
73	C ₇ H ₈	Toluene	-24.097	5.2187E-01	-2.9827E-04	6.1220E-08	1.2576E-12	200	1500
74	C ₄ H ₆ O ₂	Vinyl acetate	27.664	2.3366E-01	6.2106E-05	-1.6972E-07	5.7917E-11	100	1500
75	H ₂ O	Water	33.933	-8.4186E-03	2.9906E-05	-1.7825E-08	3.6934E-12	100	1500

C_p – heat capacity of ideal gas, joule/(mol K)
A, B, C, D, and E – regression coefficients for chemical compound
T – temperature, K
 T_{\min} – minimum temperature, K
 T_{\max} – maximum temperature, K

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TABLE C-5 Heat Capacity of Liquids

$C_p = A + BT + CT^2 + DT^3$									
No.	Formula	Substance	A	B	C	D	T_{min}	T_{max}	C_p at 25° C
1	C ₂ H ₃ Cl ₃	1,1,1-Trichloroethane	11.142	1.0501E+00	-3.0826E-03	3.5983E-06	244	491	145.56
2	C ₂ H ₃ Cl ₃	1,1,2-Trichloroethane	34.934	8.5054E-01	-2.3306E-03	2.6455E-06	238	542	151.46
3	C ₂ H ₄ Cl ₂	1,1-Dichloroethane	57.325	5.6014E-01	-1.8136E-03	2.5617E-06	177	471	131.00
4	C ₂ H ₄ Cl ₂	1,2-Dichloroethane	26.310	7.7555E-01	-2.2271E-03	2.6107E-06	238	505	128.77
5	C ₄ H ₆	1,3-Butadiene	34.680	7.3205E-01	-2.8426E-03	4.6035E-06	165	383	122.26
6	C ₄ H ₈ O ₂	1,4-Dioxane	-20.729	1.2913E+00	-3.5408E-03	3.5408E-06	286	528	153.23
7	C ₄ H ₁₀ O	1-Butanol (<i>n</i> -Butanol)	83.877	5.6628E-01	-1.7208E-03	2.2780E-06	185	507	160.12
8	C ₄ H ₈	1-Butene	74.597	3.3434E-04	-1.3914E-03	3.0241E-06	89	378	130.74
9	C ₁₀ H ₂₀	1-Decene	137.962	1.1934E+00	-3.2863E-03	3.9390E-06	208	555	306.05
10	C ₉ H ₂₀	1-Nonane (<i>n</i> -Nonane)	98.040	1.3538E+00	-3.8058E-03	4.4991E-06	221	536	282.60
11	C ₈ H ₁₆	1-Octene	119.984	8.3332E-01	-2.5321E-03	3.4745E-06	172	510	235.43
12	C ₃ H ₈ O	1-Propanol (<i>n</i> -Propanol)	88.080	4.0224E-01	-1.3032E-03	1.9677E-06	148	483	144.32
13	C ₂ H ₄ O	Acetaldehyde	45.056	4.4853E-01	-1.6607E-03	2.7000E-06	151	415	102.72
14	C ₂ H ₄ O ₂	Acetic acid	-18.944	1.0971E+00	2.8921E-03	2.9275E-06	291	533	128.66
15	C ₄ H ₆ O ₃	Acetic anhydride	71.831	8.8879E-01	-2.6534E-03	3.3501E-06	201	512	189.75
16	C ₃ H ₆ O	Acetone	46.878	6.2652E-01	-2.0761E-03	2.9583E-06	179	457	127.53
17	C ₃ H ₄ O ₂	Acrylic acid	-18.242	1.2106E+00	-3.1160E-03	3.1409E-06	241	617	123.05
18	NH ₃	Ammonia	-182.157	3.3618E+00	-1.4398E-02	2.0371E-05	195	385	80.16
19	C ₆ H ₇ N	Aniline	63.288	9.8960E-01	-2.3583E-03	2.3296E-06	268	629	210.44
20	C ₆ H ₆	Benzene	-31.663	1.3043E+00	-3.6078E-03	3.8243E-06	280	506	137.87
21	C ₄ H ₈ O ₂	Butyric acid	28.210	1.1040E+00	-2.8523E-03	2.9528E-06	269	565	182.09
22	CS ₂	Carbon disulfide	39.938	2.3565E-01	-7.2098E-04	1.0443E-06	163	497	73.79
23	CO ₂	Carbon dioxide	-338.956	5.2796E+00	-2.3279E-02	3.5980E-05	218	274	-
24	CO	Carbon monoxide	-19.312	2.5072E+00	-2.8970E-02	1.2745E-04	69	120	-
25	CCl ₄	Carbon tetrachloride	9.671	9.3363E-01	-2.6768E-03	3.0425E-06	251	501	130.72
26	Cl ₂	Chlorine	127.601	-6.0215E-01	1.5776E-03	-5.3099E-07	172	396	74.23
27	CHCl ₃	Chloroform	28.296	6.5897E-01	-2.0353E-03	2.5901E-06	211	483	112.49
28	C ₆ H ₁₂	Cyclohexane	-44.417	1.6016E+00	-4.4676E-03	4.7582E-06	281	498	162.07
29	C ₆ H ₁₂ O	Cyclohexanol	-47.321	1.9131E+00	-4.8388E-03	4.7281E-06	298	563	218.25
30	C ₃ H ₆	Cyclopropane	30.543	5.0198E-01	-2.1040E-03	3.7444E-06	147	358	92.42
31	CH ₂ Cl ₂	Dichloromethane	38.941	4.9008E-01	-1.6224E-03	2.3069E-06	179	459	101.98
32	C ₄ H ₁₀ O	Diethyl ether	75.939	7.7335E-01	-2.7936E-03	4.4383E-06	158	420	175.81
33	C ₅ H ₁₀ O	Diethyl ketone	26.231	1.2822E+00	-3.7449E-03	4.3816E-06	235	505	191.76
34	C ₂ H ₇ N	Dimethylamine	36.962	9.5817E-01	-3.5846E-03	5.3990E-06	182	394	147.08
35	C ₂ H ₆	Ethane	38.332	4.1006E-01	-2.3024E-03	5.9347E-06	91	275	-
36	C ₂ H ₆ O	Ethanol	59.342	3.6358E-01	-1.2164E-03	1.8030E-06	160	465	107.40
37	C ₄ H ₈ O ₂	Ethyl acetate	62.832	8.4097E-01	-2.6998E-03	3.6631E-06	191	471	170.66
38	C ₂ H ₅ Cl	Ethyl chloride	60.180	3.4553E-01	-1.2983E-03	2.1963E-06	138	414	106.00
39	C ₈ H ₁₀	Ethylbenzene	102.11	5.5959E-01	-1.5609E-03	2.0149E-06	179	555	183.60
40	C ₂ H ₄	Ethylene	25.597	5.7078E-01	-3.3620E-03	8.4120E-06	105	254	-
41	C ₂ H ₆ O ₂	Ethylene glycol	75.878	6.4182E-01	-1.6493E-03	1.6937E-06	261	581	165.52
42	C ₂ H ₄ O	Ethylene oxide	35.720	4.2908E-01	-1.5473E-03	2.4070E-06	162	422	89.90
43	F ₂	Fluorine	83.829	-7.8518E-01	5.2305E-03	4.6617E-06	53	137	-
44	C ₃ H ₈ O ₃	Glycerol	132.145	8.6007E-01	-1.9745E-03	1.8068E-06	292	651	260.94
45	H ₂	Hydrogen	50.607	-6.1136E+00	3.0930E-01	-4.1480E-03	14	32	-
46	HCl	Hydrogen chloride	73.993	-1.2946E-01	-7.8980E-05	2.6409E-06	165	308	98.37
47	CHN	Hydrogen cyanide	-123.155	1.7769E+00	-5.8083E-03	6.9129E-06	261	411	73.52
48	H ₂ O ₂	Hydrogen peroxide	-15.248	6.7693E-01	-1.4948E-03	1.2018E-06	273	694	85.55
49	C ₄ H ₁₀	<i>i</i> -Butane (<i>iso</i> -Butane)	71.791	4.8472E-01	-2.0519E-03	4.0634E-06	115	367	141.61
50	CH ₄	Methane	-0.018	1.1982E+00	-9.8722E-03	3.1670E-05	92	172	-
51	CH ₃ OH	Methanol	40.152	3.1046E-01	-1.0291E-03	1.4598E-06	176	461	79.93

TABLE C-5—(continued)

$C_p = A + BT + CT^2 + DT^3$									
No.	Formula	Substance	A	B	C	D	T_{\min}	T_{\max}	C_p at 25°C
52	CH ₃ Br	Methyl bromide	25.042	4.9312E-01	-1.7627E-03	2.5993E-06	181	420	85.16
53	CH ₃ Cl	Methyl chloride	11.381	6.2328E-01	-2.4353E-03	3.8333E-06	176	375	82.33
54	C ₆ H ₁₂ O	Methyl isobutyl ketone	96.184	8.5227E-01	-2.5379E-03	3.3066E-06	190	514	212.42
55	CH ₅ N	Methylamine	13.565	9.0836E-01	-3.4881E-03	5.2770E-06	181	3887	114.19
56	C ₈ H ₁₀	<i>m</i> -Xylene	70.916	8.0450E-01	-2.1885E-03	2.5061E-06	226	555	182.66
57	C ₁₀ H ₈	Naphthalene	-30.842	1.5362E+00	-3.2492E-03	2.6568E-06	354	674	—
58	C ₄ H ₁₀	<i>n</i> -Butane	62.873	5.8913E-01	-2.3588E-03	4.2257E-06	136	383	140.84
59	C ₁₀ H ₂₂	<i>n</i> -Decane	79.741	1.6926E+00	-4.5287E-03	4.9769E-06	244	557	313.73
60	C ₇ H ₁₆	<i>n</i> -Heptane	101.121	9.7739E-01	-3.0712E-03	4.1844E-06	184	486	230.42
61	C ₆ H ₁₄	<i>n</i> -Hexane	78.848	8.8729E-01	-2.9482E-03	4.1999E-06	179	457	192.63
62	C ₆ H ₅ NO ₂	Nitrobenzene	51.773	9.1277E-01	-2.1098E-03	2.0093E-06	280	647	189.62
63	N ₂	Nitrogen	76.452	-3.5226E-01	-2.6690E-03	5.0057E-05	64	120	—
64	C ₉ H ₂₀	<i>n</i> -Nonane	98.040	1.3538E+00	-3.8058E-03	4.4991E-06	221	536	282.60
65	C ₈ H ₁₈	<i>n</i> -Octane	82.736	1.3043E+00	-3.8254E-03	4.6459E-06	217	512	254.71
66	C ₅ H ₁₂	<i>n</i> -Pentane	80.641	6.2195E-01	-2.2682E-03	3.7423E-06	144	423	163.64
67	O ₂	Oxygen	46.432	3.9506E-01	-7.0522E-03	3.9897E-05	54	147	—
68	C ₈ H ₁₀	<i>o</i> -Xylene	56.460	9.4926E-01	-2.4902E-03	2.6838E-06	249	567	189.25
69	C ₆ H ₆ O	Phenol	38.622	1.0983E+00	-2.4897E-03	2.2802E-06	315	625	—
70	C ₈ H ₁₀	<i>p</i> -Xylene	-11.035	1.5158E+00	-3.9039E-03	3.9193E-06	287	555	197.75
71	C ₅ H ₅ N	Pyridine	37.150	6.9497E-01	-1.8749E-03	2.1188E-06	233	558	133.85
72	C ₈ H ₈	Styrene	66.737	8.4051E-01	-2.1615E-03	2.3324E-06	244	583	187.00
73	SO ₂	Sulfur dioxide	203.445	-1.0537E+00	2.6113E-03	-1.0697E-06	198	409	93.06
74	C ₇ H ₈	Toluene	83.703	5.1666E-01	-1.4910E-03	1.9725E-06	179	533	157.49
75	C ₄ H ₆ O ₂	Vinyl acetate	63.910	7.0656E-01	-2.2832E-03	3.1788E-06	181	472	155.86
76	H ₂ O	Water	92.053	-3.9953E-02	-2.1103E-04	5.3469E-07	273	615	75.55

C_p – heat capacity of liquid, J/(mol K)
A, B, C, and D – regression coefficients for chemical compound
T – temperature, K
 T_{\min} – minimum temperature, K
 T_{\max} – maximum temperature, K

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TABLE C-6 Thermal Conductivity of Gas

$K_{\text{gas}} = A + BT + CT^2$						$(K_{\text{gas}} - W/(m K), T - K)$				
No.	Formula	Substance	A	B	C	T_{min}	T_{max}	K_{gas} at 25° C	K_{gas} at T_{min}	K_{gas} at T_{max}
1	C ₂ H ₃ Cl ₃	1,1,1-Trichloroethane	-0.00070	3.9347E-06	3.3468E-09	347	997	-	0.00107	0.00655
2	C ₂ H ₃ Cl ₃	1,1,2-Trichloroethane	-0.00609	3.2555E-05	3.0529E-08	387	997	-	0.01108	0.05674
3	C ₂ H ₄ Cl ₂	1,1-Dichloroethane	-0.00739	4.4752E-05	3.3174E-08	330	990	-	0.01099	0.06943
4	C ₂ H ₄ Cl ₂	1,2-Dichloroethane	-0.00682	4.0081E-05	3.1925E-08	357	997	-	0.01156	0.06487
5	C ₄ H ₆	1,3-Butadiene	-0.00085	7.1537E-06	1.6202E-07	250	850	0.01569	0.01106	0.12229
6	C ₄ H ₈ O ₂	1,4-Dioxane	-0.01642	8.0095E-05	1.7582E-08	285	1000	0.00902	0.00784	0.08126
7	C ₄ H ₁₀ O	1-Butanol (<i>n</i> -Butanol)	0.01783	-4.8291E-05	1.6334E-07	371	713	-	0.02240	0.06644
8	C ₄ H ₈	1-Butene	-0.00293	3.0205E-05	1.0192E-07	225	800	0.01514	0.00903	0.08646
9	C ₁₀ H ₂₀	1-Decene	-0.01118	6.2751E-05	2.8360E-08	444	1000	-	0.02227	0.07993
10	C ₉ H ₂₀	1-Nonane (<i>n</i> -Nonane)	-0.00655	3.2637E-05	7.7150E-08	449	678	-	0.02366	0.05104
11	C ₈ H ₁₆	1-Octene	-0.00463	2.8829E-05	8.4175E-08	394	500	-	0.01980	0.03083
12	C ₃ H ₈ O	1-Propanol (<i>n</i> -Propanol)	-0.00333	2.8691E-05	1.0222E-07	372	720	-	0.02149	0.07032
13	C ₂ H ₄ O	Acetaldehyde	-0.00181	2.1187E-05	8.0192E-08	200	700	0.01164	0.00564	0.05231
14	C ₂ H ₄ O ₂	Acetic acid	0.00234	-6.5956E-06	1.1569E-07	295	687	0.01066	0.01046	0.05241
15	C ₄ H ₆ O ₃	Acetic anhydride	-0.00846	5.2818E-05	1.7355E-08	413	993	-	0.01631	0.06110
16	C ₃ H ₆ O	Acetone	-0.00084	8.7475E-06	1.0678E-07	273	572	0.01126	0.00951	0.03910
17	C ₃ H ₄ O ₂	Acrylic acid	-0.00889	6.0453E-05	1.2049E-08	414	1000	-	0.01820	0.06361
18	NH ₃	Ammonia	0.00457	2.3239E-05	1.4810E-07	200	700	0.02466	0.01514	0.09341
19	C ₆ H ₇ N	Aniline	-0.01796	8.3464E-05	1.5022E-09	458	1000	-	0.02058	0.06701
20	C ₆ H ₆	Benzene	-0.00565	3.4493E-05	6.9298E-08	325	700	-	0.01288	0.05246
21	C ₄ H ₈ O ₂	Butyric acid	0.12421	-3.6238E-04	3.7750E-07	523	707	-	0.03794	0.05670
22	CS ₂	Carbon disulfide	-0.00239	3.2574E-05	2.1193E-10	273	999	0.00734	0.00652	0.03036
23	CO ₂	Carbon dioxide	-0.01200	1.0208E-04	-2.2403E-08	195	1500	0.01644	0.00705	0.09071
24	CO	Carbon monoxide	0.00158	8.2511E-05	-1.9081E-08	70	1250	0.02448	0.00726	0.07490
25	CCl ₄	Carbon tetrachloride	-0.00070	2.2065E-05	6.7913E-09	255	556	0.00648	0.00537	0.01367
26	Cl ₂	Chlorine	-0.00194	3.8300E-05	-6.3523E-09	200	1000	0.00891	0.00547	0.03001
27	CHCl ₃	Chloroform	-0.00019	2.2269E-05	1.2105E-09	273	573	0.00656	0.00598	0.01297
28	C ₆ H ₁₂	Cyclohexane	-0.00159	-1.7494E-07	1.4588E-07	325	650	-	0.01376	0.05993
29	C ₆ H ₁₂ O	Cyclohexanol	-0.02696	1.1162E-04	1.2497E-08	434	1000	-	0.02384	0.09716
30	C ₃ H ₆	Cyclopropane	-0.00430	3.7668E-05	1.0953E-07	240	1000	0.01667	0.01105	0.14290
31	CH ₂ Cl ₂	Dichloromethane	-0.00122	1.8440E-05	3.5385E-08	250	500	0.00742	0.00560	0.01685
32	C ₄ H ₁₀ O	Diethyl ether	-0.00032	1.6530E-05	1.1709E-07	200	600	0.01502	0.00767	0.05175
33	C ₅ H ₁₀ O	Diethyl ketone	0.00004	-2.7408E-07	1.2105E-07	273	1000	0.01072	0.00899	0.12082
34	C ₂ H ₇ N	Dimethylamine	-0.01559	8.3374E-05	6.3822E-08	273	990	0.01494	0.01193	0.12950
35	C ₂ H ₆	Ethane	-0.01936	1.2547E-04	3.8298E-08	225	825	0.02145	0.01081	0.11022
36	C ₂ H ₆ O	Ethanol	-0.00556	4.3620E-05	8.5033E-08	351	991	-	0.02023	0.12118
37	C ₄ H ₈ O ₂	Ethyl acetate	0.00207	-4.8558E-06	1.1222E-07	273	1000	0.01060	0.00911	0.10943
38	C ₂ H ₅ Cl	Ethyl chloride	-0.00291	3.1284E-05	5.5316E-08	273	773	0.01133	0.00975	0.05433
39	C ₈ H ₁₀	Ethylbenzene	-0.00797	4.0572E-05	6.7289E-08	400	825	-	0.01903	0.07130
40	C ₂ H ₄	Ethylene	-0.00123	3.6219E-05	1.2459E-07	150	750	0.02064	0.00701	0.09602
41	C ₂ H ₆ O ₂	Ethylene glycol	-0.01076	7.9631E-05	5.7243E-09	470	990	-	0.02793	0.07369
42	C ₂ H ₄ O	Ethylene oxide	0.01612	-7.3460E-05	2.1215E-07	273	673	0.01308	0.01188	0.06277
43	F ₂	Fluorine	-0.00076	9.5961E-05	-2.1800E-08	70	700	0.02591	0.00585	0.05573
44	C ₃ H ₈ O ₃	Glycerol	-0.00842	4.4977E-05	2.4839E-08	563	993	-	0.02478	0.06073
45	H ₂	Hydrogen	0.03951	4.5918E-04	-6.4933E-08	150	1500	0.17064	0.10693	0.58218
46	HCl	Hydrogen chloride	0.00119	4.4775E-05	2.0997E-10	159	1000	0.01456	0.00831	0.04617
47	CHN	Hydrogen cyanide	-0.00136	3.7886E-05	2.6807E-08	260	360	0.01232	0.01030	0.01575
48	H ₂ O ₂	Hydrogen peroxide	-0.00858	8.6933E-05	-6.2970E-09	275	1200	0.01678	0.01485	0.08667
49	C ₄ H ₁₀	<i>i</i> -Butane (<i>iso</i> -Butane)	-0.00115	1.4943E-05	1.4921E-07	261	673	0.01657	0.01291	0.07649
50	CH ₄	Methane	-0.00935	1.4028E-04	3.3180E-08	97	1400	0.03542	0.00457	0.25207

TABLE C-6—(continued)

No.	Formula	Substance	$K_{\text{gas}} = A + BT + CT^2$			$(K_{\text{gas}} - W/(m K), T - K)$				
			A	B	C	T_{min}	T_{max}	K_{gas} at 25° C	K_{gas} at T_{min}	K_{gas} at T_{max}
51	CH ₃ Br	Methyl bromide	-0.00421	2.7182E-05	3.9758E-08	273	825	0.00743	0.00617	0.04528
52	CH ₂ Cl	Methyl chloride	-0.00185	2.0296E-05	7.3234E-08	213	750	0.01071	0.00580	0.05457
53	C ₆ H ₁₂ O	Methyl isobutyl ketone	0.00209	-7.7952E-06	1.2993E-07	390	1000	—	0.01881	0.12422
54	CH ₅ N	Methylamine	-0.01136	8.0400E-05	5.8607E-08	267	800	0.01782	0.01428	0.09047
55	C ₈ H ₁₀	<i>m</i> -Xylene	-0.00375	2.9995E-05	7.4603E-08	400	825	—	0.02018	0.07177
56	C ₁₀ H ₈	Naphthalene	-0.02306	9.2610E-05	4.4577E-10	353	1259	—	0.00969	0.09424
57	C ₄ H ₁₀	<i>n</i> -Butane	-0.00182	1.9396E-05	1.3818E-07	225	675	0.01625	0.00954	0.07423
58	C ₁₀ H ₂₂	<i>n</i> -Decane	-0.00113	8.1090E-06	9.6092E-08	470	700	—	0.02391	0.05163
59	C ₇ H ₁₆	<i>n</i> -Heptane	-0.00172	1.6565E-05	1.0525E-07	250	750	0.01257	0.00900	0.06991
60	C ₆ H ₁₄	<i>n</i> -Hexane	-0.00200	7.7788E-06	1.3824E-07	290	480	0.01261	0.01188	0.03358
61	C ₆ H ₅ NO ₂	Nitrobenzene	—	—	—	—	—	—	—	—
62	N ₂	Nitrogen	0.00309	7.5930E-05	-1.1014E-08	78	1500	0.02475	0.00895	0.09220
63	C ₉ H ₂₀	<i>n</i> -Nonane	-0.00655	3.2637E-05	7.7150E-08	449	678	—	0.02366	0.05104
64	C ₈ H ₁₈	<i>n</i> -Octane	-0.00213	1.8456E-05	9.4775E-08	300	800	—	0.01194	0.07329
65	C ₅ H ₁₂	<i>n</i> -Pentane	-0.00137	1.8081E-05	1.2136E-07	225	480	0.01481	0.00884	0.03527
66	O ₂	Oxygen	0.00121	8.6157E-05	-1.3346E-08	80	1500	0.02571	0.00802	0.10042
67	C ₈ H ₁₀	<i>o</i> -Xylene	-0.00979	7.4087E-05	1.8418E-08	400	825	—	0.02279	0.06387
68	C ₆ H ₆ O	Phenol	-0.00552	4.4952E-05	3.9900E-08	455	995	—	0.02319	0.07871
69	C ₈ H ₁₀	<i>p</i> -Xylene	-0.00870	4.7349E-05	5.8829E-08	400	825	—	0.01965	0.07040
70	C ₃ H ₈	Propane	-0.00869	6.6409E-05	7.8760E-08	233	773	0.01811	0.01106	0.08971
71	C ₅ H ₅ N	Pyridine	-0.00469	1.6151E-05	9.4006E-08	388	998	—	0.01573	0.10506
72	C ₈ H ₈	Styrene	-0.00712	4.5538E-05	3.9529E-08	273	973	0.00997	0.00826	0.07461
73	SO ₂	Sulfur dioxide	-0.00394	4.4847E-05	2.1066E-09	198	1000	0.00962	0.00502	0.04301
74	C ₇ H ₈	Toluene	-0.00776	4.4905E-05	6.4514E-08	350	800	—	0.01586	0.06945
75	C ₄ H ₆ O ₂	Vinyl acetate	-0.00846	5.8704E-08	1.7678E-08	346	996	—	0.01397	0.06755
76	H ₂ O	Water	0.00053	4.7093E-05	4.9551E-08	275	1073	0.01898	0.01723	0.10811

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TABLE C-7a Thermal Conductivity of Liquids

$\log_{10} k_{liq} = A + B [1 - T/C]^{2.7}$										
No.	Formula	Substance	A	B	C	T_{min}	T_{max}	k_{liq} at 25° C	k_{liq} at T_{min}	k_{liq} at T_{max}
1	C ₂ H ₃ Cl ₃	1,1,1-Trichloroethane	-1.7352	0.9286	545.00	243	518	0.1012	0.1096	0.0184
2	C ₂ H ₃ Cl ₃	1,1,2-Trichloroethane	-2.6567	2.1686	602.00	237	572	0.1340	0.1601	0.0022
3	C ₂ H ₄ Cl ₂	1,1-Dichloroethane	-1.7265	0.9930	523.00	176	497	0.1132	0.1412	0.0188
4	C ₂ H ₄ Cl ₂	1,2-Dichloroethane	-1.6509	0.9701	561.00	237	533	0.1350	0.1476	0.0223
5	C ₄ H ₆	1,3-Butadiene	-1.6512	0.9899	425.37	164	404	0.1122	0.1592	0.0223
6	C ₄ H ₈ O ₂	1,4-Dioxane	-2.1607	1.6668	587.00	285	558	0.1586	0.1578	0.0069
7	C ₄ H ₁₀ O	1-Butanol (<i>n</i> -Butanol)	-1.3120	0.6190	562.93	184	535	0.1538	0.1725	0.0488
8	C ₄ H ₈	1-Butene	-1.6539	0.9786	419.59	88	399	0.1078	0.1809	0.0222
9	C ₁₀ H ₂₀	1-Decene	-1.7491	1.0443	617.05	207	586	0.1305	0.1489	0.0293
10	C ₉ H ₂₀	1-Nonane (<i>n</i> -Nonane)	-1.7865	1.1033	595.65	220	566	0.1313	0.1486	0.0163
11	C ₈ H ₁₆	1-Octene	-1.6274	0.9136	566.60	171	538	0.1290	0.1555	0.0236
12	C ₃ H ₈ O	1-Propanol (<i>n</i> -Propanol)	-1.2131	0.5097	536.71	147	510	0.1553	0.1776	0.0612
13	C ₂ H ₄ O	Acetaldehyde	-1.4826	0.9821	461.00	150	438	0.1766	0.2447	0.0329
14	C ₂ H ₄ O ₂	Acetic acid	-1.2836	0.5893	592.71	290	563	0.1581	0.1569	0.0520
15	C ₄ H ₆ O ₃	Acetic anhydride	-1.3593	0.7106	569.15	200	541	0.1643	0.1834	0.0437
16	C ₃ H ₆ O	Acetone	-1.3857	0.7643	508.20	178	483	0.1615	0.1925	0.0411
17	C ₃ H ₄ O ₂	Acrylic acid	-1.6101	0.9742	615.00	287	584	0.1570	0.1559	0.0245
18	NH ₃	Ammonia	1.1606	-2.2840E-03	3.1245E-18	220	400	0.480	0.658	0.247
19	C ₆ H ₇ N	Aniline	-1.3485	0.6888	699.00	267	664	0.1734	0.1763	0.0448
20	C ₆ H ₆	Benzene	-1.6846	1.0520	562.16	279	534	0.1456	0.1469	0.0207
21	C ₄ H ₈ O ₂	Butyric acid	-1.3420	0.6161	628.00	268	597	0.1481	0.1505	0.0455
22	CS ₂	Carbon disulfide	-1.2917	0.5809	552.00	162	524	0.1491	0.1702	0.0511
23	CO ₂	Carbon dioxide	-1.3679	0.8092	304.19	217	289	-	0.1500	0.0429
24	CO	Carbon monoxide	-1.7115	1.1359	132.59	68	126	-	0.1580	0.0194
25	CCl ₄	Carbon tetrachloride	-1.8791	1.0875	556.35	250	529	0.0987	0.1063	0.0132
26	Cl ₂	Chlorine	0.2246	-6.4000E-05	-7.8800E-07	172	410	0.135	0.190	0.066
27	CHCl ₃	Chloroform	-1.5271	0.7577	536.40	210	510	0.1185	0.1330	0.0297
28	C ₆ H ₁₂	Cyclohexane	-1.6817	0.9649	553.54	280	526	0.1236	0.1244	0.0208
29	C ₆ H ₁₂ O	Cyclohexanol	-1.3475	0.5719	625.15	297	594	0.1342	0.1323	0.0449
30	C ₃ H ₆	Cyclopropane	-1.5958	0.9876	397.91	146	378	0.1173	0.1833	0.0254
31	CH ₂ Cl ₂	Dichloromethane	-1.8069	1.2216	510.00	178	485	0.1392	0.1841	0.0156
32	C ₄ H ₁₀ O	Diethyl ether	-1.5629	0.9357	466.70	157	443	0.1369	0.1832	0.0274
33	C ₅ H ₁₀ O	Diethyl ketone	-1.5868	0.9252	560.95	234	533	0.1439	0.1576	0.0259
34	C ₂ H ₇ N	Dimethylamine	-1.2557	0.6069	437.65	181	416	0.1521	0.1819	0.0555
35	C ₂ H ₆	Ethane	-1.3474	0.7003	305.42	90	290	-	0.1916	0.0449
36	C ₂ H ₆ O	Ethanol	-1.3172	0.6987	516.25	159	490	0.1694	0.2030	0.0482
37	C ₄ H ₈ O ₂	Ethyl acetate	-1.6938	1.0862	523.30	190	497	0.1445	0.1789	0.0202
38	C ₂ H ₅ Cl	Ethyl chloride	-2.0001	1.4496	460.35	137	437	0.1191	0.2003	0.0100
39	C ₈ H ₁₀	Ethylbenzene	1.7498	1.0437	617.17	178	586	0.1302	0.1554	0.0178
40	C ₂ H ₄	Ethylene	-1.3314	0.8527	282.36	104	268	-	0.2568	0.0466
41	C ₂ H ₆ O ₂	Ethylene glycol	-0.5918	-	645.00	260	613	0.2560	0.2560	0.2560
42	C ₂ H ₄ O	Ethylene oxide	-1.4656	0.8777	469.15	161	446	0.1557	0.2026	0.0342
43	F ₂	Fluorine	0.2758	-1.6297E-03	-3.7475E-18	53	130	-	0.189	0.064
44	C ₃ H ₈ O ₃	Glycerol	-0.3550	-0.2097	723.00	293	550	0.2916	0.2994	0.4416
45	H ₂	Hydrogen	-0.1433	2.3627E-02	-5.1480E-04	14	33	-	0.0866	0.0737
46	HCl	Hydrogen chloride	0.8045	-2.1020E-03	-2.3238E-16	273	323	0.178	0.231	0.126
47	CHN	Hydrogen cyanide	-1.4117	10.0351	456.65	260	434	0.2256	0.2429	0.0388
48	H ₂ O ₂	Hydrogen peroxide	0.4425	-1.8406E-04	-3.8824E-07	273	657	0.353	0.363	0.154
49	C ₄ H ₁₀	<i>i</i> -Butane (<i>iso</i> -Butane)	-1.6862	0.9802	408.14	114	388	0.0972	0.1589	0.0206
50	CH ₄	Methane	-1.0976	0.5387	190.58	91	181	-	0.2206	0.0799

TABLE C-7a—(continued)

$\log_{10} k_{liq} = A + B[1 - T/C]^{27}$										
No.	Formula	Substance	A	B	C	T_{min}	T_{max}	k_{liq} at 25° C	k_{liq} at T_{min}	k_{liq} at T_{max}
51	CH ₃ Br	Methyl bromide	-1.7379	1.0082	467.00	180	444	0.1038	0.1352	0.0183
52	CH ₃ Cl	Methyl chloride	-1.7528	1.3666	416.25	175	395	0.1593	0.2541	0.0177
53	C ₆ H ₁₂ O	Methyl isobutyl ketone	-1.6520	0.9961	571.40	189	543	0.1428	0.1696	0.0223
54	CH ₃ N	Methylamine	-1.0947	0.5539	430.05	180	409	0.1997	0.2369	0.0804
55	C ₈ H ₁₀	<i>m</i> -Xylene	-1.7286	1.0193	617.05	225	586	0.1305	0.1442	0.0187
56	C ₁₀ H ₈	Naphthalene	-1.0304	0.1860	748.35	353	711	—	0.1326	0.0932
57	C ₄ H ₁₀	<i>n</i> -Butane	-1.8929	1.2885	425.18	135	404	0.1046	0.1796	0.0128
58	C ₁₀ H ₂₂	<i>n</i> -Decane	-1.7768	1.0839	618.45	243	588	0.1322	0.1425	0.0167
59	C ₇ H ₁₆	<i>n</i> -Heptane	-1.8482	1.1843	540.26	183	513	0.1240	0.1570	0.0142
60	C ₆ H ₁₄	<i>n</i> -Hexane	-1.8389	1.1860	507.43	178	482	0.1208	0.1588	0.0145
61	C ₆ H ₅ NO ₂	Nitrobenzene	-1.3942	0.6571	719.00	279	683	0.1478	0.1484	0.0403
62	N ₂	Nitrogen	0.2130	-4.2050E-04	-7.2951E-06	70	126	—	0.148	0.044
63	C ₉ H ₂₀	<i>n</i> -Nonane	-1.7865	1.1033	595.65	220	566	0.1313	0.1486	0.0163
64	C ₈ H ₁₈	<i>n</i> -Octane	-1.8388	1.1699	568.83	216	540	0.1281	0.1487	0.0145
65	C ₅ H ₁₂	<i>n</i> -Pentane	-1.2287	0.5822	469.65	143	446	0.1480	0.1769	0.0591
66	O ₂	Oxygen	0.2320	-5.6357E-04	-3.8093E-06	60	155	—	0.184	0.053
67	C ₈ H ₁₀	<i>o</i> -Xylene	-1.7372	1.0282	630.37	248	599	0.1315	0.1398	0.0183
68	C ₆ H ₆ O	Phenol	-1.1489	0.4091	694.25	314	660	—	0.1553	0.0710
69	C ₈ H ₁₀	<i>p</i> -Xylene	-1.7354	1.0254	616.26	286	585	0.1299	0.1291	0.0184
70	C ₅ H ₅ N	Pyridine	-1.2083	0.5146	619.95	232	589	0.1653	0.1729	0.0619
71	C ₈ H ₈	Styrene	-1.7023	1.0002	648.00	243	616	0.1369	0.1460	0.0198
72	SO ₂	Sulfur dioxide	0.3822	-6.2540E-04	-5.6891E-19	200	400	0.196	0.257	0.132
73	C ₇ H ₈	Toluene	-1.6735	0.9773	591.79	178	562	0.1338	0.1596	0.0212
74	C ₄ H ₆ O ₂	Vinyl acetate	-1.7519	1.1895	524.00	180	498	0.1525	0.1970	0.0177
75	H ₂ O	Water	-0.2758	4.6120E-03	-5.5391E-06	273	633	0.607	0.570	0.424
k_{liq} – thermal conductivity of liquid, W/(m K)										
A, B, and C – regression coefficients for chemical compound										
T – temperature, K										
T_{min} – minimum temperature, K										
T_{max} – maximum temperature, K										

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TABLE C-7b Thermal Conductivity of Liquids and Solids (Inorganic)

$k = A + BT + CT^2$											
No.	Formula	Substance	A	B	C	T_{\min}	T_{\max}	Phase	k at 25° C	k at T_{\min}	k at T_{\max}
1	Ag	Silver	438.2178	-2.2947E-02	-3.5429E-05	200	1200	solid	428.227	432.211	359.664
2	Al	Aluminum	228.2103	5.7999E-02	-8.6806E-05	200	934	solid	237.786	236.338	206.658
3	As	Arsenic	122.7520	-3.4038E-01	3.3153E-04	200	500	solid	50.739	67.937	35.445
4	Au	Gold	335.4544	-5.8253E-02	-7.4773E-06	200	1300	solid	317.422	323.505	247.089
5	Ba	Barium	26.5122	-5.3067E-02	8.6615E-05	150	300	solid	18.390	20.501	18.387
6	Br ₂	Bromine	0.1325	1.0331E-04	-4.5514E-07	266	584	liquid	0.123	0.128	0.038
7	Cd	Cadmium	101.2521	-5.5398E-03	-2.7578E-05	200	594	solid	97.149	99.041	88.231
8	Co	Cobalt	150.4892	-1.9030E-01	8.9428E-05	200	1200	solid	101.701	116.006	50.906
9	Cu	Copper	426.2970	-8.3932E-02	9.3782E-06	200	1300	solid	402.106	409.886	333.035
10	HCl	Hydrogen chloride	0.8045	-2.1020E-03	-2.3238E-16	273	323	liquid	0.178	0.231	0.126
11	H ₂ O	Water	-0.2758	4.6120E-03	-5.5391E-06	273	633	liquid	0.607	0.570	0.424
12	Hg	Mercury	0.9230	2.8887E-02	-1.5499E-05	234	1562	liquid	8.158	6.834	8.229
13	I ₂	Iodine	0.0965	1.7970E-04	-3.4020E-07	387	785	liquid	–	0.115	0.028
14	K	Potassium	69.3316	-4.7493E-02	9.4295E-06	350	1600	liquid	–	53.864	17.482
15	KBr	Potassium bromide	13.8899	-5.4091E-05	8.0015E-05	241	372	solid	4.875	5.501	4.841
16	KCl	Potassium chloride	39.3670	-1.9735E-01	2.8892E-04	120	360	solid	6.210	19.845	5.765
17	Li	Lithium	28.9331	3.5692E-02	-1.0087E-05	454	3677	liquid	–	43.058	23.793
18	Mg	Magnesium	165.8119	-3.7721E-02	1.6112E-05	200	900	solid	155.998	158.912	144.914
19	NH ₃	Ammonia	1.1606	-2.2840E-03	3.1245E-18	220	400	liquid	0.480	0.658	0.247
20	NH ₄ S	Ammonium hydrogen sulfide	0.1661	6.3855E-04	-1.6809E-06	391	449	liquid	–	0.159	0.114
21	NO	Nitric oxide	0.1878	1.0293E-03	-9.4300E-06	110	176	liquid	–	0.187	0.077
22	Na	Sodium	98.8908	-4.3158E-02	5.2876E-06	371	2316	liquid	–	83.607	27.299
23	NaBr	Sodium bromide	0.3616	-3.3985E-05	-7.3045E-09	1020	3858	liquid	–	0.319	0.122
24	NaCl	Sodium chloride	51.6119	-2.9610E-01	4.7053E-04	80	380	solid	5.157	30.935	7.038
25	NaOH	Sodium hydroxide	-3.2252	4.0045E-03	5.0633E-06	592	592	solid	–	0.920	0.920
26	Ni	Nickel	144.4370	-2.2793E-01	1.6434E-04	250	800	solid	91.088	97.726	67.271
27	Pb	Lead	39.3335	-1.3469E-02	5.1500E-07	200	600	solid	35.363	36.660	31.438
28	S	Sulfur	0.0262	4.1738E-04	-3.2471E-07	388	1182	liquid	–	0.139	0.066
29	Sb	Antimony	39.6013	-6.0319E-02	3.9401E-05	200	900	solid	25.120	29.114	17.229
30	SiO ₂	Silicon oxide	2.1744	-3.7847E-03	4.6353E-06	273	1400	solid	1.458	1.487	5.961
31	Sn	Tin	92.3073	-1.1537E-01	1.0000E-04	200	500	solid	66.799	73.233	59.622
32	SnCl ₂	Stannous chloride	0.1616	-1.1786E-04	-1.7857E-07	260	340	liquid	0.111	0.119	0.101
33	SnCl ₄	Stannic chloride	0.1482	-6.7765E-05	-1.8857E-07	243	558	liquid	0.111	0.121	0.052
34	Zn	Zinc	125.5025	-3.0320E-02	-1.1471E-05	200	693	solid	115.443	118.980	98.982
35	ZnCl ₂	Zinc chloride	2.2616	-6.2681E-03	4.9822E-06	563	641	solid	–	0.312	0.291
36	ZnO	Zinc oxide	71.4550	-1.8504E-01	1.6306E-04	319	418	solid	–	29.020	22.599

k – thermal conductivity, W/(m K)
A, B, and C – regression coefficients for chemical compound
T – temperature, K
 T_{\min} – minimum temperature, K
 T_{\max} – maximum temperature, K

TABLE C-8 Surface Tension of Organic Liquids

$\sigma = A(1 - T/T_c)^n$								
No.	Formula	Substance	A	T_c	n	T_{min}	T_{max}	σ at 25° C
1	C ₂ H ₃ Cl ₃	1,1,1-Trichloroethane	65.600	545.00	1.2170	242.75	545.00	25.02
2	C ₂ H ₃ Cl ₃	1,1,2-Trichloroethane	77.200	602.00	1.2100	236.50	602.00	33.75
3	C ₂ H ₄ Cl ₂	1,1-Dichloroethane	72.110	523.00	1.2530	176.19	523.00	25.04
4	C ₂ H ₄ Cl ₂	1,2-Dichloroethane	80.140	561.00	1.2000	237.49	561.00	32.27
5	C ₄ H ₆	1,3-Butadiene	47.682	425.37	1.0507	164.25	425.37	13.41
6	C ₄ H ₈ O ₂	1,4-Dioxane	82.160	587.00	1.2899	284.95	587.00	32.92
7	C ₄ H ₁₀ O	1-Butanol (<i>n</i> -Butanol)	64.526	562.93	1.2222	283.15	562.93	25.67
8	C ₄ H ₈	1-Butene	56.000	419.59	1.2341	87.80	419.59	12.12
9	C ₁₀ H ₂₀	1-Decene	54.880	617.05	1.2818	206.89	617.05	23.55
10	C ₉ H ₂₀	1-Nonane (<i>n</i> -Nonane)	55.400	595.65	1.3027	219.63	595.65	22.43
11	C ₈ H ₁₆	1-Octene	54.040	566.60	1.2468	171.45	566.60	21.29
12	C ₃ H ₈ O	1-Propanol (<i>n</i> -Propanol)	66.660	536.71	1.2222	283.15	536.71	24.74
13	C ₂ H ₄ O	Acetaldehyde	67.660	476.00	1.1940	150.15	461.00	19.53
14	C ₂ H ₄ O ₂	Acetic acid	57.050	592.71	1.0703	289.81	592.71	26.99
15	C ₄ H ₆ O ₃	Acetic anhydride	80.370	569.15	1.2420	200.15	569.15	31.98
16	C ₃ H ₆ O	Acetone	62.200	508.20	1.1240	178.45	508.20	23.04
17	C ₃ H ₄ O ₂	Acrylic acid	65.495	615.00	1.2549	286.65	615.00	28.50
18	C ₆ H ₇ N	Aniline	77.260	699.00	1.0800	267.13	699.00	42.38
19	C ₆ H ₆	Benzene	71.950	562.16	1.2389	278.68	562.16	28.21
20	C ₄ H ₈ O ₂	Butyric acid	56.230	628.00	1.1930	267.95	628.00	26.08
21	CS ₂	Carbon disulfide	79.590	552.00	1.1909	161.11	552.00	19.72
22	CO ₂	Carbon dioxide	79.970	304.19	1.2617	216.58	304.19	0.57
23	CO	Carbon monoxide	27.959	132.92	1.1330	68.15	132.92	–
24	CCl ₄	Carbon tetrachloride	66.750	556.35	1.2140	250.33	556.35	26.29
25	Cl ₂	Chlorine	67.560	417.15	1.0850	172.12	417.15	17.32
26	CHCl ₃	Chloroform	69.284	536.40	1.1761	209.63	536.40	26.68
27	C ₆ H ₁₂	Cyclohexane	66.097	553.54	1.2553	279.69	553.54	24.65
28	C ₆ H ₁₂ O	Cyclohexanol	65.400	625.15	1.0360	296.60	625.15	3.42
29	C ₃ H ₆	Cyclopropane	74.254	397.91	1.2599	145.59	397.91	12.99
30	CH ₂ Cl ₂	Dichloromethane	88.570	510.00	1.2800	178.01	510.00	28.77
31	C ₄ H ₁₀ O	Diethyl ether	57.356	466.70	1.2280	156.85	466.70	16.42
32	C ₅ H ₁₀ O	Diethyl ketone	54.700	560.95	1.0560	234.18	560.95	24.56
33	C ₂ H ₇ N	Dimethylamine	56.215	437.65	1.0807	180.96	437.65	16.34
34	C ₂ H ₆	Ethane	48.984	305.42	1.2065	90.35	305.42	0.54
35	C ₂ H ₆ O	Ethanol	67.036	516.25	1.2222	273.15	516.25	23.39
36	C ₄ H ₈ O ₂	Ethyl acetate	59.870	523.30	1.1220	189.60	523.30	23.24
37	C ₂ H ₅ Cl	Ethyl chloride	57.652	460.35	1.0880	134.80	460.35	18.53
38	C ₈ H ₁₀	Ethylbenzene	65.700	617.05	1.2780	225.30	617.05	28.26
39	C ₂ H ₄	Ethylene	52.940	282.36	1.2784	103.97	282.36	–
40	C ₂ H ₆ O ₂	Ethylene glycol	106.491	645.00	1.2222	260.15	645.00	49.89
41	C ₂ H ₄ O	Ethylene oxide	74.730	469.15	1.1410	160.71	469.15	23.63
42	F ₂	Fluorine	40.040	144.31	1.2266	53.53	144.31	22.68
43	C ₃ H ₈ O ₃	Glycerol	124.793	723.00	1.2222	291.33	723.00	65.16
44	H ₂	Hydrogen	5.336	33.18	1.0622	13.95	33.18	2.99
45	HCl	Hydrogen chloride	85.200	324.65	1.2970	158.97	324.65	3.30
46	CHN	Hydrogen cyanide	52.256	456.65	1.0198	259.83	456.65	17.76
47	H ₂ O ₂	Hydrogen peroxide	141.031	730.15	1.2222	272.72	730.15	74.26
48	C ₄ H ₁₀	<i>i</i> -Butane (<i>iso</i> -Butane)	52.165	408.14	1.2723	113.54	408.14	9.84
49	CH ₄	Methane	35.684	190.58	1.0920	90.67	190.58	–
50	CH ₄ O	Methanol	68.329	512.58	1.2222	273.10	512.58	23.55
51	CH ₃ Br	Methyl bromide	83.795	467.00	1.2222	179.47	467.00	24.17

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TABLE C-8--(continued)

$\sigma = A(1 - T/T_c)^n$								
No.	Formula	Substance	A	T_c	n	T_{\min}	T_{\max}	σ at 25° C
52	CH ₃ Cl	Methyl chloride	68.594	416.25	1.1966	175.43	416.25	15.19
53	C ₆ H ₁₂ O	Methyl isobutyl ketone	57.130	571.40	1.2040	189.15	571.40	23.50
54	CH ₅ N	Methylamine	85.600	430.05	1.2556	179.69	430.05	19.41
55	C ₈ H ₁₀	<i>m</i> -Xylene	65.700	617.05	1.2780	225.30	617.05	28.26
56	C ₁₀ H ₈	Naphthalene	83.190	748.35	1.3896	353.43	748.35	–
57	C ₄ H ₁₀	<i>n</i> -Butane	52.660	425.18	1.2330	134.86	425.18	11.87
58	C ₁₀ H ₂₂	<i>n</i> -Decane	55.777	618.45	1.3198	243.49	618.45	23.41
59	C ₇ H ₁₆	<i>n</i> -Heptane	53.640	540.26	1.2431	182.56	540.26	19.78
60	C ₆ H ₁₄	<i>n</i> -Hexane	56.081	507.43	1.2843	177.84	507.43	17.98
61	C ₆ H ₅ NO ₂	Nitrobenzene	79.440	719.00	1.1362	278.91	719.00	43.23
62	C ₉ H ₂₀	<i>n</i> -Nonane	55.400	595.65	1.3027	219.63	595.65	22.43
63	C ₈ H ₁₈	<i>n</i> -Octane	52.036	568.83	1.2168	216.38	568.83	21.08
64	C ₅ H ₁₂	<i>n</i> -Pentane	52.090	469.65	1.2054	143.42	469.65	15.47
65	C ₈ H ₁₀	<i>o</i> -Xylene	66.100	630.37	1.2544	247.98	630.37	29.60
66	C ₆ H ₆ O	Phenol	74.500	694.25	1.0767	314.06	694.25	–
67	C ₈ H ₁₀	<i>p</i> -Xylene	64.850	616.26	1.2743	286.41	616.26	27.92
68	C ₅ H ₅ N	Pyridine	81.500	619.95	1.2160	231.51	619.95	36.72
69	C ₈ H ₈	Styrene	68.178	648.00	1.2222	273.15	648.00	32.10
70	C ₇ H ₈	Toluene	66.850	591.79	1.2456	178.18	591.79	27.93
71	C ₄ H ₆ O ₂	Vinyl acetate	68.685	524.00	1.2500	180.35	524.00	23.99
72	H ₂ O	Water	132.674	647.13	0.9550	273.15	647.13	73.56
σ – surface tension, dyn/cm – surface tension, dyn/cm								
A, T_c , and n – regression coefficients for chemical compound								
T – temperature, K								
T_{\min} – minimum temperature, K								
T_{\max} – maximum temperature, K								

TABLE C-9 Vapor Pressure

$\log_{10} P_v = A + B/T + C \log_{10} T + DT + ET^2$									
No .	Formula	Substance	A	B	C	D	E	T_{\min}	T_{\max}
1	C ₂ H ₃ Cl ₃	1,1,1-Trichloroethane	36.5468	-2.8421E+03	-1.0205E+01	-2.6369E-09	3.7075E-06	242.75	545.00
2	C ₂ H ₃ Cl ₃	1,1,2-Trichloroethane	25.0845	-2.7368E+03	-5.9182E+00	2.5155E-01	1.1831E-06	236.50	602.00
3	C ₂ H ₄ Cl ₂	1,1-Dichloroethane	33.3800	-2.6102E+03	-9.1336E+00	-2.8388E-11	3.7323E-06	176.19	523.00
4	C ₂ H ₄ Cl ₂	1,2-Dichloroethane	48.4226	-3.1803E+03	-1.5370E+01	7.2935E-03	2.6844E-14	237.49	561.00
5	C ₄ H ₆	1,3-Butadiene	30.0572	-1.9891E+03	-8.2922E+00	2.5664E-10	5.1334E-06	164.25	425.37
6	C ₄ H ₈ O ₂	1,4-Dioxane	20.5761	-2.4658E+03	-4.3645E+00	-2.7053E-10	8.5235E-07	284.95	587.00
7	C ₄ H ₁₀ O	1-Butanol (<i>n</i> -Butanol)	39.6673	-4.0017E+03	-1.0295E+01	-3.2572E-10	8.6672E-07	183.85	562.93
8	C ₄ H ₈	1-Butene	27.3116	-1.9235E+03	-7.2064E+00	7.4852E-12	3.6481E-06	87.80	419.59
9	C ₁₀ H ₂₀	1-Decene	2.2678	-3.1244E+03	5.4320E+00	-2.0137E-02	1.1221E-05	206.89	617.05
10	C ₉ H ₂₀	1-Nonane (<i>n</i> -Nonane)	8.8817	-2.8042E+03	1.5262E+00	-1.0464E-02	5.7972E-06	219.63	595.65
11	C ₈ H ₁₆	1-Octene	56.1183	-3.7657E+03	-1.8006E+01	7.7387E-03	-1.3036E-13	171.45	566.60
12	C ₃ H ₈ O	1-Propanol (<i>n</i> -Propanol)	31.5155	-3.4570E+03	-7.5235E+00	-4.2870E-11	1.3029E-07	146.95	536.71
13	C ₂ H ₄ O	Acetaldehyde	87.3702	-3.6822E+03	-3.1548E+01	2.0114E-02	5.5341E-13	150.15	461.00
14	C ₂ H ₄ O ₂	Acetic acid	28.3756	-2.9734E+03	-7.0320E+00	-1.5051E-09	2.1806E-06	289.81	592.71
15	C ₄ H ₆ O ₃	Acetic anhydride	43.5021	-3.8643E+03	-1.2162E+01	-2.1843E-09	3.3250E-06	200.15	448.15
16	C ₃ H ₆ O	Acetone	28.5884	-2.4690E+03	-7.3510E+00	2.8025E-10	2.7361E-06	178.45	508.20
17	C ₃ H ₄ O ₂	Acrylic acid	23.0607	-3.1347E+03	-4.8813E+00	4.3690E-04	-4.9161E-13	286.65	615.00
18	NH ₃	Ammonia	37.1575	-2.0277E+03	-1.1601E+01	7.4625E-03	-9.5811E-12	195.41	605.65
19	C ₆ H ₇ N	Aniline	124.3764	-7.1676E+03	-4.2763E+01	1.7336E-02	5.7138E-15	267.13	699.00
20	C ₆ H ₆	Benzene	31.7718	-2.7254E+03	-8.4443E+00	-5.3534E-09	2.7187E-06	276.68	562.16
21	C ₄ H ₈ O ₂	Butyric acid	8.0847	-3.3219E+03	2.4312E+00	-1.1734E-02	5.7992E-06	267.95	628.00
22	CS ₂	Carbon disulfide	25.1475	-2.0439E+03	-6.7794E+00	3.4828E-03	-1.0105E-14	161.58	552.00
23	CO ₂	Carbon dioxide	35.0169	-1.5119E+03	-1.1334E+01	9.3368E-03	1.7136E-09	216.58	304.19
24	CO	Carbon monoxide	51.8145	-7.8824E+02	-2.2734E+01	5.1225E-02	6.1896E-11	68.15	132.92
25	CCl ₄	Carbon tetrachloride	31.9407	-2.6614E+03	-8.5763E+00	-6.7136E-10	2.9732E-06	250.33	556.35
26	Cl ₂	Chlorine	28.8659	-1.6745E+03	-8.5216E+00	5.3792E-03	-7.7867E-13	172.12	417.15
27	CHCl ₃	Chloroform	56.6178	-3.2462E+03	-1.8700E+01	9.5150E-03	1.553E-12	209.63	536.40
28	C ₆ H ₁₂	Cyclohexane	48.5529	-3.0874E+03	-1.5521E+01	7.3830E-03	6.3563E-12	279.69	553.54
29	C ₆ H ₁₂ O	Cyclohexanol	49.9123	-4.8446E+03	-1.3711E+01	3.5451E-09	1.5932E-06	296.60	625.15
30	C ₃ H ₆	Cyclopropane	37.8180	-1.8661E+03	-1.2278E+01	8.5721E-03	-2.9652E-13	145.59	397.91
31	CH ₂ Cl ₂	Dichloromethane	32.5609	-2.5166E+03	-8.8015E+00	1.2934E-10	3.194E-06	178.01	510.00
32	C ₄ H ₁₀ O	Diethyl ether	41.7519	-2.7410E+03	-1.2270E+01	-3.1948E-10	5.9802E-06	156.85	466.70
33	C ₅ H ₁₀ O	Diethyl ketone	32.2560	-2.9431E+03	-8.5068E+00	-4.5720E-10	2.6177E-06	234.18	560.95
34	C ₂ H ₇ N	Dimethylamine	36.9182	-2.4965E+03	-1.0417E+01	-1.6287E-09	4.6496E-06	180.96	437.65
35	C ₂ H ₆	Ethane	20.6973	-1.341E+03	-5.2514E+00	-9.8774E-11	6.7329E-06	90.35	305.42
36	C ₂ H ₆ O	Ethanol	23.8442	-2.8642E+03	-5.0474E+00	3.7448E-11	2.7361E-07	159.05	516.25
37	C ₄ H ₈ O ₂	Ethyl acetate	0.6955	-2.2498E+03	5.4643E+00	-1.9451E-02	1.2362E-05	189.60	523.30
38	C ₂ H ₅ Cl	Ethyl chloride	28.3448	-2.0788E+03	-7.5387E+00	-1.6384E-11	4.0550E-06	136.75	460.35
39	C ₈ H ₁₀	Ethylbenzene	36.1998	-3.3402E+03	-9.7970E+00	-1.1467E-11	2.5758E-06	178.15	617.17
40	C ₂ H ₄	Ethylene	18.7964	-9.9962E+02	-4.5788E+00	9.9746E-11	6.7880E-06	104.01	282.36
41	C ₂ H ₆ O ₂	Ethylene glycol	82.4062	-6.3472E+03	-2.5433E+01	-2.3732E-09	8.7467E-06	260.15	645.00
42	C ₂ H ₄ O	Ethylene oxide	39.9235	-2.3595E+03	-1.2517E+01	6.9835E-03	-1.1101E-13	160.71	469.15
43	F ₂	Fluorine	27.1409	-5.7201E+02	-1.0015E+01	2.1078E-02	8.9567E-13	53.48	144.31
44	C ₃ H ₈ O ₃	Glycerol	-62.7929	-3.6585E+03	3.4249E+01	-5.1940E-02	2.2830E-05	291.33	723.00
45	H ₂	Hydrogen	3.4132	-4.1316E+01	1.0947E+00	-6.6896E-10	1.4589E-04	13.95	33.18
46	HCl	Hydrogen chloride	43.5455	-1.6279E+03	-1.5214E+01	1.3783E-02	-1.4984E-11	158.97	324.65
47	CHN	Hydrogen cyanide	-57.5717	-3.5182E+02	2.9640E+01	-4.7820E-02	2.8550E-05	259.91	456.65
48	H ₂ O ₂	Hydrogen peroxide	33.3222	-3.7350E+03	-8.3458E+00	-1.2351E-10	1.6917E-06	272.74	730.15
49	C ₄ H ₁₀	<i>i</i> -Butane (<i>iso</i> -Butane)	31.2541	-1.9532E+03	-8.8060E+00	8.9246E-11	5.7501E-06	113.54	408.14
50	CH ₄	Methane	14.6667	-5.7097E+02	-3.3373E+00	2.1999E-09	1.3096E-05	90.67	190.58
51	CH ₄ O	Methanol	45.6171	-3.2447E+03	-1.3988E+01	6.6365E-03	-1.0507E-13	175.47	512.58

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TABLE C-9—(continued)

$\log_{10} P_v = A + B/T + C \log_{10} T + DT + ET^2$									
No.	Formula	Substance	A	B	C	D	E	T_{\min}	T_{\max}
52	CH ₃ Br	Methyl bromide	29.3988	-2.0406E+03	-7.9966E+00	-4.1899E-10	5.0174E-06	179.47	467.00
53	CH ₃ Cl	Methyl chloride	25.7264	-1.7503E+03	-6.7151E+00	-1.2956E-09	4.4341E-06	175.43	416.25
54	C ₆ H ₁₂ O	Methyl isobutyl ketone	64.1919	-4.3577E+03	-1.9766E+01	-3.9997E-10	7.1020E-06	189.15	571.40
55	CH ₅ N	Methylamine	30.5366	-2.2074E+03	-8.0919E+00	-2.7828E-11	3.5234E-06	179.69	430.05
56	C ₈ H ₁₀	<i>m</i> -Xylene	34.6803	-3.2981E+03	-9.2570E+00	-4.3563E-10	2.4103E-06	225.30	617.05
57	C ₁₀ H ₈	Naphthalene	34.9161	-3.9357E+03	-9.0648E+00	-2.0672E-09	1.5550E-06	353.43	748.35
58	C ₄ H ₁₀	<i>n</i> -Butane	27.0441	-1.9049E+03	-7.1805E+05	-6.6845E-11	4.2190E-06	134.86	425.18
59	C ₁₀ H ₂₂	<i>n</i> -Decane	26.5125	-3.3584E+03	-6.1174E+00	-3.3225E-10	4.8554E-07	243.49	618.45
60	C ₇ H ₁₆	<i>n</i> -Heptane	65.0257	-3.8188E+03	-2.1684E+01	1.0387E-02	1.0206E-14	182.56	540.26
61	C ₆ H ₁₄	<i>n</i> -Hexane	69.7378	-3.6278E+03	-2.3927E+01	1.2810E-02	-1.6844E-13	177.84	507.43
62	C ₆ H ₅ NO ₂	Nitrobenzene	-54.4937	-2.1123E+03	2.9321E+01	-4.4839E-02	2.0162E-05	278.91	719.00
63	N ₂	Nitrogen	23.8572	-4.7668E+02	-8.6689E+00	2.0128E-02	-2.4139E-11	63.15	126.10
64	C ₉ H ₂₀	<i>n</i> -Nonane	8.8817	-2.8042E+03	1.5262E+00	-1.0464E-02	5.7972E-06	219.63	595.65
65	C ₈ H ₁₈	<i>n</i> -Octane	29.0948	-3.0114E+03	-7.2653E+00	-2.2696E-11	1.4680E-06	216.38	568.83
66	C ₅ H ₁₂	<i>n</i> -Pentane	33.3239	-2.4227E+03	-9.2354E+00	9.0199E-11	4.1050E-06	143.42	469.65
67	O ₂	Oxygen	20.6695	-5.2697E+02	-6.7062E+00	1.2926E-02	-9.8832E-13	54.35	154.58
68	C ₈ H ₁₀	<i>o</i> -Xylene	37.2413	-3.4573E+03	-1.0126E+01	9.0676E-11	2.6123E-06	247.98	630.37
69	C ₆ H ₆ O	Phenol	23.5332	-3.4961E+03	-4.8990E+00	1.2160E-04	9.6537E-13	314.06	694.25
70	C ₈ H ₁₀	<i>p</i> -Xylene	60.0531	-4.0159E+03	-1.9441E+01	8.2881E-03	-2.3647E-12	286.41	616.26
71	C ₅ H ₅ N	Pyridine	33.5541	-3.1318E+03	-8.8646E+00	7.1293E-12	2.2813E-06	231.51	619.95
72	C ₈ H ₈	Styrene	55.8621	-4.0240E+03	-1.7609E+01	6.6842E-03	1.9438E-13	242.54	648.00
73	SO ₂	Sulfur dioxide	19.7418	-1.8132E+03	-4.1458E+00	-4.4284E-09	8.4918E-07	197.67	430.75
74	C ₇ H ₈	Toluene	34.0775	-3.0379E+03	-9.1635E+00	1.0289E-11	2.7035E-06	178.18	591.79
75	C ₄ H ₆ O ₂	Vinyl acetate	12.7220	-2.1770E+03	-9.1458E-01	-4.5688E-03	2.9673E-06	180.35	524.00
76	H ₂ O	Water	29.8605	-3.1522E+03	-7.3037E+00	2.4247E-09	1.8090E-06	273.16	647.13
P_v – vapor pressure, mmHg									
A, B, C, D, and E – regression coefficients for chemical compound									
T – temperature, K									
T_{\min} – minimum temperature, K									
T_{\max} – maximum temperature, K									

TABLE C-10 Enthalpy of Vaporization

$\Delta H_v = A (1 - T/T_c)^n$									
No.	Formula	Substance	A	T_c	n	T_{min}	T_{max}	T_B	ΔH_v at T_B
1	C ₂ H ₃ Cl ₃	1,1,1-Trichloroethane	44.083	545.00	0.385	242.75	545.00	347.23	29.84
2	C ₂ H ₃ Cl ₃	1,1,2-Trichloroethane	46.865	602.00	0.294	236.50	602.00	387.00	34.62
3	C ₂ H ₄ Cl ₂	1,1-Dichloroethane	42.180	523.00	0.367	176.19	523.00	330.45	29.23
4	C ₂ H ₄ Cl ₂	1,2-Dichloroethane	45.426	561.00	0.342	237.49	561.00	356.59	32.16
5	C ₄ H ₆	1,3-Butadiene	35.170	425.37	0.448	200.00	425.37	266.74	22.48
6	C ₄ H ₈ O ₂	1,4-Dioxane	36.047	587.00	0.049	340.00	587.00	374.47	34.30
7	C ₄ H ₁₀ O	1-Butanol (<i>n</i> -Butanol)	63.024	562.93	0.318	220.00	562.93	390.81	43.24
8	C ₄ H ₈	1-Butene	33.390	419.59	0.393	87.80	419.59	266.90	22.44
9	C ₁₀ H ₂₀	1-Decene	65.577	617.05	0.402	206.89	617.05	443.75	39.36
10	C ₉ H ₂₀	1-Nonane (<i>n</i> -Nonane)	59.378	595.65	0.377	219.63	595.65	423.97	37.15
11	C ₈ H ₁₆	1-Octene	55.443	566.60	0.401	171.45	566.60	394.44	34.39
12	C ₃ H ₈ O	1-Propanol (<i>n</i> -Propanol)	70.179	536.71	0.451	146.95	536.71	370.35	41.38
13	C ₂ H ₄ O	Acetaldehyde	44.950	461.00	0.594	150.15	461.00	293.55	24.63
14	C ₂ H ₄ O ₂	Acetic acid	11.575	592.71	-0.650	289.81	391.05	391.05	23.33
15	C ₄ H ₆ O ₃	Acetic anhydride	58.520	569.15	0.280	200.15	569.15	411.78	40.83
16	C ₃ H ₆ O	Acetone	49.244	508.20	0.481	260.00	508.20	392.44	29.79
17	C ₃ H ₄ O ₂	Acrylic acid	62.977	615.00	0.351	286.65	615.00	414.15	42.52
18	NH ₃	Ammonia	31.523	405.65	0.364	195.41	405.65	239.72	22.77
19	C ₆ H ₇ N	Aniline	72.038	699.00	0.459	267.13	699.00	457.60	44.22
20	C ₆ H ₆	Benzene	49.888	562.16	0.489	278.68	562.16	353.24	30.75
21	C ₄ H ₈ O ₂	Butyric acid	18.437	628.00	-0.757	320.00	436.42	436.42	45.29
22	CS ₂	Carbon disulfide	34.997	552.00	0.299	161.11	552.00	270.65	28.61
23	CO ₂	Carbon dioxide	15.326	304.19	0.227	216.58	304.19	194.67	-
24	CO	Carbon monoxide	8.003	132.92	0.318	68.15	132.92	81.70	5.91
25	CCl ₄	Carbon tetrachloride	37.890	556.35	0.241	250.33	556.35	349.79	29.84
26	Cl ₂	Chlorine	28.560	417.15	0.401	172.12	417.15	239.12	20.29
27	CHCl ₃	Chloroform	42.953	536.40	0.375	209.63	536.40	334.33	29.79
28	C ₆ H ₁₂	Cyclohexane	49.060	553.54	0.486	279.69	553.54	353.87	29.89
29	C ₆ H ₁₂ O	Cyclohexanol	85.741	625.15	0.527	296.60	625.15	434.00	45.92
30	C ₃ H ₆	Cyclopropane	28.060	397.91	0.361	145.59	397.91	240.37	20.08
31	CH ₂ Cl ₂	Dichloromethane	41.910	510.00	0.410	178.01	510.00	312.90	28.38
32	C ₄ H ₁₀ O	Diethyl ether	41.972	466.70	0.407	156.85	466.70	307.58	27.09
33	C ₅ H ₁₀ O	Diethyl ketone	49.640	560.95	0.354	234.18	560.95	375.14	33.57
34	C ₂ H ₇ N	Dimethylamine	41.070	437.65	0.424	180.96	437.65	280.03	26.64
35	C ₂ H ₆	Ethane	21.342	305.42	0.403	90.35	305.42	184.55	14.69
36	C ₂ H ₆ O	Ethanol	43.122	516.25	0.079	300.00	516.25	351.44	39.40
37	C ₄ H ₈ O ₂	Ethyl acetate	49.346	523.30	0.385	189.60	523.30	350.21	32.23
38	C ₂ H ₅ Cl	Ethyl chloride	35.233	460.35	0.365	134.80	460.35	285.42	24.75
39	C ₈ H ₁₀	Ethylbenzene	54.788	617.17	0.388	178.15	617.17	409.35	35.91
40	C ₂ H ₄	Ethylene	19.986	282.36	0.431	103.97	282.36	169.47	13.46
41	C ₂ H ₆ O ₂	Ethylene glycol	88.200	645.00	0.397	260.15	645.00	470.45	52.49
42	C ₂ H ₄ O	Ethylene oxide	36.474	469.15	0.377	160.71	469.15	283.85	25.70
43	F ₂	Fluorine	10.549	144.31	0.546	53.48	144.31	84.95	6.50
44	C ₃ H ₈ O ₃	Glycerol	104.153	723.00	0.301	291.33	723.00	563.15	66.13
45	H ₂	Hydrogen	0.659	33.18	0.380	13.95	33.18	20.39	0.46
46	HCl	Hydrogen chloride	30.540	324.65	0.647	158.97	324.65	188.15	17.43
47	CHN	Hydrogen cyanide	42.384	456.65	0.428	259.83	456.65	298.85	26.90
48	H ₂ O ₂	Hydrogen peroxide	61.900	730.15	0.325	272.74	730.15	423.35	46.72
49	C ₄ H ₁₀	<i>i</i> -Butane (<i>iso</i> -Butane)	31.954	408.14	0.392	113.54	408.14	261.43	21.40
50	CH ₄	Methane	10.312	190.58	0.265	90.67	190.58	111.66	8.16
51	CH ₄ O	Methanol	52.723	512.58	0.377	175.47	512.58	337.85	35.14

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TABLE C-10—(continued)

$\Delta H_v = A (1 - T/T_c)^n$									
No.	Formula	Substance	A	T_c	n	T_{min}	T_{max}	T_B	ΔH_v at T_B
52	CH ₃ Br	Methyl bromide	32.009	467.00	0.308	179.47	467.00	276.71	24.28
53	CH ₃ Cl	Methyl chloride	32.534	416.25	0.452	175.43	416.25	248.93	21.55
54	C ₆ H ₁₂ O	Methyl isobutyl ketone	57.680	571.40	0.416	189.15	571.40	389.65	35.82
55	CH ₅ N	Methylamine	38.656	430.05	0.405	179.69	430.05	266.82	26.11
56	C ₈ H ₁₀	<i>m</i> -Xylene	60.216	617.05	0.458	225.30	617.05	412.27	36.33
57	C ₁₀ H ₈	Naphthalene	76.150	748.35	0.526	353.46	748.35	491.14	43.42
58	C ₄ H ₁₀	<i>n</i> -Butane	33.020	425.18	0.377	134.86	425.18	272.65	22.44
59	C ₁₀ H ₂₂	<i>n</i> -Decane	71.428	618.45	0.451	243.49	618.45	447.30	40.02
60	C ₇ H ₁₆	<i>n</i> -Heptane	49.730	540.26	0.386	182.56	540.26	371.58	31.73
61	C ₆ H ₁₄	<i>n</i> -Hexane	45.610	507.43	0.401	177.84	507.43	341.88	29.11
62	C ₆ H ₅ NO ₂	Nitrobenzene	67.414	719.00	0.380	278.91	719.00	483.95	44.08
63	N ₂	Nitrogen	9.430	126.10	0.533	63.15	126.10	77.35	5.68
64	C ₉ H ₂₀	<i>n</i> -Nonane	59.378	595.65	0.377	219.63	595.65	423.97	37.15
65	C ₈ H ₁₈	<i>n</i> -Octane	59.077	568.83	0.439	216.38	568.83	398.83	34.77
66	C ₅ H ₁₂	<i>n</i> -Pentane	39.854	469.65	0.398	143.42	469.65	309.22	25.99
67	O ₂	Oxygen	8.040	154.58	0.201	54.35	154.58	90.17	6.74
68	C ₈ H ₁₀	<i>o</i> -Xylene	55.606	630.37	0.375	247.98	630.37	417.58	37.00
69	C ₆ H ₆ O	Phenol	77.397	694.25	0.462	314.06	694.25	454.99	47.31
70	C ₈ H ₁₀	<i>p</i> -Xylene	52.910	616.26	0.354	286.41	616.26	411.51	35.82
71	C ₅ H ₅ N	Pyridine	53.461	619.95	0.408	231.51	619.95	388.41	35.77
72	C ₈ H ₈	Styrene	65.327	648.00	0.558	350.00	648.00	418.31	36.62
73	SO ₂	Sulfur dioxide	46.900	430.75	0.636	197.67	430.75	263.13	25.72
74	C ₇ H ₈	Toluene	50.139	591.79	0.383	178.18	591.79	383.78	33.59
75	C ₄ H ₆ O ₂	Vinyl acetate	45.805	524.00	0.353	180.35	524.00	345.65	31.31
76	H ₂ O	Water	52.053	647.13	0.321	273.16	647.13	373.15	39.50
ΔH_v – enthalpy of vaporization, kJ/mol									
A, T_c , and n – regression coefficients of chemical compound									
T – temperature, K									
T_{min} – minimum temperature, K									
T_{max} – maximum temperature, K									
T_B – boiling temperature, K									

TABLE C-11 Enthalpy of Formation

No.	Formula	Substance	$\Delta H_f^\circ = A + BT + CT^2$			$(\Delta H_f^\circ - \text{kJoule/mol, T - K})$			
			A	B	C	T_{\min}	T_{\max}	ΔH_f° at 298 K	ΔH_f° at 500 K
1	C ₂ H ₃ Cl ₃	1,1,1-Trichloroethane	-136.019	-2.6621E-02	1.7816E-05	298	1000	-142.30	-144.88
2	C ₂ H ₃ Cl ₃	1,1,2-Trichloroethane	-131.466	-2.9213E-02	1.7876E-05	298	1000	-138.49	-141.60
3	C ₂ H ₄ Cl ₂	1,1-Dichloroethane	-119.156	-4.3078E-02	2.2469E-05	298	1000	-129.91	-135.08
4	C ₂ H ₄ Cl ₂	1,2-Dichloroethane	-119.407	-4.0489E-02	1.9654E-05	298	1000	-129.70	-134.74
5	C ₄ H ₆	1,3-Butadiene	123.286	-5.1225E-02	2.3192E-05	298	1000	110.16	103.47
6	C ₄ H ₈ O ₂	1,4-Dioxane	-286.843	-1.1418E-01	6.2626E-05	298	1000	-315.06	-328.28
7	C ₄ H ₁₀ O	1-Butanol (<i>n</i> -Butanol)	-245.806	-1.1235E-01	5.3505E-05	298	1000	-274.43	-288.61
8	C ₄ H ₈	1-Butene	21.822	-8.5458E-02	3.8902E-05	298	1000	-0.13	-11.18
9	C ₁₀ H ₂₀	1-Decene	-72.195	-2.0530E-01	1.0175E-04	298	1000	-124.14	149.40
10	C ₉ H ₂₀	1-Nonane (<i>n</i> -Nonane)	-175.883	-2.1036E-01	1.0501E-04	298	1000	-229.03	-254.91
11	C ₈ H ₁₆	1-Octene	-41.002	-1.6529E-01	8.0839E-05	298	1000	-82.93	-103.44
12	C ₃ H ₇ O	1-Propanol (<i>n</i> -Propanol)	-233.653	-9.2123E-02	4.2848E-05	298	1000	-257.53	-269.30
13	C ₂ H ₄ O	Acetaldehyde	-154.122	-4.7166E-02	2.0279E-05	298	1000	-166.36	-172.64
14	C ₂ H ₄ O ₂	Acetic acid	-422.584	-4.8354E-02	2.3337E-05	298	1000	-434.84	-440.93
15	C ₄ H ₈ O ₃	Acetic anhydride	-554.715	-8.4124E-02	4.3618E-05	298	1000	-575.72	-585.87
16	C ₃ H ₆ O	Acetone	-199.175	-7.1484E-02	3.2534E-05	298	1000	-217.57	-226.78
17	C ₃ H ₄ O ₂	Acrylic acid	-325.038	-4.4058E-02	2.0926E-05	298	1000	-336.23	-341.84
18	C ₆ H ₇ N	Aniline	105.261	-7.3513E-02	3.7553E-05	298	1000	86.86	77.89
19	C ₆ H ₆	Benzene	101.403	-7.2136E-02	3.2877E-05	298	1000	82.93	73.55
20	C ₄ H ₈ O ₂	Butyric acid	-448.775	-8.5107E-02	4.2361E-05	298	1000	-470.28	-480.74
21	CS ₂	Carbon disulfide	137.658	-8.1634E-02	4.2246E-05	389	717	117.07	107.40
22	CO ₂	Carbon dioxide	-393.422	1.5913E-04	-1.3945E-06	298	1000	-393.51	-393.69
23	CO	Carbon monoxide	-112.190	8.1182E-03	-8.0425E-06	298	1000	-110.54	-110.14
24	CCl ₄	Carbon tetrachloride	-103.244	9.0605E-03	9.5332E-07	298	1000	-100.42	-98.48
25	CHCl ₃	Chloroform	-98.906	-1.0149E-02	7.1513E-06	298	1000	-101.25	-102.19
26	C ₆ H ₁₂	Cyclohexane	-81.822	-1.6705E-01	9.2830E-05	298	1000	-123.14	-142.14
27	C ₆ H ₁₂ O	Cyclohexanol	-255.672	-1.5846E-01	9.1123E-05	298	1000	-294.55	-312.12
28	C ₃ H ₆	Cyclopropane	71.797	-7.2889E-02	3.4947E-05	298	1000	53.30	44.09
29	CH ₂ Cl ₂	Dichloromethane	-88.943	-2.5399E-02	1.2304E-05	298	1000	-95.40	-98.57
30	C ₄ H ₁₀ O	Diethyl ether	-223.739	-1.1173E-01	5.3459E-05	298	1000	-252.21	-266.24
31	C ₅ H ₁₀ O	Diethyl ketone	-230.936	-1.1046E-01	5.2823E-05	298	1000	-259.20	-272.96
32	C ₂ H ₇ N	Dimethylamine	2.793	-8.5680E-02	4.2790E-05	298	1000	-18.83	-29.35
33	C ₂ H ₆	Ethane	-66.735	-6.9337E-02	3.0379E-05	298	1000	-84.68	-93.81
34	C ₂ H ₆ O	Ethanol	-216.961	-6.9572E-02	3.1744E-05	298	1000	-234.81	-243.81
35	C ₄ H ₈ O ₂	Ethyl acetate	-420.199	-8.9885E-02	4.4497E-05	298	1000	-442.92	-454.02
36	C ₂ H ₅ Cl	Ethyl chloride	-96.985	-5.7861E-02	2.7636E-05	298	1000	-111.71	-119.01
37	C ₈ H ₁₀	Ethylbenzene	58.099	-1.1129E-01	5.3183E-05	298	1000	29.79	15.75
38	C ₂ H ₄	Ethylene	63.053	-4.1076E-02	1.6598E-05	298	1000	52.30	46.66
39	C ₂ H ₆ O ₂	Ethylene glycol	-377.811	-4.5844E-02	2.3144E-05	298	1000	-389.32	-394.95
40	C ₂ H ₄ O	Ethylene oxide	-38.880	-5.4041E-02	2.5601E-05	298	1000	-52.63	-59.50
41	C ₃ H ₈ O ₃	Glycerol	-559.438	-9.2185E-02	4.5003E-05	298	1000	-582.80	-594.28
42	CHN	Hydrogen cyanide	135.847	-2.1831E-03	-4.3739E-07	298	1000	135.14	134.65
43	C ₄ H ₁₀	<i>i</i> -Butane (iso-Butane)	-106.746	-1.0929E-01	5.2693E-05	298	1000	-134.52	-148.22
44	CH ₄	Methane	-63.425	-4.3355E-02	1.7220E-05	298	1000	-74.85	-80.80
45	CH ₄ O	Methanol	-188.188	-4.9823E-02	2.0791E-05	298	1000	-201.17	-207.90
46	CH ₃ Br	Methyl bromide	-44.104	-3.5166E-02	1.5043E-05	333	1000	-37.66	-57.93
47	CH ₃ Cl	Methyl chloride	-76.576	-3.7541E-02	1.6128E-05	298	1000	-86.32	-91.31
48	C ₆ H ₁₂ O	Methyl isobutyl ketone	-256.000	-1.2779E-01	6.2353E-05	298	1000	-288.49	-304.30

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TABLE C-11—(continued)

$\Delta H_f^\circ = A + BT + CT^2$			$(\Delta H_f^\circ - \text{kJoule/mol, } T - \text{K})$						
No.	Formula	Substance	A	B	C	T_{\min}	T_{\max}	ΔH_f° at 298 K	ΔH_f° at 500 K
49	CH ₅ N	Methylamine	-7.489	-6.0538E-02	2.7800E-05	298	1000	-23.01	-30.81
50	C ₈ H ₁₀	<i>m</i> -Xylene	46.618	-1.1480E-01	5.3371E-05	298	1000	17.24	2.56
51	C ₁₀ H ₈	Naphthalene	173.657	-8.9278E-02	4.2685E-05	298	1000	150.96	139.69
52	C ₄ H ₁₀	<i>n</i> -Butane	-98.186	-1.0974E-01	5.2254E-05	298	1000	-126.15	-139.99
53	C ₁₀ H ₂₂	<i>n</i> -Decane	-191.468	-2.3050E-01	1.1559E-04	298	1000	-249.66	-277.82
54	C ₇ H ₁₆	<i>n</i> -Heptane	-144.670	-1.7028E-01	8.4057E-05	298	1000	-187.78	-208.79
55	C ₆ H ₁₄	<i>n</i> -Hexane	-129.114	-1.5013E-01	7.3458E-05	298	1000	-167.19	-185.82
56	C ₆ H ₅ NO ₂	Nitrobenzene	-	-	-	-	-	67.60	-
57	C ₉ H ₂₀	<i>n</i> -Nonane	-175.883	-2.1036E-01	1.0501E-04	298	1000	-229.03	-254.81
58	C ₈ H ₁₈	<i>n</i> -Octane	-160.339	-1.9025E-01	9.4491E-05	298	1000	-208.45	-231.84
59	C ₅ H ₁₂	<i>n</i> -Pentane	-113.399	-1.3001E-01	6.2902E-05	298	1000	-146.44	-162.68
60	C ₈ H ₁₀	<i>o</i> -Xylene	46.756	-1.0824E-01	4.9928E-05	298	1000	19.00	5.12
61	C ₆ H ₆ O	Phenol	-80.956	-6.1053E-02	3.0058E-05	298	1000	-96.36	-103.97
62	C ₈ H ₁₀	<i>p</i> -Xylene	47.806	-1.1644E-01	5.3672E-05	298	1000	17.95	3.01
63	C ₅ H ₅ N	Pyridine	156.938	-6.7082E-02	3.4853E-05	298	1000	140.16	132.11
64	C ₈ H ₈	Styrene	167.879	-8.0354E-02	3.7418E-05	298	1000	147.36	137.06
65	C ₇ H ₈	Toluene	74.320	-9.5998E-02	4.7011E-05	298	1000	50.00	38.07
66	C ₄ H ₆ O ₂	Vinyl acetate	-296.867	-7.5158E-02	3.9850E-05	298	1000	-315.70	-324.48
ΔH_f° —enthalpy of formation of ideal gas, kJoule/mol									
A, B, and C—regression coefficients for chemical compound									
T—temperature, K									
T_{\min} —minimum temperature, K									
T_{\max} —maximum temperature, K									

TABLE C-12 Gibbs Energy of Formation

$\Delta G_f^\circ = A + BT + CT^2$									
No.	Formula	Substance	A	B	C	T_{\min}	T_{\max}	ΔG_f° at 298 K	ΔG_f° at 500 K
1	C ₂ H ₃ Cl ₃	1,1,1-Trichloroethane	-143.436	2.2407E-01	3.9301E-06	298	1000	-76.19	-30.42
2	C ₂ H ₃ Cl ₃	1,1,2-Trichloroethane	-139.616	2.0630E-01	5.9155E-06	298	1000	-77.49	-34.99
3	C ₂ H ₄ Cl ₂	1,1-Dichloroethane	-131.060	1.9006E-01	1.2939E-05	298	1000	-73.09	-32.79
4	C ₂ H ₄ Cl ₂	1,2-Dichloroethane	-130.549	1.8562E-01	1.3775E-05	298	1000	-73.85	-34.29
5	C ₄ H ₆	1,3-Butadiene	109.172	1.3296E-01	1.9003E-05	298	1000	150.67	180.40
6	C ₄ H ₈ O ₂	1,4-Dioxane	-318.550	4.5161E-01	3.0870E-05	298	1000	-180.79	-85.03
7	C ₄ H ₁₀ O	1-Butanol (<i>n</i> -Butanol)	-276.720	4.0989E-01	3.9100E-05	298	1000	-150.67	-62.00
8	C ₄ H ₈	1-Butene	-1.692	2.3442E-01	3.1582E-05	298	1000	71.30	123.42
9	C ₁₀ H ₂₀	1-Decene	-128.709	8.1530E-01	6.7574E-05	298	1000	121.04	295.84
10	C ₉ H ₂₀	1-Nonane (<i>n</i> -Nonane)	-233.826	8.4477E-01	6.8451E-05	298	1000	24.81	205.67
11	C ₈ H ₁₆	1-Octene	-86.500	6.2135E-01	5.5457E-05	298	1000	104.22	238.04
12	C ₃ H ₈ O	1-Propanol (<i>n</i> -Propanol)	-259.317	3.1232E-01	3.3063E-05	298	1000	-162.97	-94.89
13	C ₂ H ₄ O	Acetaldehyde	-167.052	1.0714E-01	1.8665E-05	298	1000	-133.30	-108.82
14	C ₂ H ₄ O ₂	Acetic acid	-435.963	1.9346E-01	1.6362E-05	298	1000	-376.69	-335.14
15	C ₄ H ₆ O ₃	Acetic anhydride	-578.076	3.3162E-01	2.5188E-05	298	1000	-476.68	-405.97
16	C ₃ H ₆ O	Acetone	-218.77	2.1177E-01	2.6619E-05	298	1000	-153.05	-106.24
17	C ₃ H ₄ O ₂	Acrylic acid	-337.271	1.6672E-01	1.5209E-05	298	1000	-286.06	-250.11
18	C ₆ H ₇ N	Aniline	84.822	2.6707E-01	2.2598E-05	298	1000	166.69	224.01
19	C ₆ H ₆	Benzene	81.512	1.5282E-01	2.6522E-05	298	1000	129.66	164.55
20	C ₄ H ₈ O ₂	Butyric acid	-472.274	3.8416E-01	2.7623E-05	298	1000	-355.00	-273.29
21	CS ₂	Carbon disulfide	121.242	-1.9750E-01	5.0587E-05	389	717	66.90	35.14
22	CO ₂	Carbon dioxide	-393.360	-3.8212E-03	1.3322E-06	298	1000	-394.38	-394.94
23	CO	Carbon monoxide	-109.885	-9.2218E-02	1.4547E-06	298	1000	-137.28	-155.63
24	CCl ₄	Carbon tetrachloride	-100.838	1.4561E-01	-8.6766E-06	298	1000	-58.24	-30.20
25	CHCl ₃	Chloroform	-101.846	1.1137E-01	8.6302E-07	298	1000	-68.53	-45.95
26	C ₆ H ₁₂	Cyclohexane	-127.917	5.2032E-01	4.4706E-05	298	1000	31.76	143.42
27	C ₆ H ₁₂ O	Cyclohexanol	-299.464	5.9552E-01	3.9211E-05	298	1000	-117.91	8.10
28	C ₃ H ₆	Cyclopropane	51.643	1.6873E-01	2.4956E-05	298	1000	104.39	142.25
29	CH ₂ Cl ₂	Dichloromethane	-95.965	8.8080E-02	8.5438E-06	298	1000	-68.87	-49.79
30	C ₄ H ₁₀ O	Diethyl ether	-254.382	4.3005E-01	3.8907E-05	298	1000	-122.34	-29.63
31	C ₅ H ₁₀ O	Diethyl ketone	-261.163	4.1025E-01	3.8997E-05	298	1000	-135.06	-46.39
32	C ₂ H ₇ N	Dimethylamine	-20.837	2.8875E-01	2.7736E-05	298	1000	67.99	130.47
33	C ₂ H ₆	Ethane	-85.787	1.6858E-01	2.6853E-05	298	1000	-32.93	5.21
34	C ₂ H ₆ O	Ethanol	-236.103	2.1904E-01	2.5659E-05	298	1000	-168.28	-120.17
35	C ₄ H ₈ O ₂	Ethyl acetate	-444.940	3.8444E-01	2.9614E-05	298	1000	-327.40	-245.32
36	C ₂ H ₅ Cl	Ethyl chloride	-112.949	1.7104E-01	1.9992E-05	298	1000	-60.00	-22.43
37	C ₈ H ₁₀	Ethylbenzene	27.421	3.3327E-01	3.8542E-05	298	1000	130.58	203.69
38	C ₂ H ₄	Ethylene	51.752	4.9338E-02	1.7284E-05	298	1000	68.12	80.74
39	C ₂ H ₆ O ₂	Ethylene glycol	-390.502	2.8378E-01	1.4492E-05	298	1000	-304.47	-244.99
40	C ₂ H ₄ O	Ethylene oxide	-53.838	1.3048E-01	1.8741E-05	298	1000	-13.10	16.09
41	C ₃ H ₈ O ₃	Glycerol	-584.906	4.4735E-01	3.0773E-05	298	1000	-448.49	-353.54
42	CHN	Hydrogen cyanide	135.278	-3.6253E-02	2.3053E-06	298	1000	124.68	117.73
43	CH ₄	Methane	-75.262	7.5925E-02	1.8700E-05	298	1000	-50.84	-32.63
44	CH ₄ O	Methanol	-201.860	1.2542E-01	2.0345E-05	298	1000	-162.51	-134.06
45	CH ₃ Br	Methyl bromide	-55.241	8.0199E-02	1.1207E-05	333	1000	-28.16	-12.34
46	CH ₃ Cl	Methyl chloride	-86.903	7.5722E-02	1.4823E-05	298	1000	-62.89	-45.34
47	C ₆ H ₁₂ O	Methyl isobutyl ketone	-291.134	5.0824E-01	4.3056E-05	298	1000	-135.36	-26.25
48	CH ₃ N	Methylamine	-24.115	1.8179E-01	2.2182E-05	298	1000	32.26	72.32
49	C ₈ H ₁₀	<i>m</i> -Xylene	15.063	3.3452E-01	4.1387E-05	298	1000	118.87	192.67

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TABLE C-12--(continued)

$\Delta G_f^\circ = A + BT + CT^2$									
No.	Formula	Substance	A	B	C	T_{\min}	T_{\max}	ΔG_f° at 298 K	ΔG_f° at 500 K
50	C ₁₀ H ₈	Naphthalene	148.988	2.4014E-01	3.0705E-05	298	1000	223.59	276.74
51	C ₄ H ₁₀	<i>n</i> -Butane	-128.375	3.6047E-01	3.8256E-05	298	1000	-17.15	61.43
52	C ₁₀ H ₂₂	<i>n</i> -Decane	-255.000	9.4201E-01	7.4254E-05	298	1000	33.22	234.57
53	C ₇ H ₁₆	<i>n</i> -Heptane	-191.520	6.5052E-01	5.6444E-05	298	1000	7.99	147.85
54	C ₆ H ₁₄	<i>n</i> -Hexane	-170.447	5.5417E-01	5.0303E-05	298	1000	-0.25	119.21
55	C ₆ H ₅ NO ₂	Nitrobenzene	-	-	-	-	-	158.00	-
56	C ₉ H ₂₀	<i>n</i> -Nonane	-233.826	8.4477E-01	6.8451E-05	298	1000	24.81	205.67
57	C ₈ H ₁₈	<i>n</i> -Octane	-212.692	7.4774E-01	6.2361E-05	298	1000	16.40	176.77
58	C ₅ H ₁₂	<i>n</i> -Pentane	-149.141	4.5748E-01	4.4417E-05	298	1000	-8.37	90.70
59	C ₈ H ₁₀	<i>o</i> -Xylene	17.048	3.3940E-01	3.9428E-05	298	1000	122.09	196.61
60	C ₆ H ₆ O	Phenol	-97.896	2.1140E-01	1.9980E-05	298	1000	-32.89	12.80
61	C ₈ H ₁₀	<i>p</i> -Xylene	15.763	3.3952E-01	4.2301E-05	298	1000	121.13	196.10
62	C ₅ H ₅ N	Pyridine	138.330	1.6730E-01	2.0124E-05	298	1000	190.20	227.01
63	C ₈ H ₈	Styrene	145.657	2.1917E-01	2.8490E-05	298	1000	213.80	262.36
64	C ₇ H ₈	Toluene	47.813	2.3831E-01	3.1916E-05	298	1000	122.01	174.95

ΔG_f° – Gibbs energy of formation of ideal gas, kJ/mol

T – temperature, K

T_{\min} – minimum temperature, K

T_{\max} – maximum temperature, K

TABLE C-13 Solubility of Salt Water

$\log_{10} S = A + BX + CX^2$									
No.	Formula	Substance	M_w	T_B	A	B	C	S at X = 0	S at X = 34,472
1	C ₉ H ₂₀	1-Nonane (Nonane)	128.257	423.81	-0.9136	-3.8600E-06	1.9300E-12	1.2200E-01	9.0290E-02
2	C ₆ H ₆	Benzene	78.113	353.31	3.2443	-3.2714E-06	1.6357E-16	1.7550E+03	1.3540E+03
3	C ₆ H ₁₂	Cyclohexane	84.161	353.90	1.7490	-4.5987E-06	2.2993E-12	5.6100E+01	3.9190E+01
4	C ₈ H ₁₀	Ethylbenzene	106.167	409.17	2.2178	-5.0916E-06	2.5458E-12	1.6510E+02	1.1100E+02
5	C ₈ H ₁₀	<i>m</i> -Xylene	106.67	412.22	2.2405	-6.3514E-06	3.1757E-12	1.7400E+02	1.0600E+02
6	C ₇ H ₁₆	<i>n</i> -Heptane (Heptane)	100.203	371.56	0.3502	-3.8600E-06	1.9300E-12	2.2400E+00	1.6570E+00
7	C ₆ H ₁₄	<i>n</i> -Hexane (Hexane)	86.177	341.93	0.9763	-3.8600E-06	1.9300E-12	9.4700E+00	7.0070E+00
8	C ₉ H ₂₀	<i>n</i> -Nonane (Nonane)	128.257	423.81	-0.9136	-3.8600E-06	1.9300E-12	1.2200E-01	9.0290E-02
9	C ₈ H ₁₈	<i>n</i> -Octane (Octane)	114.230	398.77	-0.3655	-3.8600E-06	1.9300E-12	4.3100E-01	3.1900E-01
10	C ₅ H ₁₂	<i>n</i> -Pentane (Pentane)	72.150	309.22	1.5966	-4.5956E-06	2.2978E-12	3.9500E+01	2.7600E+01
11	C ₈ H ₁₀	<i>o</i> -Xylene	106.167	417.46	2.3441	-6.8318E-06	3.4159E-12	2.2080E+02	1.2960E+02
12	C ₈ H ₁₀	<i>p</i> -Xylene	106.67	411.44	2.3047	-7.6669E-06	3.8335E-12	2.0170E+02	1.1090E+02
13	C ₇ H ₈	Toluene	92.140	383.73	2.7343	-3.8393E-06	1.9196E-12	5.4240E+02	4.0200E+02

S – solubility in salt water at 25° C, parts per million by weight, ppm (wt)

X – concentration of salt (NaCl) in water, parts per million by weight, ppm (wt)

A , B , and C – correlation constants for compound

M_w – molecular weight of compound, g/mol

T_B – boiling point of compound, K

$X = 0$ for water without salt

$X = 34,472$ for sea water

TABLE C-14 Solubility of Organic Compounds in Water as a Function of Temperature

$\log_{10} S = A + B/T + CT^2$									
No.	Formula	Substance	M_w	T_B	A	B	C	S at 25°C	S at 100°C
1	C ₉ H ₂₀	1-Nonane (Nonane)	128.257	423.81	18.222	-11404.793	1.6993E+06	1.2200E-01	7.2870E-01
2	C ₆ H ₆	Benzene	78.113	353.31	11.994	-5214.537	7.76966E+05	1.7550E+03	3.9780E+03
3	C ₆ H ₁₂	Cyclohexane	84.161	353.90	6.403	-2773.806	4.13297E+05	5.6100E+01	8.6640E+01
4	C ₈ H ₁₀	Ethylbenzene	106.167	409.17	13.365	-6643.672	9.89907E+05	1.6510E+02	4.6780E+02
5	C ₈ H ₁₀	<i>m</i> -Xylene	106.167	412.22	14.743	-7451.440	1.11026E+06	1.7400E+02	5.5930E+02
6	C ₇ H ₁₆	<i>n</i> -Heptane (Heptane)	100.203	371.56	12.811	-7426.389	1.10653E+06	2.2400E+00	7.1780E+00
7	C ₆ H ₁₄	<i>n</i> -Hexane (Hexane)	86.177	341.93	10.992	-5969.484	8.89453E+05	9.4700E+00	2.4120E+01
8	C ₉ H ₂₀	<i>n</i> -Nonane (Nonane)	128.257	423.81	18.222	-11404.793	1.69931E+06	1.2200E-01	7.2870E-01
9	C ₈ H ₁₈	<i>n</i> -Octane (Octane)	114.230	398.77	16.865	-10269.143	1.53010E+06	4.3100E-01	2.1560E+00
10	C ₅ H ₁₂	<i>n</i> -Pentane (Pentane)	72.150	309.22	9.036	-4433.922	6.60654E+05	3.9500E+01	7.9120E+01
11	C ₈ H ₁₀	<i>o</i> -Xylene	106.167	417.46	13.112	-6417.607	9.56223E+05	2.2080E+02	6.0390E+02
12	C ₈ H ₁₀	<i>p</i> -Xylene	106.167	411.44	13.731	-6810.190	1.01472E+06	2.0170E+02	5.8610E+02
13	C ₇ H ₈	Toluene	92.140	383.73	15.471	-7591.270	1.13110E+06	5.4240E+02	1.7810E+03
14	C ₅ H ₁₀	Cyclopentane	70.134	322.41	8.665	-3850.808	5.73770E+05	1.6000E+02	2.9240E+02
15	C ₅ H ₁₂	2-Methylbutane (isopentane)	72.150	301.15	9.473	-4645.254	6.92143E+05	4.7800E+01	9.8870E+01
16	C ₆ H ₁₂	Methylcyclopentane	84.161	344.97	12.430	-6436.630	9.59058E+05	4.2640E+01	1.1700E+02
17	C ₇ H ₁₄	Ethylcyclopentane	98.188	376.60	14.360	-7974.533	1.18821E+06	9.5560E+00	3.3310E+01
18	C ₇ H ₁₄	Methylcyclohexane	98.188	374.08	13.091	-7084.522	1.05559E+06	1.6000E+01	4.8570E+01
19	C ₆ H ₁₂	Propylbenzene	120.194	430.17	11.722	-5962.906	8.88473E+05	5.2160E+01	1.3270E+02
20	C ₉ H ₁₂	Cumene	120.194	426.31	13.052	-6766.120	1.00815E+06	5.0000E+01	1.4450E+02
21	C ₉ H ₁₈	Butylcyclopentane	126.241	429.76	20.741	-12579.687	1.87437E+06	4.3080E-01	3.0920E+00
22	C ₆ H ₁₈	Propylcyclohexane	126.241	429.90	18.885	-11356.483	1.69212E+06	6.7730E-01	4.0120E+00
23	C ₁₀ H ₁₄	Butylbenzene	134.221	456.43	9.533	-5001.869	7.45278E+05	1.3820E+01	3.0270E+01
24	C ₁₀ H ₁₄	<i>m</i> -Diethylbenzene	134.221	454.25	10.975	-5686.134	8.47234E+05	2.7230E+01	6.6290E+01
25	C ₁₀ H ₁₄	<i>o</i> -Diethylbenzene	134.221	457.02	10.908	-5686.174	8.47240E+05	2.3320E+01	5.6810E+01
26	C ₁₀ H ₁₄	<i>p</i> -Diethylbenzene	134.221	456.94	10.910	-5686.175	8.47240E+05	2.3420E+01	5.7070E+01
27	C ₁₀ H ₂₂	Decane	142.284	446.86	17.396	-11133.010	1.65882E+06	5.2000E-02	2.9790E-01
28	C ₁₁ H ₁₆	Pentylbenzene	148.247	478.62	9.504	-5316.406	7.92144E+05	3.8400E+00	8.8240E+00
29	C ₁₁ H ₂₂	Pentylcyclohexane	154.295	476.87	22.316	-14034.923	2.09120E+06	5.8500E-02	5.2790E-01
30	C ₁₁ H ₂₄	Undecane	156.311	468.70	28.051	-18123.096	2.70034E+06	4.4000E-03	7.5240E-02
31	C ₁₂ H ₁₈	Hexylbenzene	162.274	499.26	11.076	-6596.944	9.82945E+05	1.0180E+00	2.8590E+00
32	C ₁₂ H ₂₆	Dodecane	170.337	488.61	23.755	-15607.165	2.32547E+06	3.7000E-03	4.2720E-02
33	C ₁₃ H ₂₈	Tridecane	184.364	507.77	22.937	-15279.183	2.27660E+06	2.0000E-03	2.1910E-02
34	C ₁₄ H ₂₂	1-Phenyloctane	190.328	537.56	9.743	-6166.179	9.18761E+05	2.4970E-01	6.5570E-01
35	C ₁₄ H ₃₀	Tetradecane	198.391	526.14	17.765	-12172.057	1.81364E+06	2.2000E-03	1.4810E-02
36	C ₁₅ H ₃₂	Pentadecane	212.418	543.59	18.533	-12808.889	1.90852E+06	1.1000E-03	8.1890E-03
37	C ₁₆ H ₃₄	Hexadecane	226.445	560.50	16.462	-11626.514	1.73235E+06	9.0000E-04	5.5670E-03
38	C ₁₇ H ₃₆	Heptadecane	240.471	576.00	10.581	-8007.275	1.19308E+06	1.4000E-03	4.9080E-03

S – solubility in water, parts per million by weight, ppm (wt)
 T – temperature, K
 A , B , and C – correlation constants for compound
 M_w – molecular weight of compound, g/mol
 T_B – boiling point of compound, K

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TABLE C-15 Henry's Law Constant for Gases in Water as a Function of Temperature

$\log_{10} H = A + B/T + C \log T + DT$											
No.	Formula	Substance	M_w	A	B	C	D	T_{\min}	T_{\max}	H at 25° C	H at T_{\max}
1	Ar	Argon	39.948	65.3235	-3.24690E+03	-2.01398E+01	0.00000E+00	273.15	348.15	39696.1	64077.9
2	CF ₄	Carbon tetrafluoride	88.005	1507.2737	-4.19725E+04	-5.99350E+02	4.09087E-01	273.15	323.15	259777.3	374833.0
3	CH ₄	Methane	16.043	146.8858	-5.76834E+03	-5.19144E+01	1.84936E-02	273.15	360.95	39240.1	64820.5
4	CO	Carbon monoxide	28.010	74.5962	-3.60330E+03	-2.33376E+01	0.00000E+00	273.15	353.15	57978.5	85034.9
5	COS	Carbonyl sulfide	60.076	96.0704	-5.22240E+03	-3.03658E+01	0.00000E+00	273.15	303.15	2607.5	3060.5
6	CO ₂	Carbon dioxide	44.010	69.4237	-3.79646E+03	-2.16694E+01	4.78857E-04	273.15	353.15	1635.2	4263.7
7	C ₂ H ₂	Acetylene	26.038	67.9714	-3.54393E+03	-2.14030E+01	0.00000E+00	274.15	343.15	1332.6	2381.4
8	C ₂ H ₃ Cl	Vinyl chloride	62.499	61.1868	-3.43853E+03	-1.90984E+01	2.51906E-03	273.15	323.15	1403.3	2719.5
9	C ₂ H ₄	Ethylene	28.054	107.7298	-6.33990E+03	-3.17169E+01	-1.32533E-02	283.15	360.95	10784.4	18502.9
10	C ₂ H ₆	Ethane	30.070	108.9263	-5.51363E+03	-3.47413E+01	0.00000E+00	275.15	323.15	29402.4	48324.7
11	C ₃ H ₆	Cyclopropane	42.081	-141.9730	5.87466E+03	5.09015E+01	0.00000E+00	298.15	361.15	4820.7	30453.0
12	C ₃ H ₆	Propylene	42.081	-2570.0227	6.86740E+04	1.03384E+03	-7.19694E-01	283.15	360.95	8182.3	29043.9
13	C ₃ H ₈	Propane	44.096	2874.1130	-8.56732E+04	-1.12809E+03	7.01580E-01	283.15	360.95	35420.1	90695.7
14	C ₄ H ₈	1-Butene	56.107	12.9563	-2.78226E+03	0.00000E+00	0.00000E+00	311.15	378.15	-	399742.0
15	C ₄ H ₈	Isobutene	56.107	103.9814	-5.54785E+03	-3.28909E+01	0.00000E+00	273.15	343.15	9714.4	26279.4
16	C ₄ H ₁₀	n-Butane	58.123	121.8305	-6.34244E+03	-3.87599E+01	0.00000E+00	273.15	349.15	44563.3	125372.9
17	C ₄ H ₁₀	Isobutane	58.123	161.2644	-7.94950E+03	-5.24651E+01	0.00000E+00	278.15	318.15	60280.3	94825.0
18	ClO ₂	Chloride dioxide	67.452	-24.6413	-6.21813E+01	1.07454E+01	0.00000E+00	283.15	333.15	54.814	190.01
19	Cl ₂	Chlorine	70.905	232.4396	-8.21980E+03	-8.69997E+01	4.42155E-02	283.15	353.15	599.8	1279.3
20	H ₂	Hydrogen	2.016	54.6946	-2.40098E+03	-1.68893E+01	0.00000E+00	273.15	345.15	70832.1	74664.1
21	H ₂ S	Hydrogen sulfide	34.082	10.8191	-1.51009E+03	-3.99300E-01	-6.81842E-03	273.15	353.15	541.18	1311.5
22	He	Helium	4.003	46.0252	-1.84993E+03	-1.40094E+01	0.00000E+00	273.15	348.15	142950.4	126766.7
23	Kr	Krypton	83.800	77.5359	-3.95280E+03	-2.42207E+01	0.00000E+00	273.15	353.15	22161.3	42614.9
24	NO	Nitric oxide	30.006	30.2512	-2.42215E+03	-5.70490E+00	-1.19149E-02	273.15	353.15	28739.1	44559.0
25	N ₂	Nitrogen	28.013	78.8622	-3.74498E+03	-2.47981E+01	0.00000E+00	273.15	350.15	87143.1	118634.5
26	N ₂ O	Nitrous oxide	44.013	68.8882	-3.85775E+03	-2.12530E+01	0.00000E+00	273.15	313.15	2291.4	3363.7
27	Ne	Neon	20.180	60.7869	-2.65134E+03	-1.89157E+01	0.00000E+00	273.15	348.15	12262.8	123620.2
28	O ₂	Oxygen	31.999	77.8881	-3.79901E+03	-2.44526E+01	0.00000E+00	273.15	348.15	43630.9	66575.2
29	PH ₃	Phosphine	33.998	67.5831	-3.57648E+03	-2.09165E+01	0.00000E+00	298.15	323.15	6776.6	10656.0
30	Rn	Radon	222.000	109.3341	-5.64696E+03	-3.50047E+01	0.00000E+00	273.15	323.15	5987.3	10449.8
31	SF ₆	Sulfur hexafluoride	146.056	191.8514	-9.19008E+03	-6.29116E+01	0.00000E+00	276.15	323.15	22752.1	348071.1
32	SO ₂	Sulfur dioxide	64.065	22.3423	-1.98711E+03	-5.68540E+00	0.00000E+00	283.15	323.15	40.674	84.355
33	Xe	Xenon	131.290	87.3918	-4.56921E+03	-2.74664E+01	0.00000E+00	273.15	348.15	12669.1	28466.9

H – Henry's Law constant (atm/mol fraction) for gas in water at pressure of 1 atm (101.325 kPa)

- Henry's Law constant is applicable at very low concentration ($x \ll 1$). Most compounds in the tabulation are at very low concentrations (range of 0.0001–0.00001).
- A few compounds (e.g., ClO₂ and SO₂) are not at very low concentrations. The tabulated data for these compounds should be considered rough values.
- For those compounds that react with water, all chemical species of the gas and its reaction products are included.

TABLE C-16 Solubility of Selected Gases in Water as a Function of Temperature

$\log x_{wt} = A + B/T + C \log T + DT$											
No.	Formula	Substance	M_w , g/mol	A	B	C	D	T_{min}	T_{max}	x_{wt} at 25°C	x_{wt} at T_{max}
1	Ar	Argon	39.948	-106.3705	2.87724E+04	4.24672E+02	-3.02604E-01	273.15	348.15	5.4131E-05	2.1760E-05
2	CF ₄	Carbon tetrafluoride	88.005	-1923.2642	5.23082E+04	7.69721E+02	-5.41819E-01	273.15	323.15	1.8227E-05	1.1456E-05
3	CH ₄	Methane	16.043	-1388.5451	3.78016E+04	5.55218E+02	-3.91585E-01	273.15	360.95	2.1949E-05	6.0342E-06
4	CO	Carbon monoxide	28.010	-1316.0154	3.56367E+04	5.26642E+02	-3.73092E-01	273.15	353.15	2.5937E-05	9.9946E-06
5	COS	Carbonyl sulfide	60.076	-310.8791	1.03967E+04	1.19013E+02	-7.17370E-02	273.15	303.15	1.2373E-03	1.0429E-03
6	CO ₂	Carbon dioxide	44.010	-1307.3028	3.57336E+04	5.23648E+02	-3.72704E-01	273.15	353.15	1.4429E-03	3.1311E-04
7	C ₂ H ₂	Acetylene	26.038	-904.6169	2.48670E+04	3.61545E+02	-2.56198E-01	273.15	343.15	1.0504E-03	4.2360E-04
8	C ₂ H ₃ Cl	Vinyl chloride	62.499	-466.7040	1.34792E+04	1.85229E+02	-1.32359E-01	273.15	323.15	2.3906E-03	1.1202E-03
9	C ₂ H ₄	Ethylene	28.054	-2717.3688	7.56485E+04	1.08310E+03	-7.38856E-01	283.15	360.96	1.3646E-04	3.1695E-05
10	C ₂ H ₆	Ethane	30.070	-546.9272	1.64179E+04	2.13803E+02	-1.38988E-01	275.15	323.15	5.5018E-05	3.0358E-05
11	C ₃ H ₆	Cyclopropane	42.081	-3892.0392	1.04154E+05	1.56543E+03	-1.12081E+00	298.15	361.15	4.7881E-04	2.8627E-05
12	C ₃ H ₆	Propylene	42.081	-39.4402	6.34551E+02	1.75424E+01	-3.24155E-02	283.15	360.95	2.6979E-04	3.0288E-05
13	C ₃ H ₈	Propane	44.096	-5554.9049	1.56979E+05	2.20789E+03	-1.47267E+00	283.15	360.95	6.5123E-05	1.0153E-05
14	C ₄ H ₈	1-Butene	56.107	-2991.5526	8.40296E+04	1.19372E+03	-8.29111E-01	311.15	348.15	-	2.0827E-05
15	C ₄ H ₈	Isobutene	56.107	-919.4382	2.63056E+04	3.64670E+02	-2.50383E-01	273.15	343.15	3.1083E-04	8.2769E-05
16	C ₄ H ₁₀	n-Butane	58.123	-1160.1487	3.29912E+04	4.60393E+02	-3.14847E-01	273.15	349.15	7.0137E-05	1.5785E-05
17	C ₄ H ₁₀	Isobutane	58.123	-566.9083	1.80393E+04	2.18486E+02	-1.29161E-01	278.15	318.15	5.1857E-05	3.0814E-05
18	ClO ₂	Chloride dioxide	67.452	-569.1018	1.46852E+04	2.32419E+02	-1.89385E-01	283.15	333.15	6.2050E-02	1.5612E-02
19	Cl ₂	Chlorine	70.905	-1847.3759	5.05934E+04	7.39612E+02	-5.18667E-01	283.15	353.15	6.2695E-03	1.6680E-03
20	H ₂	Hydrogen	2.016	-938.5889	2.49279E+04	3.75683E+02	-2.69793E-01	273.15	345.15	1.5319E-06	1.0072E-06
21	H ₂ S	Hydrogen sulfide	34.082	-1247.8348	3.34178E+02	5.01994E+02	-3.65161E-01	273.15	353.15	3.3698E-03	7.8792E-04
22	He	Helium	4.003	-1043.1419	2.73774E+04	4.18569E+02	-3.02623E-01	273.15	348.15	1.5063E-06	1.1022E-06
23	Kr	Krypton	83.800	-1318.1442	3.59766E+04	5.27392E+02	-3.73004E-01	273.15	353.15	2.0297E-04	5.9664E-05
24	NO	Nitric oxide	30.006	-1271.6006	3.44544E+04	5.08993E+02	-3.61166E-01	273.15	353.15	5.6051E-05	2.0432E-05
25	N ₂	Nitrogen	28.013	-1163.3807	3.16107E+04	4.64916E+02	-3.28050E-01	273.15	350.15	1.7282E-05	7.8317E-06
26	N ₂ O	Nitrous oxide	44.013	-371.1999	1.12586E+04	1.45406E+02	-9.84292E-02	273.15	313.15	1.0319E-03	6.7314E-04
27	Ne	Neon	20.180	-1057.1943	2.81787E+04	4.23473E+02	-3.02621E-01	273.15	348.15	8.8522E-06	5.6978E-06
28	O ₂	Oxygen	31.999	-1074.0450	2.93249E+04	4.28990E+02	-3.02607E-01	273.15	348.15	3.9450E-05	1.6776E-05
29	PH ₃	Phosphine	33.998	-864.2313	2.41128E+04	3.44136E+02	-2.40666E-01	298.15	323.15	2.6973E-04	1.5551E-04
30	Rn	Radon	222.000	-514.8565	1.57032E+04	2.01357E+02	-1.29996E-01	273.15	323.15	1.9910E-03	1.0349E-03
31	SF ₆	Sulfur hexafluoride	146.056	-640.4119	2.03918E+04	2.46507E+02	-1.42242E-01	276.15	323.15	3.4534E-05	2.0471E-05
32	SO ₂	Sulfur dioxide	64.065	-359.9136	9.82234E+03	1.45582E+02	-1.15277E-01	283.15	323.15	7.8097E-02	3.5720E-02
33	Xe	Xenon	131.290	-1081.4609	3.00530E+04	4.31418E+02	-3.02221E-01	273.15	348.15	5.5714E-04	1.6095E-04

x_{wt} – solubility (weight fraction) of compound in water at pressure of 1 atm (101.325 kPa)

- Most compounds in the tabulation are at very low concentrations (range of 0.0001–0.000001). At very low concentrations, Henry's Law is applicable ($p = Hx$ where $x \ll 1$).
- A few compounds (e.g., ClO₂ and SO₂) are not at very low concentrations. The tabulation data for these compounds should be considered rough values.
- For those compounds that react with water, all chemical species of the gas and its reaction products are included.

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TABLE C-17 Solubility of Sulfur Compounds in Water as a Function of Boiling Point for Mercaptans and Aromatics

No.	Formula	Substance	Type	T_B , K	S at 25° C, ppm (wt)	S at 25° C, ppm (mol)	Code
1	CH ₃ S	Methyl mercaptan	mercaptan	279.11	2.3300E+04	8.8548E+03	1
2	C ₂ H ₆ S	Ethyl mercaptan	mercaptan	308.15	1.5000E+04	4.3962E+03	1
3	C ₃ H ₈ S	Propyl mercaptan	mercaptan	340.87	3.6899E+03	8.7535E+02	2
4	C ₃ H ₈ S	Isopropyl mercaptan	mercaptan	325.71	6.1810E+03	1.4691E+03	2
5	C ₄ H ₁₀ S	Butyl mercaptan	mercaptan	371.61	6.0000E+02	1.1992E+02	1
6	C ₄ H ₁₀ S	Isobutyl mercaptan	mercaptan	361.64	1.6210E+03	3.2425E+02	2
7	C ₄ H ₁₀ S	sec-Butyl mercaptan	mercaptan	358.13	1.8786E+03	3.7586E+02	2
8	C ₄ H ₁₀ S	tert-Butyl mercaptan	mercaptan	337.37	4.1849E+03	8.3883E+02	2
9	C ₅ H ₁₂ S	Penyl Mercaptan	mercaptan	399.79	2.7257E+02	4.7132E+01	2
10	C ₅ H ₁₂ S	2-Pentanethiol	mercaptan	385.55	5.4872E+02	9.4907E+01	2
11	C ₅ H ₁₂ S	3-Pentanethiol	mercaptan	387.05	5.1059E+02	8.8310E+01	2
12	C ₅ H ₁₂ S	2-Methyl-1-butanethiol	mercaptan	392.15	3.9851E+02	6.8919E+01	2
13	C ₅ H ₁₂ S	3-Methyl-1-butanethiol	mercaptan	391.50	4.1147E+02	7.1161E+01	2
14	C ₅ H ₁₂ S	2-Methyl-2-butanethiol	mercaptan	372.28	1.0171E+03	1.7599E+02	2
15	C ₅ H ₁₂ S	3-Methyl-2-butanethiol	mercaptan	382.91	6.2217E+02	1.0762E+02	2
16	C ₅ H ₁₂ S	2,2-Dimethyl-1-propanethiol	mercaptan	376.83	8.2658E+02	1.4300E+02	2
17	C ₆ H ₁₄ S	Hexyl mercaptan	mercaptan	425.81	7.0459E+01	1.0737E+01	2
18	C ₆ H ₁₄ S	2-Hexanethiol	mercaptan	412.05	1.4553E+02	2.2177E+01	2
19	C ₈ H ₁₈ S	Octyl mercaptan	mercaptan	472.19	5.6934E+00	7.0119E-01	2
20	C ₈ H ₁₈ S	2-Octanethiol	mercaptan	459.55	1.1319E+01	1.3940E+00	2
21	C ₈ H ₁₈ S	tert-Octyl mercaptan	mercaptan	429.00	5.9408E+01	7.3169E+00	2
22	C ₉ H ₂₀ S	Nonyl mercaptan	mercaptan	492.95	1.8771E+00	2.1095E-01	2
23	C ₉ H ₂₀ S	2-Nonanethiol	mercaptan	481.35	3.4756E+00	3.9059E-01	2
24	C ₁₀ H ₂₂ S	Decyl mercaptan	mercaptan	512.35	6.9284E-01	7.1599E-02	2
25	C ₁₀ H ₂₂ S	2-Decanethiol	mercaptan	501.45	1.2056E+00	1.2459E-01	2
26	C ₁₁ H ₂₄ S	1-Undecanethiol	mercaptan	530.55	2.8701E-01	2.7451E-02	2
27	C ₁₁ H ₂₄ S	2-Undecanethiol	mercaptan	520.45	4.6457E-01	4.4434E-02	2
28	C ₁₂ H ₂₆ S	1-Dodecanethiol	mercaptan	547.75	1.3292E-01	1.1832E-02	2
29	C ₁₂ H ₂₆ S	2-Dodecanethiol	mercaptan	538.35	2.0073E-01	1.7868E-02	2
30	C ₁₃ H ₂₈ S	1-Tridecanethiol	mercaptan	563.96	6.8950E-02	5.7399E-03	2
30	C ₁₃ H ₂₈ S	2-Tridecanethiol	mercaptan	555.15	9.7619E-02	8.1266E-03	2
31	C ₁₄ H ₃₀ S	1-Tetradecanethiol	mercaptan	579.36	3.9756E-02	3.1082E-03	2
32	C ₁₄ H ₃₀ S	2-Tetradecanethiol	mercaptan	571.15	5.2816E-02	4.1293E-03	2

Code: 1 – experimental data; 2 – estimate

T_B – boiling point, K

S – solubility in water, ppm (wt); ppm = parts per million

T – temperature, °C

TABLE C-18 Solubility of Napthenes in Water

$\log_{10} S = A + B/T + C/T^2$									
No.	Formula	Substance	M_w	T_B	A	B	C	S at 25° C	S at 100° C
1	C ₅ H ₁₀	Cyclopentane	70.134	322.4	8.665	-3850.808	5737.704E+02	1600E-01	2924E-01
2	C ₆ H ₁₂	Cyclohexane	84.161	353.9	6.403	-2773.806	4132.971E+02	5610E-02	8664E-02
3	C ₆ H ₁₂	Methylcyclopentane	84.161	345.0	12.430	-6436.630	9590.579E+02	4264E-02	1170E-01
4	C ₇ H ₁₄	Ethylcyclopentane	98.188	376.6	14.360	-7974.533	1188.205E+03	9556E-03	3331E-02
5	C ₇ H ₁₄	1,1-Dimethylcyclopentane	98.188	361.0	12.634	-6723.665	1001.826E+03	2253E-02	6460E-02
6	C ₇ H ₁₄	C-1,2-Dimethylcyclopentane	98.188	372.7	13.907	-7647.583	1139.49E+03	1191E-02	3944E-02
7	C ₇ H ₁₄	T-1,2-Dimethylcyclopentane	98.188	365.0	13.057	-7031.220	1047.652E+03	1816E-02	5472E-02
8	C ₇ H ₁₄	C-1,3-Dimethylcyclopentane	98.188	363.9	12.940	-6946.544	1035.035E+03	1927E-02	5721E-02
9	C ₇ H ₁₄	T-1,3-Dimethylcyclopentane	98.188	364.9	13.042	-7020.299	1046.025E+03	1830E-02	5505E-02
10	C ₇ H ₁₄	Methylcyclohexane	98.188	374.1	13.091	-7084.522	1055.594E+03	1600E-02	4857E-02
11	C ₈ H ₁₆	Propylcyclopentane	112.214	404.1	17.327	-10142.370	1511.213E+03	2040E-03	9996E-03
12	C ₈ H ₁₆	Ethylcyclohexane	112.214	404.9	19.501	-11345.870	1690.535E+03	2916E-03	1724E-02
13	C ₈ H ₁₆	1,1-Dimethylcyclohexane	112.214	392.7	14.606	-8241.599	1227.998E+03	5989E-03	2181E-02
14	C ₈ H ₁₆	C-1,2-Dimethylcyclohexane	112.214	402.9	11.610	-6455.995	9619.432E+02	6000E-03	1649E-02
15	C ₈ H ₁₆	T-1,2-Dimethylcyclohexane	112.214	396.7	15.082	-8586.692	1279.417E+03	4734E-03	1816E-02
16	C ₈ H ₁₆	C-1,3-Dimethylcyclohexane	112.214	393.3	14.671	-8288.887	1235.044E+03	5799E-03	2126E-02
17	C ₈ H ₁₆	T-1,3-Dimethylcyclohexane	112.214	397.6	15.189	-8663.467	1290.857E+03	4493E-03	1748E-02
18	C ₈ H ₁₆	C-1,4-Dimethylcyclohexane	112.214	397.6	15.184	-8660	1290.340E+03	4504E-03	1750E-02
19	C ₈ H ₁₆	T-1,4-Dimethylcyclohexane	112.214	392.5	17.766	-10240.17	1525.786E+03	3840E-03	1911E-02
20	C ₉ H ₁₈	Butylcyclopentane	126.241	429.8	20.741	-12579.69	1874.373E+03	4308E-04	3092E-03
21	C ₉ H ₁₈	Propylcyclohexane	126.241	429.9	18.885	-11356.48	1692.116E+03	6773E-04	4012E-03
22	C ₉ H ₁₈	C-C-1,5-Trimethylcyclohexane	126.241	411.7	16.852	-9869.544	1470.562E+03	1962E-03	9205E-03
23	C ₉ H ₁₈	C-T-1,3,5-Trimethylcyclohexane	126.241	413.7	17.089	-10041.88	1496.240E+03	1740E-03	8387E-03
24	C ₁₀ H ₂₀	1-Cyclopentylpentane	140.268	453.8	22.985	-1459.12	2124.608E+03	1150E-04	1073E-03
25	C ₁₀ H ₂₀	Butylcyclohexane	140.268	454.1	21.087	-13014.7	1939.191E+03	1781E-04	1368E-03
26	C ₁₁ H ₂₂	1-Cyclopentylhexane	154.295	476.3	24.302	-15330.35	2284.223E+03	3800E-05	4200E-04
27	C ₁₁ H ₂₂	Pentylcyclohexane	154.295	476.9	22.316	-14034.92	2091.204E+03	5850E-05	5279E-04
28	C ₁₂ H ₂₄	1-Cyclopentylheptane	168.322	497.3	24.467	-15649.31	2331.747E+03	1620E-05	1883E-04
29	C ₁₂ H ₂₄	1-Cyclohexylhexane	168.322	497.9	22.412	-14310.59	2132.278E+03	2520E-05	2370E-04
30	C ₁₃ H ₂₆	1-Cyclopentyloctane	182.348	516.9	23.457	-15199.39	2264.709E+03	9000E-06	9750E-05
31	C ₁₃ H ₂₆	1-Cyclohexylheptane	182.348	518.1	21.326	-13817.11	2058.750E+03	1390E-05	1211E-04
32	C ₁₄ H ₂₈	1-Cyclopentylnonane	196.375	535.3	21.217	-13948.64	2078.347E+03	6500E-06	5787E-05
33	C ₁₄ H ₂₈	1-Cyclohexyloctane	196.375	536.8	19.067	-12553.52	1870.474E+03	1010E-05	7217E-05
34	C ₁₅ H ₃₀	1-Cyclopentyldecane	210.402	552.5	17.98	-12044.88	1794.686E+03	5900E-06	3892E-05
35	C ₁₅ H ₃₀	1-Cyclohexylnonane	210.402	554.7	15.592	-10498.13	1564.222E+03	9500E-06	4922E-05

S – solubility in salt water at 25° C, parts per million by weight, ppm (wt)
Temperature range is 298–393 K (25–120° C)
A, B, and C – correlation constants for compound
M_w – molecular weight of compound, g/mol
T_B – boiling point of compound, K

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TABLE C-19 Solubility of Nitrogen Compounds in Water

No.	Formula	Substance	T_B	Code	T	S at T , ppm (wt)	S at T , ppm (mol)
1	CH ₅ N	Methylamine	266.82	1	25	High	High
2	C ₂ H ₇ N	Ethylamine	289.73	1	20	High	High
3	C ₂ H ₇ N	Dimethylamine	280.03	2	25	High	High
4	C ₃ H ₉ N	<i>n</i> -Propylamine	321.65	1	100	1.0000E+06	1.0000E+06
5	C ₃ H ₉ N	<i>iso</i> -Propylamine	305.55	1	100	1.0000E+06	1.0000E+06
6	C ₃ H ₉ N	Methylethylamine	309.15	2	25	High	High
7	C ₃ H ₉ N	Trimethylamine	276.02	2	25	High	High
8	C ₄ H ₁₁ N	<i>n</i> -Butylamine	350.55	1	100	1.0000E+06	1.0000E+06
9	C ₄ H ₁₁ N	<i>iso</i> -Butylamine	340.88	1	20	1.0000E+06	1.0000E+06
10	C ₄ H ₁₁ N	<i>sec</i> -Butylamine	336.15	2	20	High	High
11	C ₄ H ₁₁ N	<i>tert</i> -Butylamine	317.55	2	20	High	High
12	C ₄ H ₁₁ N	Diethylamine	328.60	1	38	1.0000E+06	1.0000E+06
13	C ₅ H ₁₃ N	<i>n</i> -Pentylamine	377.65	1	25	High	High
14	C ₅ H ₁₃ N	1-Methylbutylamine	364.85	2	25	High	High
15	C ₅ H ₁₃ N	1-Ethylpropylamine	362.15	2	25	High	High
16	C ₅ H ₁₃ N	2-Methylbutylamine	368.65	2	25	High	High
17	C ₅ H ₁₃ N	3-Methylbutylamine	370.15	2	25	High	High
18	C ₆ H ₁₅ N	<i>n</i> -Hexylamine	404.65	1	25	1.2000E+04	2.1576E+03
19	C ₆ H ₁₅ N	1-Methylpentylamine	403.15	2	25	2.6103E+04	4.7490E+03
20	C ₆ H ₁₅ N	1-Ethylbutylamine	400.45	2	25	3.0072E+04	5.4893E+03
21	C ₇ H ₁₇ N	<i>n</i> -Heptylamine	430.05	2	25	7.1302E+03	1.1216E+03
22	C ₇ H ₁₇ N	Methyl- <i>n</i> -hexylamine	415.15	2	25	1.0213E+04	1.6107E+03
23	C ₇ H ₁₇ N	Ethyl- <i>n</i> -pentylamine	407.15	2	25	1.5615E+04	2.4740E+03
24	C ₇ H ₁₇ N	Dimethyl- <i>n</i> -pentylamine	395.15	2	25	8.6243E+03	1.3583E+03
25	C ₇ H ₁₇ N	Dimethyl-2-Pentylamine	382.15	2	25	1.7197E+04	2.7284E+03
26	C ₈ H ₁₉ N	<i>n</i> -Octylamine	452.75	1	25	2.0000E+02	2.7882E+01
27	C ₈ H ₁₉ N	2-Ethylhexylamine	442.35	1	20	2.5000E+03	3.4921E+02
28	C ₈ H ₁₉ N	Di- <i>n</i> -butylamine	432.00	1	25	3.5000E+03	4.8932E+02
29	C ₈ H ₁₉ N	Methyl- <i>n</i> -heptylamine	438.15	2	25	3.3545E+03	4.6893E+02
30	C ₈ H ₁₉ N	Ethyl- <i>n</i> -hexylamine	431.15	2	25	4.8771E+03	6.8266E+02
31	C ₈ H ₁₉ N	Dimethyl- <i>n</i> -hexylamine	418.15	2	25	2.8303E+03	3.9546E+02
32	C ₈ H ₁₉ N	Diethyl- <i>n</i> -butylamine	409.15	2	25	4.5801E+03	6.4092E+02
33	C ₉ H ₂₁ N	<i>n</i> -Nonylamine	475.35	2	25	7.7899E+02	9.8706E+01
34	C ₉ H ₂₁ N	Methyl- <i>n</i> -octylamine	459.85	2	25	1.1549E+03	1.4638E+02
35	C ₉ H ₂₁ N	Ethyl- <i>n</i> -heptylamine	453.85	2	25	1.5929E+03	2.0197E+02
36	C ₁₀ H ₂₃ N	<i>n</i> -Decylamine	493.65	2	25	5.5000E+02	6.3021E+01
37	C ₁₀ H ₂₃ N	Di- <i>n</i> -pentylamine	476.15	2	25	5.3283E+02	6.1053E+01
38	C ₁₀ H ₂₃ N	Methyl- <i>n</i> -nonylamine	480.15	2	25	4.2996E+02	4.9261E+01
39	C ₁₁ H ₂₅ N	<i>n</i> -Undecylamine	516.15	2	25	1.0516E+02	1.1059E+01
40	C ₁₁ H ₂₅ N	Methyl- <i>n</i> -decylamine	499.35	2	25	1.6721E+02	1.7585E+01

Code: 1 – experimental data; 2 – estimate
 T_B – boiling point temperature, K
 S – solubility in water, ppm
ppm – parts per million
 T – temperature, °C

TABLE C-20 Henry's Law Constant for Nitrogen Compounds in Water

Henry's Law Constant, H , at 25° C							
No.	Formula	H at T (atm/mol frac)	H at T (atm/mol/m ³)	No.	Formula	H at T (atm/mol frac)	H at T (atm/mol/m ³)
1	CH ₅ N	0.49	8.8019E-06	41	C ₆ H ₁₅ N	1.64	2.9579E-05
2	C ₂ H ₇ N	0.66	1.1897E-05	42	C ₆ H ₁₅ N	2.26	4.0759E-05
3	C ₂ H ₇ N	0.88	1.5886E-05	43	C ₆ H ₁₅ N	2.39	4.3037E-05
4	C ₃ H ₉ N	1.08	1.9362E-05	44	C ₆ H ₁₅ N	1.83	3.2888E-05
5	C ₃ H ₉ N	0.85	1.5374E-05	45	C ₆ H ₁₅ N	1.53	2.7546E-05
6	C ₃ H ₉ N	1.44	2.5904E-05	46	C ₆ H ₁₅ N	1.66	2.9888E-05
7	C ₃ H ₉ N	2.62	4.7117E-05	47	C ₆ H ₁₅ N	1.50	2.7003E-05
8	C ₄ H ₁₁ N	1.51	2.7141E-05	48	C ₆ H ₁₅ N	1.44	2.5967E-05
9	C ₄ H ₁₁ N	1.37	2.4672E-05	49	C ₆ H ₁₅ N	2.37	4.2731E-05
10	C ₄ H ₁₁ N	1.35	2.4361E-05	50	C ₆ H ₁₅ N	5.62	1.0111E-04
11	C ₄ H ₁₁ N	1.04	1.8769E-05	51	C ₆ H ₁₅ N	2.87	5.1655E-05
12	C ₄ H ₁₁ N	1.87	3.3586E-05	52	C ₆ H ₁₅ N	7.23	1.3021E-04
13	C ₄ H ₁₁ N	2.20	3.9552E-05	53	C ₆ H ₁₅ N	6.34	1.1417E-04
14	C ₄ H ₁₁ N	1.90	3.4228E-05	54	C ₆ H ₁₅ N	5.81	1.0455E-04
15	C ₄ H ₁₁ N	4.90	8.8180E-05	55	C ₆ H ₁₅ N	5.48	9.8659E-05
16	C ₅ H ₁₃ N	2.12	3.8121E-05	56	C ₆ H ₁₅ N	5.33	9.5861E-05
17	C ₅ H ₁₃ N	1.60	2.8776E-05	57	C ₆ H ₁₅ N	5.18	9.3157E-05
18	C ₅ H ₁₃ N	1.51	2.7255E-05	58	C ₆ H ₁₅ N	5.03	9.0544E-05
19	C ₅ H ₁₃ N	1.73	3.1144E-05	59	C ₆ H ₁₅ N	4.89	8.8017E-05
20	C ₅ H ₁₃ N	1.79	3.2159E-05	60	C ₆ H ₁₅ N	5.48	9.8659E-05
21	C ₅ H ₁₃ N	1.21	2.1851E-05	61	C ₆ H ₁₅ N	4.14	7.4531E-05
22	C ₅ H ₁₃ N	1.38	2.4756E-05	62	C ₆ H ₁₅ N	4.14	7.4531E-05
23	C ₅ H ₁₃ N	1.21	2.1851E-05	63	C ₆ H ₁₅ N	2.50	4.5008E-05
24	C ₅ H ₁₃ N	4.34	7.8193E-05	64	C ₆ H ₁₅ N	4.17	7.5143E-05
25	C ₅ H ₁₃ N	3.14	5.6540E-05	65	C ₆ H ₁₅ N	11.16	2.0095E-04
26	C ₅ H ₁₃ N	3.03	5.4504E-05	66	C ₆ H ₁₅ N	12.64	2.2744E-04
27	C ₅ H ₁₃ N	2.75	4.9531E-05	67	C ₆ H ₁₅ N	12.64	2.2744E-04
28	C ₅ H ₁₃ N	3.28	5.9117E-05	68	C ₆ H ₁₅ N	9.33	1.6793E-04
29	C ₅ H ₁₃ N	2.96	5.3200E-05	69	C ₆ H ₁₅ N	11.47	2.0645E-04
30	C ₅ H ₁₃ N	6.87	1.2367E-04	70	C ₆ H ₁₅ N	11.89	2.1401E-04
31	C ₅ H ₁₃ N	6.87	1.2368E-04	71	C ₆ H ₁₅ N	11.89	2.1401E-04
32	C ₅ H ₁₃ N	6.87	1.2368E-04	72	C ₇ H ₁₇ N	3.21	5.7839E-05
33	C ₆ H ₁₅ N	2.70	4.8577E-05	73	C ₇ H ₁₇ N	5.51	9.9229E-05
34	C ₆ H ₁₅ N	2.68	4.8233E-05	74	C ₇ H ₁₇ N	4.50	8.1079E-05
35	C ₆ H ₁₅ N	2.51	4.5156E-05	75	C ₇ H ₁₇ N	26.88	4.8377E-04
36	C ₆ H ₁₅ N	2.48	4.4721E-05	76	C ₇ H ₁₇ N	18.64	3.3546E-04
37	C ₆ H ₁₅ N	2.40	4.3140E-05	77	C ₇ H ₁₇ N	22.63	4.0727E-04
38	C ₆ H ₁₅ N	2.31	4.1631E-05	78	C ₇ H ₁₇ N	21.39	3.8501E-04
39	C ₆ H ₁₅ N	1.50	2.7003E-05	79	C ₇ H ₁₇ N	21.09	3.7968E-04
40	C ₆ H ₁₅ N	1.56	2.8105E-05	80	C ₇ H ₁₇ N	23.95	4.3107E-04

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TABLE C-21 Coefficient of Thermal Expansion of Liquids

No.	Formula	Substance	$B_{\text{liq}} = a(1 - T/T_c)^m$					B_{liq} at 25° C	density _{liq} at 25° C
			a	T_c	m	T_{min}	T_{max}		
1	C ₂ H ₃ Cl ₃	1,1,1-Trichloroethane	6.9960E-04	545.00	-0.7067	242.75	517.75	1.2240E-03	1.330
2	C ₂ H ₃ Cl ₃	1,1,2-Trichloroethane	7.0420E-04	602.00	-0.6900	236.50	571.90	1.290E-03	1.435
3	C ₂ H ₄ Cl ₂	1,1-Dichloroethane	7.2810E-04	523.00	-0.7130	176.19	496.85	1.3290E-03	1.168
4	C ₂ H ₄ Cl ₂	1,2-Dichloroethane	6.8990E-04	561.00	-0.6896	237.49	532.95	1.1640E-03	1.246
5	C ₄ H ₆	1,3-Butadiene	8.8920E-04	425.37	-0.7093	164.25	404.10	2.0930E-03	0.615
6	C ₄ H ₈ O ₂	1,4-Dioxane	6.5840E-04	587.00	-0.6953	284.95	557.65	1.0780E-03	1.029
7	C ₄ H ₁₀ O	1-Butanol (<i>n</i> -Butanol)	5.7680E-04	562.93	-0.7543	183.85	534.78	1.0190E-03	0.806
8	C ₄ H ₈	1-Butene	8.9970E-04	419.59	-0.7147	87.80	398.61	2.1820E-03	0.588
9	C ₁₀ H ₂₀	1-Decene	6.2750E-04	617.05	-0.7144	206.89	586.20	1.0060E-03	0.737
10	C ₉ H ₂₀	1-Nonane (<i>n</i> -Nonane)	6.5440E-04	595.65	-0.7143	219.63	565.87	1.0740E-03	0.715
11	C ₈ H ₁₆	1-Octene	6.8610E-04	566.60	-0.7143	171.45	538.27	1.1700E-03	0.711
12	C ₃ H ₈ O	1-Propanol (<i>n</i> -Propanol)	6.0500E-04	536.71	-0.7506	146.95	509.87	1.1120E-03	0.802
13	C ₂ H ₄ O	Acetaldehyde	8.1110E-04	461.00	-0.7224	150.15	437.95	1.7200E-03	0.774
14	C ₂ H ₄ O ₂	Acetic acid	5.9380E-04	592.71	-0.7316	289.81	563.07	9.9030E-04	1.043
15	C ₄ H ₆ O ₃	Acetic anhydride	6.7520E-04	569.15	-0.7301	200.15	540.69	1.1610E-03	1.077
16	C ₃ H ₆ O	Acetone	7.9810E-04	508.20	-0.7010	178.45	482.79	1.4830E-03	0.786
17	C ₃ H ₄ O ₂	Acrylic acid	6.7590E-04	615.00	-0.6930	286.65	584.25	1.0700E-03	1.046
18	NH ₃	Ammonia	9.7330E-04	405.65	-0.7113	195.41	385.37	2.5030E-03	0.602
19	C ₆ H ₇ N	Aniline	5.6660E-04	699.00	-0.7143	267.13	664.05	8.4290E-04	1.018
20	C ₆ H ₆	Benzene	6.6060E-04	562.16	-0.7182	278.68	534.05	1.1370E-03	0.873
21	C ₄ H ₈ O ₂	Butyric acid	5.9730E-04	628.00	-0.7200	267.95	596.60	9.4950E-04	0.953
22	CS ₂	Carbon disulfide	7.2850E-04	552.00	-0.6774	161.58	524.40	1.2330E-03	1.256
23	CO ₂	Carbon dioxide	1.2800E-03	304.19	-0.7097	216.58	288.98	—	0.713
24	CO	Carbon monoxide	2.8090E-03	132.92	-0.7095	68.15	126.27	—	—
25	CCl ₄	Carbon tetrachloride	6.6990E-04	556.35	-0.7100	250.33	528.53	1.1550E-03	1.583
26	Cl ₂	Chlorine	8.9690E-04	417.15	-0.7117	172.12	396.29	2.1900E-03	1.398
27	CHCl ₃	Chloroform	7.3760E-04	536.40	-0.7123	209.63	509.58	1.3150E-03	1.480
28	C ₆ H ₁₂	Cyclohexane	6.6670E-04	553.54	-0.7149	279.69	525.86	1.1590E-03	0.773
29	C ₆ H ₁₂ O	Cyclohexanol	6.4580E-04	625.15	-0.7143	296.60	593.89	1.0260E-03	0.774
30	C ₃ H ₆	Cyclopropane	9.2960E-04	397.91	-0.7143	145.73	378.01	2.4970E-03	0.619
31	CH ₂ Cl ₂	Dichloromethane	7.7360E-04	510.00	-0.7098	178.01	484.50	1.4430E-03	1.318
32	C ₄ H ₁₀ O	Diethyl ether	8.0960E-04	466.70	-0.7064	156.85	443.37	1.6620E-03	0.708
33	C ₅ H ₁₀ O	Diethyl ketone	6.9030E-04	560.95	-0.7264	234.18	532.90	1.1970E-03	0.810
34	C ₂ H ₇ N	Dimethylamine	7.4650E-04	437.65	-0.7520	180.96	415.77	1.7640E-03	0.650
35	C ₂ H ₆	Ethane	1.2030E-03	305.42	-0.7167	90.35	290.15	—	0.315
36	C ₂ H ₆ O	Ethanol	6.1070E-04	516.25	-0.7633	159.05	490.44	1.1790E-03	0.787
37	C ₄ H ₈ O ₂	Ethyl acetate	7.1860E-04	523.30	-0.7220	189.60	497.14	1.3210E-03	0.894
38	C ₂ H ₅ Cl	Ethyl chloride	6.4960E-04	460.35	-0.7686	136.75	437.33	1.4480E-05	0.890
39	C ₈ H ₁₀	Ethylbenzene	6.2960E-04	617.17	-0.7079	178.20	586.31	1.0050E-03	0.865
40	C ₂ H ₄	Ethylene	1.2860E-03	282.36	-0.7143	104.01	268.24	—	—
41	C ₂ H ₆ O ₂	Ethylene glycol	3.6440E-04	645.00	-0.8280	260.15	612.75	6.0910E-04	1.110
42	C ₂ H ₄ O	Ethylene oxide	8.0920E-04	469.15	-0.7175	161.45	445.69	1.6690E-03	0.862
43	F ₂	Fluorine	2.5210E-03	144.31	-0.7100	53.48	137.00	—	—
44	C ₃ H ₈ O ₃	Glycerol	2.9630E-04	723.00	-0.8459	291.33	686.85	4.6460E-04	1.257
45	H ₂	Hydrogen	8.7840E-03	33.18	-0.7244	13.95	31.52	—	—
46	HCl	Hydrogen chloride	1.2870E-03	324.65	-0.6813	158.97	308.42	7.0940E-03	0.796
47	CHN	Hydrogen cyanide	1.0390E-03	456.65	-0.7179	259.91	433.82	2.2220E-03	0.680
48	H ₂ O ₂	Hydrogen peroxide	5.4650E-04	730.15	-0.7123	272.74	693.64	7.9430E-04	1.443
49	C ₄ H ₁₀	<i>i</i> -Butane (<i>iso</i> -Butane)	8.6860E-04	408.14	-0.7270	113.54	387.73	2.2530E-03	0.552
50	CH ₄	Methane	1.8090E-03	190.58	-0.7230	90.67	181.05	—	—
51	CH ₄ O	Methanol	5.9220E-04	512.58	-0.7669	175.47	486.95	1.1550E-03	0.787

TABLE C-21—(continued)

$B_{liq} = a(1 - T/T_c)^m$									
No.	Formula	Substance	a	T_c	m	T_{min}	T_{max}	B_{liq} at 25° C	density _{liq} at 25° C
52	CH ₃ Br	Methyl bromide	8.0180E-04	467.00	-0.7197	179.55	443.65	1.6670E-03	1.662
53	CH ₃ Cl	Methyl chloride	9.2560E-04	416.25	-0.7131	175.45	395.44	2.2730E-03	0.913
54	C ₆ H ₁₂ O	Methyl isobutyl ketone	6.7570E-04	571.40	-0.7143	189.15	542.83	1.1450E-03	0.796
55	CH ₅ N	Methylamine	8.1550E-04	430.05	-0.7725	179.69	408.55	2.0320E-03	0.655
56	C ₈ H ₁₀	<i>m</i> -Xylene	5.9600E-04	617.05	-0.7276	225.30	586.20	9.6340E-04	0.861
57	C ₁₀ H ₈	Naphthalene	5.0520E-04	748.35	-0.7270	353.43	710.93	—	—
58	C ₄ H ₁₀	<i>n</i> -Butane	8.7570E-04	425.18	-0.7137	134.86	403.92	2.0740E-03	0.573
59	C ₁₀ H ₂₂	<i>n</i> -Decane	6.3600E-04	618.45	-0.7143	243.49	587.53	1.0180E-03	0.728
60	C ₇ H ₁₆	<i>n</i> -Heptane	6.9550E-04	540.26	-0.7209	182.57	513.25	1.2410E-03	0.682
61	C ₆ H ₁₄	<i>n</i> -Hexane	7.2780E-04	507.43	-0.7219	177.84	482.06	1.3790E-03	0.656
62	C ₆ H ₅ NO ₂	Nitrobenzene	5.5520E-04	719.00	-0.7143	278.91	683.05	8.1390E-04	1.199
63	N ₂	Nitrogen	2.9130E-03	126.10	-0.7075	63.15	119.80	—	—
64	C ₉ H ₂₀	<i>n</i> -Nonane	6.5440E-04	595.65	-0.7143	219.63	565.87	1.0740E-03	0.715
65	C ₈ H ₁₈	<i>n</i> -Octane	6.4760E-04	568.83	-0.7306	216.38	540.39	1.1140E-03	0.699
66	C ₅ H ₁₂	<i>n</i> -Pentane	7.8830E-04	469.65	-0.7179	143.42	446.17	1.6250E-03	0.621
67	O ₂	Oxygen	2.3560E-03	154.58	-0.7076	54.35	146.85	—	—
68	C ₈ H ₁₀	<i>o</i> -Xylene	5.8440E-04	630.37	-0.7259	247.98	598.85	9.3020E-04	0.876
69	C ₆ H ₆ O	Phenol	5.2480E-04	694.25	-0.6788	314.06	659.54	—	—
70	C ₈ H ₁₀	<i>p</i> -Xylene	6.0980E-04	616.26	-0.7210	286.41	585.45	9.8230E-04	0.858
71	C ₅ H ₅ N	Pyridine	6.9420E-04	619.95	-0.6955	231.53	588.95	1.0950E-03	0.979
72	C ₈ H ₈	Styrene	5.8860E-04	648.00	-0.7143	242.54	615.60	9.1420E-04	0.900
73	SO ₂	Sulfur dioxide	9.1740E-04	430.75	-0.7107	197.67	409.21	2.1190E-03	1.366
74	C ₇ H ₈	Toluene	6.5930E-04	591.79	-0.7011	178.18	562.20	1.0780E-03	0.865
75	C ₄ H ₆ O ₂	Vinyl acetate	7.3090E-04	524.00	-0.7173	180.35	497.80	1.3370E-03	0.926
76	H ₂ O	Water	5.7160E-04	647.13	-0.7143	273.16	614.77	8.8850E-04	1.027
B_{liq} – coefficient of thermal expansion of liquid, 1/C									
density _{liq} – density of liquid, g/cm ³									
T_{min} – minimum temperature, K									
T_{max} – maximum temperature, K									

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TABLE C-22 Adsorption Capacity of Activated Carbon

$\log_{10} Q = A + B [\log_{10} y] + C [\log_{10} y]^2$										
No.	Formula	Substance	A	B	C	y_{\min}	y_{\max}	Q at 10 ppmv	Q at 100 ppmv	Q at 1000 ppmv
1	C ₂ H ₃ Cl ₃	1,1,1-Trichloroethane	0.9733	2.8737E-01	-2.2770E-02	10	10000	17.29	28.64	42.70
2	C ₂ H ₃ Cl ₃	1,1,2-trichloroethane	1.1716	2.7791E-01	-2.7460E-02	10	10000	26.43	41.46	57.31
3	C ₂ H ₄ Cl ₂	1,1-Dichloroethane	0.5449	3.6091E-01	-2.1920E-02	10	10000	7.65	15.10	26.93
4	C ₂ H ₄ Cl ₂	1,2-Dichloroethane	0.5534	3.7072E-01	-2.1610E-02	10	10000	7.99	16.16	29.59
5	C ₃ H ₈ O	1-Propanol (<i>n</i> -Propanol)	0.3864	4.8033E-01	-4.5050E-02	10	10000	6.63	14.69	26.42
6	C ₂ H ₄ O	Acetaldehyde	-1.1705	6.2766E-01	-2.4750E-02	10	10000	0.27	0.97	3.09
7	C ₂ H ₄ O ₂	Acetic acid	-0.0555	6.8410E-01	-6.0710E-02	10	10000	3.70	11.74	28.21
8	C ₃ H ₆ O	Acetone	-0.1455	4.7497E-01	-2.2860E-02	10	10000	2.03	5.16	11.85
9	C ₃ H ₄ O ₂	Acrylic acid	0.7555	4.7108E-01	-5.6150E-02	10	5221	14.81	29.72	46.06
10	CS ₂	Carbon disulfide	-0.1890	4.7093E-01	-1.4810E-02	10	10000	1.85	4.94	12.32
11	CO ₂	Carbon dioxide	-3.6522	8.0180E-01	-3.2800E-03	10	10000	1.4E-03	8.7E-03	5.3E-02
12	CO	Carbon monoxide	-5.1878	9.0121E-01	-1.3580E-02	10	10000	5.0E-05	3.6E-04	2.5E-03
13	CCl ₄	Carbon tetrachloride	1.0748	2.8186E-01	-2.2730E-02	10	10000	21.57	35.29	51.98
14	CHCl ₃	Chloroform	0.6710	3.1648E-01	-2.2880E-02	10	10000	10.22	20.07	35.45
15	CH ₂ Cl ₂	Dichloromethane	-0.0704	4.9210E-01	-2.2760E-02	10	10000	2.51	6.65	15.89
16	C ₂ H ₆	Ethane	-2.4039	6.8107E-01	-1.9250E-02	10	10000	1.8E-02	7.6E-02	0.29
17	C ₂ H ₆ O	Ethanol	-0.5115	6.7525E-01	-4.4730E-02	10	10000	1.32	4.57	12.93
18	C ₂ H ₅ Cl	Ethyl chloride	-0.5083	5.0364E-01	-2.1790E-02	10	10000	0.94	2.58	6.40
19	C ₂ H ₄	Ethylene	-2.2710	6.1731E-01	-1.4670E-02	10	10000	2.1E-02	8.0E-02	0.28
20	C ₂ H ₆ O ₂	Ethylene glycol	1.4047	1.8738E-01	-2.6630E-02	10	121	36.77	47.09	-
21	C ₂ H ₄ O	Ethylene oxide	-2.4238	9.4878E-01	-4.0620E-02	10	10000	0.03	0.20	1.14
22	CH ₂ O	Formaldehyde	-2.4852	6.9123E-01	-3.7500E-03	10	10000	1.6E-02	7.6E-02	0.36
23	CH ₂ O ₂	Formic acid	-1.7773	1.0950E+00	-6.3540E-02	10	10000	0.18	1.44	8.63
24	CHN	Hydrogen cyanide	-4.3925	1.0895E+00	-7.4000E-03	10	10000	4.9E-04	5.7E-03	6.4E-02
25	CH ₄	Methane	-4.3101	7.7883E-01	-6.2800E-03	10	10000	2.9E-04	1.7E-03	9.3E-03
26	CH ₄ O	Methanol	-1.9674	8.2107E-01	-1.3930E-02	10	10000	0.07	0.42	2.35
27	C ₃ H ₆ O ₂	Methyl acetate	0.1331	4.2849E-01	-2.1880E-02	10	10000	3.47	7.99	16.66
28	CH ₃ Br	Methyl bromide	-1.2384	7.8564E-01	-5.5210E-02	10	10000	0.31	1.29	4.19
29	CH ₃ Cl	Methyl chloride	-1.9187	6.2053E-03	-5.4900E-03	10	10000	0.05	0.20	0.78
30	CH ₅ N	Methylamine	-1.9355	6.4710E-01	-1.0570E-02	10	10000	0.05	0.21	0.81
31	C ₃ H ₇ NO	<i>N,N</i> -Dimethylformamide	0.9025	3.7875E-01	-4.5230E-02	10	5220	17.22	30.14	42.83
32	CH ₃ NO ₂	Nitromethane	-0.3285	7.0602E-01	-5.1110E-02	10	10000	2.12	7.57	21.36
33	C ₃ H ₈ O	Propane	-0.7946	4.9029E-01	-2.3980E-02	10	10000	0.47	1.23	2.89
34	C ₃ H ₆ O ₂	Propionic acid	0.7785	4.4570E-01	-5.2090E-02	10	4872	14.86	28.94	44.34
35	C ₂ HCl ₃	Trichloroethylene	1.0241	2.9929E-01	-2.5390E-02	10	10000	19.86	33.20	49.38

Q – adsorption capacity at equilibrium, g of compound/100 g of carbon
y – concentration of compound in gas at 25° C and 1 atm, parts per million by volume, ppmv
A, B, and C – regression coefficients for chemical compound
y_{min} – minimum concentration, ppmv
y_{max} – maximum concentration, ppmv