TABLE 2-75 Heat Capacity at Constant Pressure of Inorganic and Organic Compounds in the Ideal Gas State Fit to Hyperbolic Functions C_p [J/(kmol·K)]

Cmpd. no.	Name	Formula	CAS	Mol. wt.	$C_1 \times$ 1E-05	$C_2 \times$ 1E-05	$C_3 \times$ 1E-03	$C_4 \times$ 1E-05	C_5	T_{min}, K	C_p at $T_{min} \times$ 1E-05	T_{max}, K	C_p at $T_{max} \times$ 1E-05
1	Acetaldehyde	C_2H_4O	75-07-0	44.05256	0.48251	1.06650	1.99290	0.78851	912.78	298.15	0.54732	1500	1.29930
2	Acetamide	C_2H_5NO	60-35-5	59.0672	0.34200	1.29400	1.07500	0.64000	502	100	0.34481	1500	1.49970
3	Acetic acid	$C_2H_4O_2$	64-19-7	60.052	0.40200	1.36750	1.26200	0.70030	569.7	50	0.40200	1500	1.57560
4	Acetic anhydride	$C_4H_6O_3$	108-24-7	102.08864	0.87998	1.66350	0.80153	0.76076	2310.1	298.15	1.10440	1500	2.69700
5	Acetone	C_3H_6O	67-64-1	58.07914	0.57040	1.63200	1.60700	0.96800	731.5	200	0.60487	1500	1.88200
6	Acetonitrile	C_2H_3N	75-05-8	41.0519	0.44346	0.84650	1.63980	0.49487	761.47	298.15	0.52233	1500	1.11990
7	Acetylene	C_2H_2	74-86-2	26.03728	0.36921	0.31793	0.67805	0.33430	3036.6	298.15	0.44032	1500	0.75868
8	Acrolein	C_3H_4O	107-02-8	56.06326	0.57019	0.91830	0.76747	0.38554	2375.4	298.15	0.71326	1500	1.56240
9	Acrylic acid	$C_3H_4O_2$	79-10-7	72.06266	0.60590	1.37030	1.64750	1.04460	751.49	250	0.69837	1500	1.74240
10	Acrylonitrile	C_3H_3N	107-13-1	53.0626	0.56303	1.09720	0.91248	−0.44070	1178.4	298.15	0.64356	1500	1.37940
11	Air	Mixture	132259-10-0	28.96	0.28958	0.09390	3.01200	0.07580	1484	50	0.28958	1500	0.34956
12	Ammonia	H_3N	7664-41-7	17.03052	0.33427	0.48980	2.03600	0.22560	882	100	0.33427	1500	0.66465
13	Anisole	C_7H_8O	100-66-3	108.13782	0.76370	2.93770	1.60510	2.17000	751.2	300	1.13020	1200	3.02260
14	Argon	Ar	7440-37-1	39.948	See Table 2-155								
15	Benzamide	C_7H_7NO	55-21-0	121.13658	1.95810	1.70190	1.32570	−37.41700	41.232	298.15	1.27450	1500	3.25010
16	Benzene	C_6H_6	71-43-2	78.11184	0.55238	1.73380	0.76425	0.72545	2445.7	298.15	0.82616	1500	2.41800
17	Benzenethiol	C_6H_6S	108-98-5	110.17684	0.68950	2.32750	1.51200	1.75160	697.9	200	0.76894	1500	2.67390
18	Benzoic acid	$C_7H_6O_2$	65-85-0	122.12134	0.77594	2.64550	1.79250	2.23820	835.9	200	0.81258	1500	2.97120
19	Benzonitrile	C_7H_5N	100-47-0	103.1213	0.76820	2.26350	0.74786	−0.67585	896	298	1.09070	1500	2.68100
20	Benzophenone	$C_{13}H_{10}O$	119-61-9	182.2179	1.00990	4.48980	1.31100	2.83950	627.4	300	1.80010	1500	4.93110
21	Benzyl alcohol	C_7H_8O	100-51-6	108.13782	0.84115	3.14280	1.95390	2.57430	850.06	298.15	1.11980	1500	3.28800
22	Benzyl ethyl ether	$C_9H_{12}O$	539-30-0	136.19098	0.95210	2.88680	0.70207	1.63850	2002.6	300	1.55010	1500	4.34450
23	Benzyl mercaptan	C_7H_8S	100-53-8	124.20342	0.99192	2.96330	1.55830	2.21160	719.16	300	1.41560	1200	3.29570
24	Biphenyl	$C_{12}H_{10}$	92-52-4	154.2078	1.07590	4.21050	1.90410	4.17850	828.81	200	1.14810	1500	4.55570
25	Bromine	Br_2	7726-95-6	159.808	0.30113	0.08009	0.75140	0.10780	314.6	100	0.30901	1500	0.37938
26	Bromobenzene	C_6H_5Br	108-86-1	157.0079	0.72100	2.06400	1.65040	1.68700	765.3	200	0.76789	1500	2.46280
27	Bromoethane	C_2H_5Br	74-96-4	108.965	0.52310	0.89110	0.81205	0.67540	2809	298.15	0.63800	1500	1.54570
28	Bromomethane	CH_3Br	74-83-9	94.93852	0.36241	0.69248	1.74540	0.44781	793.32	298.15	0.42454	1500	0.90758
29	1,2-Butadiene	C_4H_6	590-19-2	54.09044	0.66964	1.09950	0.83737	0.68373	2441.1	298.15	0.79668	1500	1.92080
30	1,3-Butadiene	C_4H_6	106-99-0	54.09044	0.50950	1.70500	1.53240	1.33700	685.6	200	0.57563	1500	1.95550
31	Butane	C_4H_{10}	106-97-8	58.1222	0.80154	1.62420	0.84149	1.05750	2476.1	298.15	0.98586	1500	2.66050
32	1,2-Butanediol	$C_4H_{10}O_2$	584-03-2	90.121	1.04780	2.54900	1.87760	1.87500	833	298.15	1.26670	1500.1	3.02890
33	1,3-Butanediol	$C_4H_{10}O_2$	107-88-0	90.121	1.06600	2.57500	1.96700	1.95100	860.5	298.15	1.26790	1500.15	3.03110
34	1-Butanol	$C_4H_{10}O$	71-36-3	74.1216	0.74540	2.59070	1.60730	1.73200	712.4	298.15	1.07860	1500	2.85090
35	2-Butanol	$C_4H_{10}O$	78-92-2	74.1216	0.90878	2.55080	1.89300	1.85200	832.13	298.15	1.12570	1500	2.87300
36	1-Butene	C_4H_8	106-98-9	56.10632	0.64257	2.06180	1.67680	1.33240	757.06	250	0.75708	1500	2.28980
37	*cis*-2-Butene	C_4H_8	590-18-1	56.10632	0.65121	1.43250	0.85796	0.89648	2477.2	298.15	0.80241	1500	2.27180
38	*trans*-2-Butene	C_4H_8	624-64-6	56.10632	0.74296	1.34760	0.87025	0.89116	2463.4	298.15	0.87766	1500	2.28360
39	Butyl acetate	$C_6H_{12}O_2$	123-86-4	116.15828	1.16840	3.76900	1.95600	2.81800	811.2	298.15	1.52810	1200	3.67240
40	Butylbenzene	$C_{10}H_{14}$	104-51-8	134.21816	1.13800	4.45400	1.55070	3.04970	708.86	200	1.26590	1500	4.84350
41	Butyl mercaptan	$C_4H_{10}S$	109-79-5	90.1872	0.92478	2.77950	1.68370	1.59740	758.68	200	0.97140	1500	3.10080
42	*sec*-Butyl mercaptan	$C_4H_{10}S$	513-53-1	90.1872	0.92367	2.51660	1.61090	1.56410	739.2	200	0.97633	1500	2.96150
43	1-Butyne	C_4H_6	107-00-6	54.09044	0.66492	1.07260	0.79390	0.74240	−2458.4	298.15	0.81441	1500	1.92210
44	Butyraldehyde	C_4H_8O	123-72-8	72.10572	0.89240	1.56750	0.90190	1.09840	2566	298.15	1.02830	1500	2.67780
45	Butyric acid	$C_4H_8O_2$	107-92-6	88.1051	1.48800	1.35220	1.14600	−678.00000	6.98	298.15	1.15330	1500	2.59050
46	Butyronitrile	C_4H_7N	109-74-0	69.1051	0.82142	1.32340	0.84021	0.67932	2313.7	298.15	0.97246	1500	2.28510
47	Carbon dioxide	CO_2	124-38-9	44.0095	0.29370	0.34540	1.42800	0.26400	588	50	0.29370	5000	0.63346
48	Carbon disulfide	CS_2	75-15-0	76.1407	0.30100	0.33380	0.89600	0.28930	374.7	100	0.31003	1500	0.61475
49	Carbon monoxide	CO	630-08-0	28.0101	0.29108	0.08773	3.08510	0.08455	1538.2	60	0.29108	1500	0.35208
50	Carbon tetrachloride	CCl_4	56-23-5	153.8227	0.37582	0.70540	0.51210	0.48500	236.1	100	0.47299	1500	1.06620

(*Continued*)

TABLE 2-75 Heat Capacity at Constant Pressure of Inorganic and Organic Compounds in the Ideal Gas State Fit to Hyperbolic Functions C_p [J/(kmol·K)] (*Continued*)

Cmpd. no.	Name	Formula	CAS	Mol. wt.	$C_1 \times$ 1E-05	$C_2 \times$ 1E-05	$C_3 \times$ 1E-03	$C_4 \times$ 1E-05	C_5	T_{min}, K	C_p at $T_{min} \times$ 1E-05	T_{max}, K	C_p at $T_{max} \times$ 1E-05
51	Carbon tetrafluoride	CF_4	75-73-0	88.0043	0.92004	0.16446	1.07640	−5083.80000	2.3486	298	0.61055	1500	1.04650
52	Chlorine	Cl_2	7782-50-5	70.906	0.29142	0.09176	0.94900	0.10030	425	50	0.29142	1500	0.37930
53	Chlorobenzene	C_6H_5Cl	108-90-7	112.5569	0.80110	2.31000	2.15700	2.04600	897.6	200	0.82193	1500	2.53270
54	Chloroethane	C_2H_5Cl	75-00-3	64.5141	0.52590	1.40200	2.03700	0.99820	861.18	298.15	0.62879	1500	1.55080
55	Chloroform	$CHCl_3$	67-66-3	119.37764	0.39420	0.65730	0.92800	0.49300	399.6	100	0.40484	1500	1.00630
56	Chloromethane	CH_3Cl	74-87-3	50.4875	0.36220	0.69810	1.80500	0.44470	844.27	298.15	0.41193	1500	0.90655
57	1-Chloropropane	C_3H_7Cl	540-54-5	78.54068	0.64710	1.79800	1.67600	1.23300	755.78	298.15	0.84674	1500	2.09750
58	2-Chloropropane	C_3H_7Cl	75-29-6	78.54068	0.61809	1.80230	1.54380	1.18930	685.93	200	0.67679	1500	2.10230
59	*m*-Cresol	C_7H_8O	108-39-4	108.13782	0.90974	2.13210	0.76324	0.93355	2474.5	298.15	1.24780	1500	3.21580
60	*o*-Cresol	C_7H_8O	95-48-7	108.13782	0.79880	2.85300	1.47650	2.04200	664.7	200	0.91584	1500	3.21630
61	*p*-Cresol	C_7H_8O	106-44-5	108.13782	0.92021	2.11060	0.76622	0.95073	2464.6	298.15	1.25080	1500	3.21320
62	Cumene	C_9H_{12}	98-82-8	120.19158	1.08100	3.79320	1.75050	3.00270	794.8	200	1.14800	1500	4.18080
63	Cyanogen	C_2N_2	460-19-5	52.0348	0.45894	0.41286	1.38120	0.33023	559.94	273.15	0.54968	1500	0.81268
64	Cyclobutane	C_4H_8	287-23-0	56.10632	0.50835	1.64870	0.82849	0.86658	2472.4	298.15	0.70636	1500	2.32330
65	Cyclohexane	C_6H_{12}	110-82-7	84.15948	0.43200	3.73500	1.19200	1.63500	530.1	100	0.43657	1500	3.65160
66	Cyclohexanol	$C_6H_{12}O$	108-93-0	100.15888	0.90430	2.57710	0.78820	1.30680	1952.2	200	0.96478	1500	3.82510
67	Cyclohexanone	$C_6H_{10}O$	108-94-1	98.143	0.85860	2.57770	0.84895	0.77780	2401.5	298.15	1.14170	1500	3.47740
68	Cyclohexene	C_6H_{10}	110-83-8	82.1436	0.58171	3.17170	1.54350	2.12730	701.62	150	0.59782	1500	3.21320
69	Cyclopentane	C_5H_{10}	287-92-3	70.1329	0.41600	3.01400	1.46170	1.80950	668.8	100	0.41650	1500	2.92980
70	Cyclopentene	C_5H_8	142-29-0	68.11702	0.48074	2.51590	1.58030	1.74540	718.37	150	0.49182	1500	2.56190
71	Cyclopropane	C_3H_6	75-19-4	42.07974	0.33800	1.68940	1.61350	1.17680	722.8	100	0.33813	1500	1.72130
72	Cyclohexyl mercaptan	$C_6H_{12}S$	1569-69-3	116.22448	0.54305	3.99620	1.35750	2.56230	618.54	300	1.26440	1200	3.72360
73	Decanal	$C_{10}H_{20}O$	112-31-2	156.2652	1.94250	5.14030	1.89780	4.17520	859.95	298.15	2.37630	1500	6.04070
74	Decane	$C_{10}H_{22}$	124-18-5	142.28168	1.67200	5.35300	1.61410	3.78200	742	200	1.79670	1500	6.09320
75	Decanoic acid	$C_{10}H_{20}O_2$	334-48-5	172.265	0.24457	6.54600	1.08990	4.86420	424	298.15	2.52320	1500	6.10990
76	1-Decanol	$C_{10}H_{22}O$	112-30-1	158.28108	1.69840	5.39200	1.56800	3.93800	720.5	298.15	2.43540	1500	6.21860
77	1-Decene	$C_{10}H_{20}$	872-05-9	140.2658	1.71010	5.20890	1.72650	3.59350	782.92	298.15	2.23040	1500	5.87450
78	Decyl mercaptan	$C_{10}H_{22}S$	143-10-2	174.34668	1.93100	5.48150	1.60850	3.74000	754.75	200	2.04340	1500	6.46130
79	1-Decyne	$C_{10}H_{18}$	764-93-2	138.24992	1.50450	4.37940	1.32910	2.55570	632.01	298	2.19380	1500	5.27940
80	Deuterium	D_2	7782-39-0	4.0316	0.30290	0.09750	2.51500	−0.02750	368	100	0.30195	1500	0.34251
81	1,1-Dibromoethane	$C_2H_4Br_2$	557-91-5	187.86116	0.66622	0.81703	0.76285	0.40941	2488.3	298.15	0.79599	1500	1.56840
82	1,2-Dibromoethane	$C_2H_4Br_2$	106-93-4	187.86116	0.74906	1.27250	1.98100	0.94370	845.2	200	0.76345	1500	1.70410
83	Dibromomethane	CH_2Br_2	74-95-3	173.83458	0.39100	0.64800	1.19400	0.42000	501	100	0.39288	1500	0.95987
84	Dibutyl ether	$C_8H_{18}O$	142-96-1	130.22792	1.61220	4.47770	1.68310	2.91800	781.6	200	1.68410	1500	5.21450
85	*m*-Dichlorobenzene	$C_6H_4Cl_2$	541-73-1	147.00196	0.70000	2.07460	1.36640	1.59830	620.16	200	0.82450	1500	2.51610
86	*o*-Dichlorobenzene	$C_6H_4Cl_2$	95-50-1	147.00196	0.69480	2.08040	1.36320	1.59400	619.2	200	0.81978	1500	2.51610
87	*p*-Dichlorobenzene	$C_6H_4Cl_2$	106-46-7	147.00196	0.69780	2.07800	1.36350	1.59650	619.37	200	0.82283	1500	2.51750
88	1,1-Dichloroethane	$C_2H_4Cl_2$	75-34-3	98.95916	0.63412	0.83862	0.76898	0.44030	2533.2	298.15	0.76395	1500	1.56330
89	1,2-Dichloroethane	$C_2H_4Cl_2$	107-06-2	98.95916	0.65271	1.12540	1.73760	0.87800	795.45	200	0.67221	1500	1.57430
90	Dichloromethane	CH_2Cl_2	75-09-2	84.93258	0.36280	0.68040	1.25600	0.42750	548	100	0.36369	1500	0.95430
91	1,1-Dichloropropane	$C_3H_6Cl_2$	78-99-9	112.98574	0.71450	1.73440	1.52400	1.22300	674.2	150	0.72683	1500	2.16090
92	1,2-Dichloropropane	$C_3H_6Cl_2$	78-87-5	112.98574	0.78658	1.74290	1.71570	1.26270	765.1	200	0.82172	1500	2.18940
93	Diethanol amine	$C_4H_{11}NO_2$	111-42-2	105.13564	1.20800	3.06600	2.08900	2.34300	891	298.15	1.41970	1500.1	3.46740
94	Diethyl amine	$C_4H_{11}N$	109-89-7	73.13684	0.91020	2.67400	1.71900	1.79260	794.94	200	0.95017	1500	3.05190
95	Diethyl ether	$C_4H_{10}O$	60-29-7	74.1216	0.99953	1.70380	0.87072	1.07460	2471.3	298.15	1.16950	1500	2.92630
96	Diethyl sulfide	$C_4H_{10}S$	352-93-2	90.1872	0.91273	2.41000	1.66860	1.65200	771.08	200	0.95673	1500	2.87240
97	1,1-Difluoroethane	$C_2H_4F_2$	75-37-6	66.04997	0.55477	1.23610	0.83501	−0.40972	1033.4	298.15	0.67988	1500	1.54560
98	1,2-Difluoroethane	$C_2H_4F_2$	624-72-6	66.04997	0.57793	0.89811	0.84727	0.43249	2424.2	298.15	0.67730	1500	1.55140
99	Difluoromethane	CH_2F_2	75-10-5	52.02339	0.37540	0.53510	0.86687	0.22998	2437.2	298.15	0.42969	1500	0.94201
100	Diisopropyl amine	$C_6H_{15}N$	108-18-9	101.19	1.13840	2.57470	0.73840	1.62000	2143	300	1.59950	1500	4.19410
101	Diisopropyl ether	$C_6H_{14}O$	108-20-3	102.17476	1.09300	3.68300	1.60570	2.34200	699	298.15	1.56690	1500	4.05350
102	Diisopropyl ketone	$C_7H_{14}O$	565-80-0	114.18546	1.08690	4.05400	1.78020	2.97860	791.6	300	1.51020	1500	4.30930

103	1,1-Dimethoxyethane	$C_4H_{10}O_2$	534-15-6	90.121	1.15560	1.83050	0.95919	0.99605	2826.3	298.15	1.27770	1500	3.06780
104	1,2-Dimethoxypropane	$C_5H_{12}O_2$	7778-85-0	104.14758	1.01130	3.23930	1.56110	2.15010	689.3	298.15	1.46380	1500	3.66690
105	Dimethyl acetylene	C_4H_6	503-17-3	54.09044	0.65340	1.61790	1.78370	1.02420	821.4	200	0.67211	1500	1.91480
106	Dimethyl amine	C_2H_7N	124-40-3	45.08368	0.55650	1.63840	1.73410	1.08990	793.04	200	0.58115	1500	1.85850
107	2,3-Dimethylbutane	C_6H_{14}	79-29-8	86.17536	0.77720	4.03200	1.54400	2.50800	649.95	200	0.93628	1500	4.03530
108	1,1-Dimethylcyclohexane	C_8H_{16}	590-66-9	112.21264	1.07760	4.67180	1.65400	3.33970	792.5	200	1.15350	1500	4.95430
109	*cis*-1,2-Dimethylcyclohexane	C_8H_{16}	2207-01-4	112.21264	1.10390	4.64450	1.69430	3.39490	798.35	200	1.17770	1500	4.92430
110	*trans*-1,2-Dimethylcyclohexane	C_8H_{16}	6876-23-9	112.21264	1.09910	4.64010	1.66790	3.37360	781.97	200	1.18200	1500	4.92750
111	Dimethyl disulfide	$C_2H_6S_2$	624-92-0	94.19904	0.78430	1.43640	1.58360	0.87100	730.65	200	0.81551	1500	1.95230
112	Dimethyl ether	C_2H_6O	115-10-6	46.06844	0.57431	0.94494	0.89551	0.65065	2467.4	298.15	0.65866	1500	1.65840
113	*N,N*-Dimethyl formamide	C_3H_7NO	68-12-2	73.09378	0.72200	1.78300	1.53200	1.31000	762	200	0.75937	1500	2.25960
114	2,3-Dimethylpentane	C_7H_{16}	565-59-3	100.20194	0.85438	4.57720	1.51810	2.97400	641.01	200	1.05500	1500	4.59830
115	Dimethyl phthalate	$C_{10}H_{10}O_4$	131-11-3	194.184	1.39600	4.78000	2.19000	3.97050	900.6	300	1.74810	1200	4.47400
116	Dimethylsilane	C_2H_8Si	1111-74-6	60.17042	0.61453	1.74380	1.34180	1.01020	592.09	200	0.70950	1500	2.09440
117	Dimethyl sulfide	C_2H_6S	75-18-3	62.134	0.60370	1.37470	1.64100	0.79880	743.5	200	0.62976	1500	1.69490
118	Dimethyl sulfoxide	C_2H_6OS	67-68-5	78.13344	0.69490	1.52400	1.65140	1.06580	722.2	200	0.73547	1500	1.92550
119	Dimethyl terephthalate	$C_{10}H_{10}O_4$	120-61-6	194.184	1.14025	5.36801	2.08860	4.13440	809.837	298.15	1.67000	1500	4.97220
120	1,4-Dioxane	$C_4H_8O_2$	123-91-1	88.10512	0.68444	1.98020	0.82793	0.90830	2447.1	298.15	0.92284	1500	2.81860
121	Diphenyl ether	$C_{12}H_{10}O$	101-84-8	170.2072	1.09850	4.34120	1.62220	3.64550	743.62	300	1.72980	1200	4.51430
122	Dipropyl amine	$C_6H_{15}N$	142-84-7	101.19	1.21140	2.61270	0.78956	1.69030	2394.4	300	1.59000	1500	4.24840
123	Dodecane	$C_{12}H_{26}$	112-40-3	170.33484	2.12950	6.63300	1.71550	4.51610	777.5	200	2.24420	1500	7.43250
124	Eicosane	$C_{20}H_{42}$	112-95-8	282.54748	3.24810	11.09000	1.63600	7.45000	726.27	200	3.52350	1500	12.21100
125	Ethane	C_2H_6	74-84-0	30.069	0.44256	0.84737	0.87224	0.67130	2430.4	298.15	0.52652	1500	1.45610
126	Ethanol	C_2H_6O	64-17-5	46.06844	0.49200	1.45770	1.66280	0.93900	744.7	273.15	0.61172	1500	1.65760
127	Ethyl acetate	$C_4H_8O_2$	141-78-6	88.10512	0.99810	2.09310	2.02260	1.80300	928.05	200	1.01260	1500	2.65940
128	Ethyl amine	C_2H_7N	75-04-7	45.08368	0.59400	1.61800	1.81200	1.07800	820	200	0.61390	1500	1.85280
129	Ethylbenzene	C_8H_{10}	100-41-4	106.165	0.78440	3.39900	1.55900	2.42600	702	200	0.89121	1500	3.61470
130	Ethyl benzoate	$C_9H_{10}O_2$	93-89-0	150.1745	1.09440	4.17940	0.88375	−1.60900	1183.1	300	1.45980	1500	4.25400
131	2-Ethyl butanoic acid	$C_6H_{12}O_2$	88-09-5	116.15828	1.04550	2.31480	0.71000	1.47100	2061.6	300	1.51020	1200.15	3.63300
132	Ethyl butyrate	$C_6H_{12}O_2$	105-54-4	116.15828	1.11500	3.39100	1.67050	2.51800	733.6	298	1.55830	1200	3.62130
133	Ethylcyclohexane	C_8H_{16}	1678-91-7	112.21264	1.10590	4.63060	1.66280	3.29900	781.1	200	1.18750	1500	4.91840
134	Ethylcyclopentane	C_7H_{14}	1640-89-7	98.18606	0.93177	2.79330	0.78650	1.64590	2303.3	298.15	1.33350	1500	4.14000
135	Ethylene	C_2H_4	74-85-1	28.05316	0.33380	0.94790	1.59600	0.55100	740.8	60	0.33380	1500	1.09870
136	Ethylenediamine	$C_2H_8N_2$	107-15-3	60.09832	0.72860	1.84360	1.68800	1.19900	767.3	300	0.91775	1500	2.20160
137	Ethylene glycol	$C_2H_6O_2$	107-21-1	62.06784	0.63012	1.45840	1.67300	0.97296	773.65	300	0.77997	1500	1.80950
138	Ethyleneimine	C_2H_5N	151-56-4	43.0678	0.34300	1.42700	1.63800	1.03700	744.7	150	0.34798	1500	1.51780
139	Ethylene oxide	C_2H_4O	75-21-8	44.05256	0.33460	1.21160	1.60840	0.82410	737.3	50	0.33460	1500	1.32970
140	Ethyl formate	$C_3H_6O_2$	109-94-4	74.07854	0.53700	1.88600	1.20700	0.86400	496	100	0.54118	1500	2.14850
141	2-Ethyl hexanoic acid	$C_8H_{16}O_2$	149-57-5	144.211	1.57770	4.40170	1.74940	3.23780	792.34	298.15	2.02790	1500	5.12010
142	Ethylhexyl ether	$C_8H_{18}O$	5756-43-4	130.22792	1.63400	4.51190	1.75320	3.10320	809.75	298.15	2.03600	1200	4.87440
143	Ethylisopropyl ether	$C_5H_{12}O$	625-54-7	88.14818	1.09530	3.00320	1.79880	2.13110	817.35	298.15	1.36200	1200	3.22890
144	Ethylisopropyl ketone	$C_6H_{12}O$	565-69-5	100.15888	1.24000	3.20000	1.96700	2.34600	896	298.15	1.44790	1200	3.42340
145	Ethyl mercaptan	C_2H_6S	75-08-1	62.13404	0.60436	0.87524	0.78662	0.62622	−2190	298.15	0.73021	1500	1.66280
146	Ethyl propionate	$C_5H_{10}O_2$	105-37-3	102.1317	0.93700	2.82900	1.64800	2.15500	724.7	300	1.33770	1200	3.05690
147	Ethylpropyl ether	$C_5H_{12}O$	628-32-0	88.14818	1.13200	2.94000	1.82700	2.05500	852	298.15	1.35380	1500	3.45350
148	Ethyltrichlorosilane	$C_2H_5Cl_3Si$	115-21-9	163.506	0.96993	1.08780	0.70467	0.55556	2089.7	298.15	1.18910	1500	2.21700
149	Fluorine	F_2	7782-41-4	37.9968064	0.29122	0.10132	1.45300	0.09410	662.91	50	0.29122	1500	0.38122
150	Fluorobenzene	C_6H_5F	462-06-6	96.1023032	0.73393	2.37390	2.30860	2.45890	906.45	200	0.75730	1500	2.50800
151	Fluoroethane	C_2H_5F	353-36-6	48.0595	0.49090	0.88880	0.83107	0.54120	2446	298.15	0.59646	1500	1.49880
152	Fluoromethane	CH_3F	593-53-3	34.03292	0.35193	0.65344	1.13330	0.15240	5316.2	100	0.35193	6000	1.05710
153	Formaldehyde	CH_2O	50-00-0	30.02598	0.33503	0.49394	1.92800	0.29728	965.04	298.15	0.35440	1500	0.71121
154	Formamide	CH_3NO	75-12-7	45.04062	0.38220	0.93000	1.84500	0.69000	850	150	0.38326	1500	1.12030
155	Formic acid	CH_2O_2	64-18-6	46.0257	0.33810	0.75930	1.19250	0.31800	550	50	0.33810	1500	0.99328
156	Furan	C_4H_4O	110-00-9	68.07396	0.43673	1.28390	0.74699	0.47541	2500.6	298.15	0.65450	1500	1.79520
157	Helium-4	He	7440-59-7	4.0026	See Table 2-155								

(*Continued*)

TABLE 2-75 Heat Capacity at Constant Pressure of Inorganic and Organic Compounds in the Ideal Gas State Fit to Hyperbolic Functions C_p [J/(kmol·K)] (*Continued*)

Cmpd. no.	Name	Formula	CAS	Mol. wt.	$C_1 \times$ 1E-05	$C_2 \times$ 1E-05	$C_3 \times$ 1E-03	$C_4 \times$ 1E-05	C_5	T_{min}, K	C_p at $T_{min} \times$ 1E-05	T_{max}, K	C_p at $T_{max} \times$ 1E-05
158	Heptadecane	$C_{17}H_{36}$	629-78-7	240.46774	2.78780	9.52470	1.69350	6.66510	744.57	200	3.00340	1500	10.41600
159	Heptanal	$C_7H_{14}O$	111-71-7	114.18546	1.30930	3.53810	1.52500	2.23950	740.37	298.15	1.70230	1500	4.27590
160	Heptane	C_7H_{16}	142-82-5	100.20194	1.20150	4.00100	1.67660	2.74000	756.4	200	1.28280	1500	4.42830
161	Heptanoic acid	$C_7H_{14}O_2$	111-14-8	130.185	1.31350	2.33170	0.67567	1.82400	1846	300	1.84970	1500	4.29410
162	1-Heptanol	$C_7H_{16}O$	111-70-6	116.20134	1.22150	3.99100	1.58000	2.83500	717.7	298.15	1.75720	1500	4.53460
163	2-Heptanol	$C_7H_{16}O$	543-49-7	116.20134	1.41060	2.88580	0.80394	1.49680	2456.1	298.15	1.79590	1500	4.59900
164	3-Heptanone	$C_7H_{14}O$	106-35-4	114.18546	1.27680	3.38100	1.38310	1.88800	650.3	200	1.39680	1500	4.13860
165	2-Heptanone	$C_7H_{14}O$	110-43-0	114.18546	1.25070	2.14800	0.69120	1.61900	1759.3	150	1.26880	1200	3.84460
166	1-Heptene	C_7H_{14}	592-76-7	98.18606	1.18510	3.63620	1.73590	2.50480	785.73	298.15	1.54340	1500	4.08360
167	Heptyl mercaptan	$C_7H_{16}S$	1639-09-4	132.26694	1.44200	4.16030	1.66030	2.65720	759.39	200	1.51910	1500	4.78310
168	1-Heptyne	C_7H_{12}	628-71-7	96.17018	1.07120	3.02580	1.52730	2.09750	689.62	200	1.17210	1500	3.59850
169	Hexadecane	$C_{16}H_{34}$	544-76-3	226.44116	2.62830	8.97330	1.69120	6.26400	744.41	200	2.83120	1500	9.81820
170	Hexanal	$C_6H_{12}O$	66-25-1	100.15888	1.18400	3.07260	1.70770	2.11740	790.64	298.15	1.48160	1500	3.66440
171	Hexane	C_6H_{14}	110-54-3	86.17536	1.04400	3.52300	1.69460	2.36900	761.6	200	1.11170	1500	3.86200
172	Hexanoic acid	$C_6H_{12}O_2$	142-62-1	116.158	1.16220	2.07080	0.68661	1.53550	1932.5	298.15	1.61070	1500	3.76360
173	1-Hexanol	$C_6H_{14}O$	111-27-3	102.17476	1.06250	3.52100	1.58350	2.46200	715.75	298.15	1.53110	1500	3.97260
174	2-Hexanol	$C_6H_{14}O$	626-93-7	102.175	1.26150	3.59640	1.84450	2.59400	819.17	298.15	1.58290	1500	4.06720
175	2-Hexanone	$C_6H_{12}O$	591-78-6	100.15888	1.09400	1.80700	0.68900	1.47400	1772	200	1.18150	1200	3.32070
176	3-Hexanone	$C_6H_{12}O$	589-38-8	100.15888	1.12370	2.93600	1.40100	1.60100	650.5	150	1.14430	1500	3.58740
177	1-Hexene	C_6H_{12}	592-41-6	84.15948	1.04340	3.07490	1.74590	2.07280	793.53	298	1.33010	1500	3.48190
178	3-Hexyne	C_6H_{10}	928-49-4	82.1436	0.93760	3.01500	1.90570	1.98600	817	300	1.19090	1500	3.18890
179	Hexyl mercaptan	$C_6H_{14}S$	111-31-9	118.24036	1.26620	3.72940	1.65740	2.30800	757.8	200	1.33400	1500	4.24830
180	1-Hexyne	C_6H_{10}	693-02-7	82.1436	0.91290	2.55770	1.52900	1.73700	683	200	1.00040	1500	3.03710
181	2-Hexyne	C_6H_{10}	764-35-2	82.1436	1.03600	3.00900	2.11600	2.10600	902.4	300	1.22150	1500	3.18940
182	Hydrazine	H_4N_2	302-01-2	32.04516	0.41729	0.54686	0.81130	0.41755	2639.2	298.15	0.48803	1500	1.05830
183	Hydrogen	H_2	1333-74-0	2.01588	0.27617	0.09560	2.46600	0.03760	567.6	250	0.28426	1500	0.32248
184	Hydrogen bromide	BrH	10035-10-6	80.91194	0.29120	0.09530	2.14200	0.01570	1400	50	0.29120	1500	0.34786
185	Hydrogen chloride	ClH	7647-01-0	36.46094	0.29157	0.09048	2.09380	−0.00107	120	50	0.29137	1500	0.34063
186	Hydrogen cyanide	CHN	74-90-8	27.02534	0.30125	0.31710	1.61020	0.21790	626	100	0.30137	1500	0.55224
187	Hydrogen fluoride	FH	7664-39-3	20.0063432	0.29134	0.09325	2.90500	0.00195	1326	50	0.29134	1500	0.32243
188	Hydrogen sulfide	H_2S	7783-06-4	34.08088	0.33288	0.26086	0.91340	−0.17979	949.4	100	0.33288	1500	0.51432
189	Isobutyric acid	$C_4H_8O_2$	79-31-2	88.10512	0.74694	2.43560	1.71500	1.84840	757.75	298.15	1.04270	1200	2.53830
190	Isopropyl amine	C_3H_9N	75-31-0	59.11026	0.79534	1.44250	0.81831	0.95493	2499.9	298.15	0.97640	1500	2.45580
191	Malonic acid	$C_3H_4O_4$	141-82-2	104.06146	0.49522	1.87180	1.29580	1.48520	569.96	300	0.97903	1500	2.14970
192	Methacrylic acid	$C_4H_6O_2$	79-41-4	86.08924	0.72510	2.08900	1.85160	1.64830	798.43	298.15	0.94749	1200.1	2.20570
193	Methane	CH_4	74-82-8	16.0425	0.33298	0.79933	2.08690	0.41602	991.96	50	0.33298	1500	0.88904
194	Methanol	CH_4O	67-56-1	32.04186	0.39252	0.87900	1.91650	0.53654	896.7	273.15	0.42513	1500	1.05330
195	*N*-Methyl acetamide	C_3H_7NO	79-16-3	73.09378	0.61160	2.02900	1.76830	1.33020	835.5	300	0.76980	1500	2.22090
196	Methyl acetate	$C_3H_6O_2$	79-20-9	74.07854	0.55500	1.78200	1.26000	0.85300	562	298	0.84891	1500	2.07540
197	Methyl acetylene	C_3H_4	74-99-7	40.06386	0.51734	0.68157	0.80525	0.51402	2463.8	298.15	0.60784	1500	1.33000
198	Methyl acrylate	$C_4H_6O_2$	96-33-3	86.08924	0.12060	2.37660	1.05430	1.81860	418.8	298.15	0.99083	1200.1	2.16630
199	Methyl amine	CH_5N	74-89-5	31.0571	0.41000	1.05780	1.70800	0.68360	735	150	0.41364	1500	1.23880
200	Methyl benzoate	$C_8H_8O_2$	93-58-3	136.14792	0.93960	2.55900	0.82500	1.36000	3000	300	1.25860	1200	3.35690
201	3-Methyl-1,2-butadiene	C_5H_8	598-25-4	68.11702	0.67100	2.22200	1.42100	1.19400	614.7	150	0.69311	1500	2.50280
202	2-Methylbutane	C_5H_{12}	78-78-4	72.14878	0.74600	3.26500	1.54500	1.92300	666.7	200	0.85462	1500	3.37920
203	2-Methylbutanoic acid	$C_5H_{10}O_2$	116-53-0	102.1317	1.84580	1.74300	1.22000	−56.11000	31.2	300	1.27930	1500	3.22620
204	3-Methyl-1-butanol	$C_5H_{12}O$	123-51-3	88.1482	0.92139	3.33710	1.83610	2.46440	757.83	298.15	1.31350	1500	3.48560
205	2-Methyl-1-butene	C_5H_{10}	563-46-2	70.1329	0.87026	2.55560	1.77570	1.76360	807.82	200	0.90596	1500	2.89230
206	2-Methyl-2-butene	C_5H_{10}	513-35-9	70.1329	0.81924	2.60380	1.75930	1.71950	800.93	200	0.85589	1500	2.87090
207	2-Methyl -1-butene-3-yne	C_5H_6	78-80-8	66.10114	0.79060	1.65600	1.69260	1.21670	788.4	298.15	0.96319	1500.15	2.15020
208	Methylbutyl ether	$C_5H_{12}O$	628-28-4	88.14818	0.82051	3.08690	1.38640	1.78860	613.87	300	1.33000	1200	3.19940
209	Methylbutyl sulfide	$C_5H_{12}S$	628-29-5	104.214	1.07850	2.73880	1.58850	1.90670	749.6	273.15	1.31730	1200	3.16870

210	3-Methyl-1-butyne	C_5H_8	598-23-2	68.11702	0.82740	2.13770	1.75500	1.51490	782	200	0.86459	1500	2.52550
211	Methyl butyrate	$C_5H_{10}O_2$	623-42-7	102.1317	0.89400	2.91000	1.57000	2.07300	678.3	298	1.34610	1200	3.07660
212	Methylchlorosilane	CH_5ClSi	993-00-0	80.5889	0.59895	1.16360	1.56500	0.81581	690.39	200	0.63795	1500	1.55930
213	Methylcyclohexane	C_7H_{14}	108-87-2	98.18606	0.92270	4.11500	1.65040	2.90060	779.48	200	0.99530	1500	4.31800
214	1-Methylcyclohexanol	$C_7H_{14}O$	590-67-0	114.18546	0.79590	2.59600	0.62130	2.28800	1698.6	300	1.53020	1200	4.13590
215	*cis*-2-Methylcyclohexanol	$C_7H_{14}O$	7443-70-1	114.18546	0.92279	2.67090	0.68784	1.98470	1732.4	300	1.50990	1200	4.14670
216	*trans*-2-Methylcyclohexanol	$C_7H_{14}O$	7443-52-9	114.18546	0.92279	2.67090	0.68784	1.98470	1732.4	300	1.50990	1200	4.14670
217	Methylcyclopentane	C_6H_{12}	96-37-7	84.15948	0.78439	2.50070	0.81937	1.30010	2416.4	298.15	1.09680	1500	3.54830
218	1-Methylcyclopentene	C_6H_{10}	693-89-0	82.1436	0.69411	3.02090	1.69030	2.12090	781.56	200	0.74637	1500	3.14960
219	3-Methylcyclopentene	C_6H_{10}	1120-62-3	82.1436	0.64220	3.07110	1.63870	2.12980	750.25	200	0.70833	1500	3.15490
220	Methyldichlorosilane	CH_4Cl_2Si	75-54-7	115.03396	0.72830	1.03070	1.54290	0.78110	668.94	200	0.77172	1500	1.58930
221	Methylethyl ether	C_3H_8O	540-67-0	60.09502	0.79188	1.31660	0.87136	0.86597	2468	298.15	0.92283	1500	2.29440
222	Methylethyl ketone	C_4H_8O	78-93-3	72.10572	0.78400	2.10320	1.54880	1.18550	693	200	0.83967	1500	2.48160
223	Methylethyl sulfide	C_3H_8S	624-89-5	76.1606	0.75083	1.95770	1.64240	1.19490	749.19	273.16	0.90040	1500	2.31780
224	Methyl formate	$C_2H_4O_2$	107-31-3	60.05196	0.50600	1.21900	1.63700	0.89400	743	250	0.58880	1500	1.51090
225	Methylisobutyl ether	$C_5H_{12}O$	625-44-5	88.14818	0.72840	3.17130	1.35200	1.89480	585.14	300	1.32000	1200	3.19870
226	Methylisobutyl ketone	$C_6H_{12}O$	108-10-1	100.15888	1.22700	2.19500	0.84200	1.19100	2460	298.15	1.47550	1500.15	3.65320
227	Methyl Isocyanate	C_2H_3NO	624-83-9	57.05132	0.47400	1.22600	2.18800	0.85983	1008.2	298.15	0.51946	1500	1.35950
228	Methylisopropyl ether	$C_4H_{10}O$	598-53-8	74.1216	0.89232	2.47650	1.69600	1.55980	791.4	200	0.92804	1500	2.86960
229	Methylisopropyl ketone	$C_5H_{10}O$	563-80-4	86.1323	1.59140	1.76400	1.20760	–407.40000	10.503	300	1.12910	1500	2.99910
230	Methylisopropyl sulfide	$C_4H_{10}S$	1551-21-9	90.1872	0.99247	2.72750	2.00300	1.89740	849.64	273	1.13770	1500	2.99520
231	Methyl mercaptan	CH_4S	74-93-1	48.10746	0.43697	0.50387	0.80924	0.42223	2192.4	298.15	0.50277	1500	1.06940
232	Methyl methacrylate	$C_5H_8O_2$	80-62-6	100.11582	0.86400	1.81100	0.75430	0.80000	2160	298.15	1.16210	1500	2.86370
233	2-Methyloctanoic acid	$C_9H_{18}O_2$	3004-93-1	158.23802	1.74830	4.92880	1.73840	3.58970	788.01	298.15	2.25670	1500	5.71770
234	2-Methylpentane	C_6H_{14}	107-83-5	86.17536	0.90300	3.80100	1.60200	2.45300	691.6	200	1.01920	1500	3.96170
235	Methyl pentyl ether	$C_6H_{14}O$	628-80-8	102.17476	0.94326	3.59650	1.35330	2.05690	599.92	300	1.56000	1200	3.74090
236	2-Methylpropane	C_4H_{10}	75-28-5	58.1222	0.76394	1.68020	0.82654	1.02850	2483.1	298.15	0.96745	1500	2.66680
237	2-Methyl-2-propanol	$C_4H_{10}O$	75-65-0	74.1216	0.90658	1.71370	0.80201	1.04240	2489.7	298.15	1.13730	1500	2.85290
238	2-Methyl propene	C_4H_8	115-11-7	56.10632	0.73226	1.36060	0.84872	0.88667	2499.8	298.15	0.88184	1500	2.28420
239	Methyl propionate	$C_4H_8O_2$	554-12-1	88.10512	0.77650	2.44200	1.71400	1.81800	716	300	1.12420	1200	2.52760
240	Methylpropyl ether	$C_4H_{10}O$	557-17-5	74.1216	0.92151	2.39430	1.69360	1.48960	797.79	298	1.12510	1200	2.63910
241	Methylpropyl sulfide	$C_4H_{10}S$	3877-15-4	90.1872	0.93775	2.61780	1.72910	1.62360	783.23	298.15	1.17280	1500	2.99040
242	Methylsilane	CH_6Si	992-94-9	46.14384	0.46149	1.27810	1.45650	0.79115	643.23	200	0.51411	1500	1.52530
243	alpha-Methyl styrene	C_9H_{10}	98-83-9	118.1757	1.00010	2.65370	0.77176	1.11620	2405.2	298.15	1.40620	1500	3.86080
244	Methyl tert-butyl ether	$C_5H_{12}O$	1634-04-4	88.1482	0.98059	3.08940	1.64560	2.09850	732.6	298.15	1.35330	1500	3.47810
245	Methyl vinyl ether	C_3H_6O	107-25-5	58.07914	0.60865	1.59650	1.61900	0.93783	739.55	300	0.77480	1500	1.88710
246	Naphthalene	$C_{10}H_8$	91-20-3	128.17052	0.89232	2.67720	0.76122	1.02010	2435.5	298.15	1.32040	1500	3.73860
247	Neon	Ne	7440-01-9	20.1797	See Table 2-155								
248	Nitroethane	$C_2H_5NO_2$	79-24-3	75.0666	0.64084	1.16310	0.80970	0.59591	2425.6	298.15	0.79235	1500	1.92450
249	Nitrogen	N_2	7727-37-9	28.0134	0.29105	0.08615	1.70160	0.00103	909.79	50	0.29105	1500	0.34838
250	Nitrogen trifluoride	F_3N	7783-54-2	71.00191	0.33284	0.49837	0.70930	0.23264	372.91	100	0.34036	1500	0.80919
251	Nitromethane	CH_3NO_2	75-52-5	61.04002	0.47876	0.78357	0.82960	0.37215	2433.8	298.15	0.57242	1500	1.32860
252	Nitrous oxide	N_2O	10024-97-2	44.0128	0.29338	0.32360	1.12380	0.21770	479.4	100	0.29475	1500	0.58278
253	Nitric oxide	NO	10102-43-9	30.0061	See Table 2-155								
254	Nonadecane	$C_{19}H_{40}$	629-92-5	268.5209	3.10620	10.57500	0.76791	–4.56610	912.03	200	3.35330	1500	11.61300
255	Nonanal	$C_9H_{18}O$	124-19-6	142.23862	1.71190	4.50580	1.71000	3.36580	807.38	298.15	2.15310	1500	5.42420
256	Nonane	C_9H_{20}	111-84-2	128.2551	1.51750	4.91500	1.64480	3.47000	749.6	200	1.62570	1500	5.54070
257	Nonanoic acid	$C_9H_{18}O_2$	112-05-0	158.238	0.12660	6.01100	1.08150	4.59460	418.2	298.15	2.29530	1500	5.52670
258	1-Nonanol	$C_9H_{20}O$	143-08-8	144.2545	1.54000	4.93600	1.57800	3.58800	721.11	298.15	2.20920	1500	5.66060
259	2-Nonanol	$C_9H_{20}O$	628-99-9	144.255	1.81180	3.59270	0.81841	2.17920	2550.1	298.15	2.26250	1500	5.85550
260	1-Nonene	C_9H_{18}	124-11-8	126.23922	1.53520	4.68440	1.72880	3.23040	783.67	298.15	2.00140	1500	5.27760
261	Nonyl mercaptan	$C_9H_{20}S$	1455-21-6	160.3201	1.76460	5.04400	1.61820	3.38570	755.48	200	1.86580	1500	5.90820
262	1-Nonyne	C_9H_{16}	3452-09-3	124.22334	1.62890	3.97080	1.89280	3.21360	855.52	298.15	1.96930	1500	4.79240
263	Octadecane	$C_{18}H_{38}$	593-45-3	254.49432	2.95020	10.03400	0.77107	–4.30120	916.73	200	3.18000	1500	11.01600

(*Continued*)

TABLE 2-75 Heat Capacity at Constant Pressure of Inorganic and Organic Compounds in the Ideal Gas State Fit to Hyperbolic Functions C_p [J/(kmol·K)] (*Continued*)

Cmpd. no.	Name	Formula	CAS	Mol. wt.	$C_1 \times$ 1E-05	$C_2 \times$ 1E-05	$C_3 \times$ 1E-03	$C_4 \times$ 1E-05	C_5	T_{min}, K	C_p at $T_{min} \times$ 1E-05	T_{max}, K	C_p at $T_{max} \times$ 1E-05
264	Octanal	$C_8H_{16}O$	124-13-0	128.212	1.59550	3.14670	0.85788	1.47130	2679.4	298.15	1.92770	1500	4.91940
265	Octane	C_8H_{18}	111-65-9	114.22852	1.35540	4.43100	1.63560	3.05400	746.4	200	1.45290	1500	4.97640
266	Octanoic acid	$C_8H_{16}O_2$	124-07-2	144.211	1.40820	4.34360	1.46620	2.76870	659.38	298.15	2.06520	1500	5.04110
267	1-Octanol	$C_8H_{18}O$	111-87-5	130.22792	1.38050	4.45900	1.57510	3.20160	718.8	298.15	1.98320	1500	5.09650
268	2-Octanol	$C_8H_{18}O$	123-96-6	130.228	1.58030	3.23480	0.79814	1.78820	2434.3	298.15	2.02310	1500	5.20600
269	2-Octanone	$C_8H_{16}O$	111-13-7	128.21204	1.39010	3.80600	1.37170	2.25730	660.96	150	1.41620	1500	4.65470
270	3-Octanone	$C_8H_{16}O$	106-68-3	128.21204	1.49520	4.41030	0.80211	−2.09580	981.95	200	1.57750	1500	4.90670
271	1-Octene	C_8H_{16}	111-66-0	112.21264	1.35990	4.16050	1.73170	2.86750	784.47	298.15	1.77230	1500	4.68070
272	Octyl mercaptan	$C_8H_{18}S$	111-88-6	146.29352	1.59810	4.60630	1.62950	3.03010	756.28	200	1.68810	1500	5.35490
273	1-Octyne	C_8H_{14}	629-05-0	110.19676	1.23070	3.49420	1.52800	2.46170	694.81	200	1.34480	1500	4.16040
274	Oxalic acid	$C_2H_2O_4$	144-62-7	90.03488	0.56777	1.11940	0.62070	−0.38079	676.72	298.15	0.79711	1500	1.56180
275	Oxygen	O_2	7782-44-7	31.9988	0.29103	0.10040	2.52650	0.09356	1153.8	50	0.29103	1500	0.36533
276	Ozone	O_3	10028-15-6	47.9982	0.33483	0.29577	1.52170	0.27151	680.35	100	0.33489	1500	0.59282
277	Pentadecane	$C_{15}H_{32}$	629-62-9	212.41458	2.46790	8.42120	1.68650	5.85370	743.6	200	2.65860	1500	9.22090
278	Pentanal	$C_5H_{10}O$	110-62-3	86.1323	1.06000	2.85000	1.93000	2.01000	879.23	298.15	1.25200	1500	3.24590
279	Pentane	C_5H_{12}	109-66-0	72.14878	0.88050	3.01100	1.65020	1.89200	747.6	200	0.94039	1500	3.29270
280	Pentanoic acid	$C_5H_{10}O_2$	109-52-4	102.132	2.83600	1.08000	2.10700	−3.56000	283	298.15	1.38240	1500	3.29520
281	1-Pentanol	$C_5H_{12}O$	71-41-0	88.1482	0.90600	3.06200	1.60540	2.11500	717.97	298.15	1.30440	1500	3.41330
282	2-Pentanol	$C_5H_{12}O$	6032-29-7	88.1482	1.08530	3.07470	1.86720	2.22710	825.4	298.15	1.35390	1500	3.47010
283	2-Pentanone	$C_5H_{10}O$	107-87-9	86.1323	0.90053	2.70850	1.65920	1.80120	743.96	200	0.95908	1500	3.07970
284	3-Pentanone	$C_5H_{10}O$	96-22-0	86.1323	0.96896	2.49070	1.41770	1.30100	646.7	200	1.05360	1500	3.03580
285	1-Pentene	C_5H_{10}	109-67-1	70.1329	0.82523	2.59430	1.72910	1.76800	778.7	298.15	1.08560	1500	2.88970
286	2-Pentyl mercaptan	$C_5H_{12}S$	2084-19-7	104.21378	1.13270	2.94700	1.74180	2.09870	795.78	298	1.42020	1500	3.49940
287	Pentyl mercaptan	$C_5H_{12}S$	110-66-7	104.21378	1.09740	3.29590	1.67610	1.94860	757.67	200	1.15470	1500	3.69560
288	1-Pentyne	C_5H_8	627-19-0	68.11702	0.75300	2.09050	1.53070	1.37800	672.8	200	0.82759	1500	2.47540
289	2-Pentyne	C_5H_8	627-21-4	68.11702	0.82096	1.46770	0.84463	0.96258	2452.3	298.15	0.98524	1500	2.50600
290	Phenanthrene	$C_{14}H_{10}$	85-01-8	178.2292	1.27200	3.56890	0.75021	1.32990	2409.4	298.15	1.86940	1500	5.06820
291	Phenol	C_6H_6O	108-95-2	94.11124	0.43400	2.44500	1.15200	1.51200	507	100	0.44014	1500	2.60450
292	Phenyl isocyanate	C_7H_5NO	103-71-9	119.1207	0.59683	2.55330	1.23970	1.55190	576.78	298.15	1.10540	1500	2.83900
293	Phthalic anhydride	$C_8H_4O_3$	85-44-9	148.11556	0.73640	2.54400	1.08520	0.80800	573	298.15	1.07450	1000.15	2.67370
294	Propadiene	C_3H_4	463-49-0	40.06386	0.48308	0.73665	0.78152	0.48698	2480	298.15	0.59127	1500	1.33810
295	Propane	C_3H_8	74-98-6	44.09562	0.59474	1.26610	0.84431	0.86165	2482.7	298.15	0.73665	1500	2.05600
296	1-Propanol	C_3H_8O	71-23-8	60.09502	0.61900	2.02130	1.62930	1.29560	727.4	298.15	0.85428	1500	2.24580
297	2-Propanol	C_3H_8O	67-63-0	60.095	0.73145	2.03130	1.93750	1.48150	843.37	298.15	0.89664	1500	2.27600
298	Propenylcyclohexene	C_9H_{14}	13511-13-2	122.20746	1.05630	4.33970	1.60980	3.18100	729.66	300	1.63920	1500	4.65270
299	Propionaldehyde	C_3H_6O	123-38-6	58.07914	0.71306	1.16890	0.92731	1.02100	2512.8	298.15	0.80337	1500	2.11890
300	Propionic acid	$C_3H_6O_2$	79-09-4	74.0785	0.69590	1.77780	1.70980	1.26540	763.78	298.15	0.89382	1500	2.12480
301	Propionitrile	C_3H_5N	107-12-0	55.0785	0.52525	1.46630	1.54760	0.93033	674.15	298.15	0.73244	1500	1.72030
302	Propyl acetate	$C_5H_{10}O_2$	109-60-4	102.1317	1.79940	1.75300	1.19600	−4.12000	108.2	298.15	1.35940	1500	3.20240
303	Propyl amine	C_3H_9N	107-10-8	59.11026	0.76078	2.10490	1.72560	1.39360	789.03	200	0.79326	1500	2.43530
304	Propylbenzene	C_9H_{12}	103-65-1	120.19158	1.13460	2.80980	0.79504	1.23760	2449.5	298.15	1.52430	1500	4.16280
305	Propylene	C_3H_6	115-07-1	42.07974	0.43852	1.50600	1.39880	0.74754	616.46	130	0.44363	1500	1.68170

306	Propyl formate	$C_4H_8O_2$	110-74-7	88.10512	0.87100	2.44700	1.92540	1.88800	821.3	298.15	1.10220	1500	2.74840
307	2-Propyl mercaptan	C_3H_8S	75-33-2	76.16062	0.73815	1.95290	1.59540	1.23560	730.5	200	0.78247	1500	2.32870
308	Propyl mercaptan	C_3H_8S	107-03-9	76.16062	0.74740	1.95230	1.63100	1.21120	750.92	200	0.78483	1500	2.32160
309	1,2-Propylene glycol	$C_3H_8O_2$	57-55-6	76.09442	2.01140	0.80820	1.86560	−2.44040	279.98	298.15	1.02180	1000.15	2.11750
310	Quinone	$C_6H_4O_2$	106-51-4	108.09476	0.80992	1.57510	0.74707	0.60196	2344.9	298.15	1.07700	1500	2.49790
311	Silicon tetrafluoride	F_4Si	7783-61-1	104.07911	0.36810	0.71245	0.65201	0.46721	286.03	100	0.41815	1500	1.05370
312	Styrene	C_8H_8	100-42-5	104.14912	0.89300	2.15030	0.77200	0.99900	2442	100	0.89310	1500	3.24160
313	Succinic acid	$C_4H_6O_4$	110-15-6	118.08804	0.71806	2.26690	1.27390	1.73420	537.65	300	1.33700	1200	2.58230
314	Sulfur dioxide	O_2S	7446-09-5	64.0638	0.33375	0.25864	0.93280	0.10880	423.7	100	0.33538	1500	0.56950
315	Sulfur hexafluoride	F_6S	2551-62-4	146.0554192	0.35256	1.22700	0.67938	0.78407	351.27	100	0.38719	1500	1.53970
316	Sulfur trioxide	O_3S	7446-11-9	80.0632	0.33408	0.49677	0.87322	0.28563	393.74	100	0.34081	1500	0.79673
317	Terephthalic acid	$C_8H_6O_4$	100-21-0	166.13084	1.00130	2.61780	0.87239	1.28310	3521.5	298.15	1.26040	1500	3.59670
318	*o*-Terphenyl	$C_{18}H_{14}$	84-15-1	230.30376	2.07190	6.26680	2.40440	6.34500	967.71	298.15	2.47630	1500	6.69470
319	Tetradecane	$C_{14}H_{30}$	629-59-4	198.388	2.30820	7.86780	1.68230	5.44860	743.1	200	2.48640	1500	8.62250
320	Tetrahydrofuran	C_4H_8O	109-99-9	72.10572	0.54850	1.84910	0.83310	0.89089	2458.5	298.15	0.76617	1500	2.55380
321	1,2,3,4-Tetrahydronaphthalene	$C_{10}H_{12}$	119-64-2	132.20228	1.05550	3.21010	0.78248	1.43950	2433	298.15	1.52510	1500	4.53700
322	Tetrahydrothiophene	C_4H_8S	110-01-0	88.17132	0.65341	1.71150	0.77705	0.91824	2432.6	298.15	0.90956	1500	2.56890
323	2,2,3,3-Tetramethylbutane	C_8H_{18}	594-82-1	114.22852	1.13520	5.63310	1.62110	3.38290	681.9	200	1.30690	1500	5.57840
324	Thiophene	C_4H_4S	110-02-1	84.13956	0.48694	1.23760	0.71271	0.47248	2484.2	298.15	0.72827	1500	1.81130
325	Toluene	C_7H_8	108-88-3	92.13842	0.58140	2.86300	1.44060	1.89800	650.43	200	0.70157	1500	3.00290
326	1,1,2-Trichloroethane	$C_2H_3Cl_3$	79-00-5	133.40422	0.66554	1.12570	1.54540	0.97196	717.04	298.15	0.84963	1500	1.64330
327	Tridecane	$C_{13}H_{28}$	629-50-5	184.36142	2.14960	7.30450	1.66950	4.99980	741.02	200	2.31560	1500	8.02510
328	Triethyl amine	$C_6H_{15}N$	121-44-8	101.19	1.27660	2.55590	0.80937	1.48290	2231.7	200	1.32780	1500	4.20460
329	Trimethyl amine	C_3H_9N	75-50-3	59.11026	0.71070	1.50510	0.79662	0.84537	2187.6	200	0.74387	1500	2.43220
330	1,2,3-Trimethylbenzene	C_9H_{12}	526-73-8	120.19158	1.05200	3.79000	1.48140	2.33100	667.3	200	1.18320	1500	4.19830
331	1,2,4-Trimethylbenzene	C_9H_{12}	95-63-6	120.19158	1.22100	2.68650	0.82886	1.42030	2443	298.15	1.54310	1500	4.18780
332	2,2,4-Trimethylpentane	C_8H_{18}	540-84-1	114.22852	1.13900	5.28600	1.59400	3.35100	677.94	200	1.31390	1500	5.37690
333	2,3,3-Trimethylpentane	C_8H_{18}	560-21-4	114.22852	0.98200	5.40200	1.53100	3.49300	639.9	200	1.21940	1500	5.37540
334	1,3,5-Trinitrobenzene	$C_6H_3N_3O_6$	99-35-4	213.10452	2.03670	1.81810	1.20890	0.79777	1060.8	298.15	2.10540	1500	3.75850
335	2,4,6-Trinitrotoluene	$C_7H_5N_3O_6$	118-96-7	227.1311	2.15400	2.44320	1.11260	0.58651	950.59	298.15	2.27260	1500	4.35600
336	Undecane	$C_{11}H_{24}$	1120-21-4	156.30826	1.95290	6.09980	1.70870	4.13020	775.4	200	2.05940	1500	6.83420
337	1-Undecanol	$C_{11}H_{24}O$	112-42-5	172.30766	1.85900	5.86900	1.57180	4.32600	722.7	298.15	2.66140	1500	6.78340
338	Vinyl acetate	$C_4H_6O_2$	108-05-4	86.08924	0.53600	2.11900	1.19800	1.14700	510	100	0.54044	1500	2.37500
339	Vinyl acetylene	C_4H_4	689-97-4	52.07456	0.55978	1.21410	1.61020	0.89079	710.4	200	0.59670	1500	1.55900
340	Vinyl chloride	C_2H_3Cl	75-01-4	62.49822	0.42364	0.87350	1.64920	0.65560	739.07	200	0.44572	1500	1.14230
341	Vinyl trichlorosilane	$C_2H_3Cl_3Si$	75-94-5	161.48972	0.84894	1.14710	1.38000	0.90000	644.61	298.15	1.07540	1500	1.85950
342	Water	H_2O	7732-18-5	18.01528	0.33363	0.26790	2.61050	0.08896	1169	100	0.33363	2273.15	0.52760
343	*m*-Xylene	C_8H_{10}	108-38-3	106.165	0.75680	3.39240	1.49600	2.24700	675.9	200	0.87588	1500	3.59200
344	*o*-Xylene	C_8H_{10}	95-47-6	106.165	0.85210	3.29540	1.49440	2.11500	675.8	200	0.96428	1500	3.59650
345	*p*-Xylene	C_8H_{10}	106-42-3	106.165	0.75120	3.39700	1.49280	2.24700	675.1	200	0.87096	1500	3.59230

Constants in this table can be used in the following equation to calculate the ideal gas heat capacity C^0_p. $C^0_p = C_1 + C_2[C_3/T/\sinh(C_3/T)]^2 + C_4[C_5/T/\cosh(C_5/T)]^2$ where C^0_p is in J/(kmol·K) and T is in K.