

Forms: (1) $C_p^\circ = a + b(T) + c(T)^2 + d(T)^3$;

(2) $C_p^\circ = a + b(T) + c(T)^{-2}$.

Units of C_p° are J/(g mol)(K or °C).

To convert to cal/(g mol)(K or °C) = Btu/(lb mol)(°R or °F), multiply by 0.2390.

Note: $b \cdot 10^2$ means the value of b is to be multiplied by 10^{-2} , e.g., 20.10×10^{-2} for acetone.

Compound	Formula	Mol. Wt.	State	Form	T	a	$b \cdot 10^2$	$c \cdot 10^5$	$d \cdot 10^9$	Temp. Range (in T)
Acetone	CH ₃ COCH ₃	58.08	g	1	°C	71.96	20.10	-12.78	34.76	0-1200
Acetylene	C ₂ H ₂	26.04	g	1	°C	42.43	6.053	-5.033	18.20	0-1200
Air		29.0	g	1	°C	28.94	0.4147	0.3191	-1.965	0-1500
			g	1	K	28.09	0.1965	0.4799	-1.965	273-1800
Ammonia	NH ₃	17.03	g	1	°C	35.15	2.954	0.4421	-6.686	0-1200
Ammonium sulfate	(NH ₄) ₂ SO ₄	132.15	c	1	K	215.9				275-328
Benzene	C ₆ H ₆	78.11	l	1	K	-7.27329	77.054	-164.82	1897.9	279-350
			g	1	°C	74.06	32.95	-25.20	77.57	0-1200
Isobutane	C ₄ H ₁₀	58.12	g	1	°C	89.46	30.13	-18.91	49.87	0-1200
<i>n</i> -Butane	C ₄ H ₁₀	58.12	g	1	°C	92.30	27.88	-15.47	34.98	0-1200
Isobutene	C ₄ H ₈	56.10	g	1	°C	82.88	25.64	-17.27	50.50	0-1200
Calcium carbide	CaC ₂	64.10	c	2	K	68.62	1.19	-8.66 × 10 ¹⁰	—	298-720
Calcium carbonate	CaCO ₃	100.09	c	2	K	82.34	4.975	-12.87 × 10 ¹⁰	—	273-1033
Calcium hydroxide	Ca(OH) ₂	74.10	c	1	K	89.5				276-373
Calcium oxide	CaO	56.08	c	2	K	41.84	2.03	-4.52 × 10 ¹⁰		10,273-1173
Carbon	C	12.01	c [†]	2	K	11.18	1.095	-4.891 × 10 ¹⁰		273-1373
Carbon dioxide	CO ₂	44.01	g	1	°C	36.11	4.233	-2.887	7.464	0-1500
Carbon monoxide	CO	28.01	g	1	°C	28.95	0.4110	0.3548	-2.220	0-1500
Carbon tetrachloride	CCl ₄	153.84	l	1	K	12.285	0.01095	-318.26	3425.2	273-343
Chlorine	Cl ₂	70.91	g	1	°C	33.60	1.367	-1.607	6.473	0-1200
Copper	Cu	63.54	c	1	K	22.76	0.06117			273-1357
Cumene (Isopropyl benzene)	C ₉ H ₁₂	120.19	g	1	°C	139.2	53.76	-39.79	120.5	0-1200
Cyclohexane	C ₆ H ₁₂	84.16	g	1	°C	94.140	49.62	-31.90	80.63	0-1200
Cyclopentane	C ₅ H ₁₀	70.13	g	1	°C	73.39	39.28	-25.54	68.66	0-1200
Ethane	C ₂ H ₆	30.07	g	1	°C	49.37	13.92	-5.816	7.280	0-1200
Ethyl alcohol	C ₂ H ₆ O	46.07	l	1	K	-325.137	0.041379	-1403.1	1.7035 × 10 ⁴	250-400
			g	1	°C	61.34	15.72	-8.749	19.83	0-1200
Ethylene	C ₂ H ₄	28.05	g	1	°C	40.75	11.47	-6.891	17.66	0-1200
Ferric oxide	Fe ₂ O ₃	159.70	c	2	K	103.4	6.711	-17.72 × 10 ¹⁰	—	273-1097
Formaldehyde	CH ₂ O	30.03	g	1	°C	34.28	4.268	0.0000	-8.694	0-1200
Helium	He	4.00	g	1	°C	20.8				All

<i>n</i> -Hexane	C ₆ H ₁₄	86.17	l	1	K	31.421	0.97606	-235.37	3092.7	273–400
				g	1	°C	137.44	40.85	-23.92	57.66
Hydrogen	H ₂	2.016	g	1	°C	28.84	0.00765	0.3288	-0.8698	0–1500
Hydrogen bromide	HBr	80.92	g	1	°C	29.10	-0.0227	0.9887	-4.858	0–1200
Hydrogen chloride	HCl	36.47	g	1	°C	29.13	-0.1341	0.9715	-4.335	0–1200
Hydrogen cyanide	HCN	27.03	g	1	°C	35.3	2.908	1.092		0–1200
Hydrogen sulfide	H ₂ S	34.08	g	1	°C	33.51	1.547	0.3012	-3.292	0–1500
Magnesium chloride	MgCl ₂	95.23	c	1	K	72.4	1.58			273–991
Magnesium oxide	MgO	40.32	c	2	K	45.44	0.5008	-8.732 × 10 ¹⁰		273–2073
Methane	CH ₄	16.04	g	1	°C	34.31	5.469	0.3661	-11.00	0–1200
			g	1	K	19.87	5.021	1.268	-11.00	273–1500
Methyl alcohol	CH ₃ OH	32.04	l	1	K	-259.25	0.03358	-1.1639	1.4052 × 10 ⁴	273–400
			g	1	°C	42.93	8.301	-1.87	-8.03	0–700
Methyl cyclohexane	C ₇ H ₁₄	98.18	g	1	°C	121.3	56.53	-37.72	100.8	0–1200
Methyl cyclopentane	C ₆ H ₁₂	84.16	g	1	°C	98.83	45.857	-30.44	83.81	0–1200
Nitric acid	HNO ₃	63.02	l	1	°C	110.0				25
Nitric oxide	NO	30.01	g	1	°C	29.50	0.8188	-0.2925	0.3652	0–3500
Nitrogen	N ₂	28.02	g	1	°C	29.00	0.2199	0.5723	-2.871	0–1500
Nitrogen dioxide	NO ₂	46.01	g	1	°C	36.07	3.97	-2.88	7.87	0–1200
Nitrogen tetroxide	N ₂ O ₄	92.02	g	1	°C	75.7	12.5	-11.3		0–300
Nitrous oxide	N ₂ O	44.02	g	1	°C	37.66	4.151	-2.694	10.57	0–1200

Oxygen	O ₂	32.00	g	1	°C	29.10	1.158	-0.6076	1.311	0-1500
<i>n</i> -Pentane	C ₅ H ₁₂	72.15	l	1	K	33.24	192.41	-236.87	17,944	270-350
						°C	114.8	34.09	-18.99	42.26
Propane	C ₃ H ₈	44.09	g	1	°C	68.032	22.59	-13.11	31.71	0-1200
Propylene	C ₃ H ₆	42.08	g	1	°C	59.580	17.71	-10.17	24.60	0-1200
Sodium carbonate	Na ₂ CO ₃	105.99	c	1	K	121				288-371
Sodium carbonate	Na ₂ CO ₃ ·10H ₂ O	286.15	c	1	K	535.6				298
Sulfur	S	32.07	c [†]	1	K	15.2	2.68			273-368
						c [§]	1	K	18.5	1.84
Sulfuric acid	H ₂ SO ₄	98.08	l	1	°C	139.1	15.59			10-45
Sulfur dioxide	SO ₂	64.07	g	1	°C	38.91	3.904	-3.104	8.606	0-1500
Sulfur trioxide	SO ₃	80.07	g	1	°C	48.50	9.188	-8.540	32.40	0-1000
Toluene	C ₇ H ₈	92.13	l	1	K	1.8083	81.222	-151.27	1630	270-370
						°C	94.18	38.00	-27.86	80.33
Water	H ₂ O	18.016	l	1	K	18.2964	47.212	-133.88	1314.2	273-373
						°C	33.46	0.6880	0.7604	-3.593

*(at 1 atm). [†]Graphite. [‡]Rhombic. [§]Monoclinic.