

Substance and State	ΔH_f° (kJ/mol)	ΔG_f° (kJ/mol)	ΔS (J/K·mol)	Substance and State	ΔH_f° (kJ/mol)	ΔG_f° (kJ/mol)	ΔS (J/K·mol)
Aluminum				Calcium (continued)			
Al _(s)	0	0	28	CaSO _{4(s)}	-1433	-1320	107
Al ₂ O _{3(s)}	-1676	-1582	51	CaSiO _{3(s)}	-1630	-1550	84
Al(OH) _{3(s)}	-1277			Carbon			
AlCl _{3(s)}	-704	-629	111	C _(s) (graphite)	0	0	6
Barium				C _(s) (diamond)	2	3	2
Ba _(s)	0	0	67	CO _(g)	-110.5	-137	198
BaCO _{3(s)}	-1219	-1139	112	CO _{2(g)}	-393.5	-394	214
BaO _(s)	-582	-552	70	CH _{4(g)}	-75	-51	186
Ba(OH) _{2(s)}	-946			CH ₃ OH _(g)	-201	-163	240
BaSO _{4(s)}	-1465	-1353	132	CH ₃ OH _(l)	-239	-166	127
Beryllium				H ₂ CO _(g)	-116	-110	219
Be _(s)	0	0	152	HCOOH _(g)	-363	-351	249
BeO _(s)	-599	-569	14	HCN _(g)	135.1	125	202
Be(OH) _{2(s)}	-904	-815	47	C ₂ H _{2(g)}	227	209	201
Bromine				C ₂ H _{4(g)}	52	68	219
Br _{2(l)}	0	0	152	CH ₃ CHO _(g)	-166	-129	250
Br _{2(g)}	31	3	245	C ₂ H ₅ OH _(l)	-278	-175	161
Br _{2(aq)}	-3	4	130	C ₂ H _{6(g)}	-84.7	-32.9	229.5
Br _(aq)	-121	-104	82	C ₃ H _{6(g)}	20.9	62.7	266.9
HBr _(g)	-36	-53	199	C ₃ H _{8(g)}	-104	-24	270
Cadmium				C ₂ H ₄ O _(g)	-53	-13	242
Cd _(s)	0	0	52	CH ₂ =CHCN _(g)	185.0	195.4	274
CdO _(s)	-258	-228	55	CH ₃ COOH _(l)	-484	-389	160
Cd(OH) _{2(s)}	-561	-474	96	C ₆ H ₁₂ O _{6(s)}	-1275	-911	212
CdS _(s)	-162	-156	65	CCl ₄	-135	-65	216
CdSO _{4(s)}	-935	-823	123	Chlorine			
Calcium				Cl _{2(g)}	0	0	223
Ca _(s)	0	0	41	Cl _{2(aq)}	-23	7	121
CaC _{2(s)}	-63	-68	70	Cl _(aq)	-167	-131	57
CaCO _{3(s)}	-1207	-1129	93	HCl _(g)	-92	-95	187
CaO _(s)	-635	-604	40	Chromium			
Ca(OH) _{2(s)}	-987	-899	83	Cr _(s)	0	0	24
Ca ₃ (PO ₄) _{2(s)}	-4126	-3890	241	Cr ₂ O _{3(s)}	-1128	-1047	81

Substance and State	ΔH_f° (kJ/mol)	ΔG_f° (kJ/mol)	ΔS (J/K·mol)	Substance and State	ΔH_f° (kJ/mol)	ΔG_f° (kJ/mol)	ΔS (J/K·mol)
Chromium (continued)				Iron (continued)			
CrO _{3(s)}	-579	-502	72	FeSO _{4(s)}	-929	-825	121
Copper				Lead			
Cu _(s)	0	0	33	Pb _(s)	0	0	65
CuCO _{3(s)}	-595	-518	88	PbO _{2(s)}	-277	-217	69
Cu ₂ O _(s)	-170	-148	93	PbS _(s)	-100	-99	91
CuO _(s)	-156	-128	43	PbSO _{4(s)}	-920	-813	149
Cu(OH) _{2(s)}	-450	-372	108	Magnesium			
CuS _(s)	-49	-49	67	Mg _(s)	0	0	32
Fluorine				MgCO _{3(s)}	-1113	-1029	66
F _{2(g)}	0	0	203	MgO _(s)	-602	-569	27
F ⁻ _(aq)	-333	-279	-14	Mg(OH) _{2(s)}	-925	-834	64
HF _(g)	-271	-273	174	Manganese			
Hydrogen				Mn _(s)	0	0	32
H _{2(g)}	0	0	131	MnO _(s)	-385	-363	60
H _(g)	217	203	115	Mn ₃ O _{4(s)}	-1387	-1280	149
H ⁺ _(aq)	0	0	0	Mn ₂ O _{3(s)}	-971	-893	110
OH ⁻ _(aq)	-230	-157	-11	MnO _{2(s)}	-521	-466	53
H ₂ O _(l)	-286	-237	70	MnO ₄ ⁻ _(aq)	-543	-449	190
H ₂ O _(g)	-242	-229	189	Mercury			
Iodine				Hg _(l)	0	0	76
I _{2(s)}	0	0	116	Hg ₂ Cl _{2(s)}	-265	-211	196
I _{2(g)}	62	19	261	HgCl _{2(s)}	-230	-184	144
I _{2(aq)}	23	16	137	HgO _(s)	-90	-59	70
I ⁻ _(aq)	-55	-52	106	HgS _(s)	-58	-49	78
Iron				Nickel			
Fe _(s)	0	0	27	Ni _(s)	0	0	30
Fe ₃ C _(s)	21	15	108	NiCl _{2(s)}	-316	-272	107
Fe _{0.95} O _(s)	-264	-240	59	NiO _(s)	-241	-213	38
FeO	-272	-255	61	Ni(OH) _{2(s)}	-538	-453	79
Fe ₃ O _{4(s)}	-1117	-1013	146	NiS _(s)	-93	-90	53
Fe ₂ O _{3(s)}	-826	-740	90	Nitrogen			
FeS _(s)	-95	-97	67	N _{2(g)}	0	0	192
FeS _{2(s)}	-178	-166	53	NH _{3(g)}	-46	-17	193

Substance and State	ΔH_f° (kJ/mol)	ΔG_f° (kJ/mol)	ΔS (J/K·mol)		Substance and State	ΔH_f° (kJ/mol)	ΔG_f° (kJ/mol)	ΔS (J/K·mol)
Nitrogen (continued)					Potassium (continued)			
NH _{3(aq)}	-80	-27	111		KClO _{4(s)}	-433	-304	151
NH ₄ ⁺ _(aq)	-132	-79	113		K ₂ O _(s)	-361	-322	98
NO _(g)	90	87	211		K ₂ O _{2(s)}	-496	-430	113
NO _{2(g)}	34	52	240		KO _{2(s)}	-283	-238	117
N ₂ O _(g)	82	104	220		KOH _(s)	-425	-379	79
N ₂ O _{4(g)}	10	98	304		KOH _(aq)	-481	-440	9.20
N ₂ O _{4(l)}	-20	97	209		Silicon			
N ₂ O _{5(s)}	-42	134	178		SiO _{2(s)}	-199	-856	42
N ₂ H _{4(l)}	51	149	121		SiCl _{4(s)}	-687	-620	240
N ₂ H ₃ CH _{3(l)}	54	180	166		Silver			
HNO _{3(aq)}	-207	-111	146		Ag _(s)	0	0	43
HNO _{3(l)}	-174	-81	156		Ag ⁺ _(aq)	105	77	73
NH ₄ ClO _{4(s)}	-295	-89	186		AgBr _(s)	-100	-97	107
NH ₄ Cl _(s)	-314	-203	96		AgCN _(s)	146	164	84
Oxygen					AgCl _(s)	-127	-110	96
O _{2(g)}	0	0	205		Ag ₂ CrO _{4(s)}	-712	-622	217
O _(g)	249	232	161		AgI _(s)	-62	-66	115
O _{3(g)}	143	163	239		Ag ₂ O _(s)	-31	-11	122
Phosphorus					Ag ₂ S _(s)	-32	-40	146
P _(s) (white)	0	0	41		Sodium			
P _(s) (red)	-18	-12	23		Na _(s)	0	0	51
P _(s) (black)	-39	-33	23		Na ⁺ _(aq)	-240	-262	59
P _{4(g)}	59	24	280		NaBr _(s)	-360	-347	84
PF _{5(g)}	-1578	-1509	296		Na ₂ CO _{3(s)}	-1131	-1048	136
PH _{3(g)}	5	13	210		NaHCO _{3(s)}	-948	-852	102
H ₃ PO _{4(s)}	-1279	-1119	110		NaCl _(s)	-411	-384	72
H ₃ PO _{4(l)}	-1267	---	---		NaH _(s)	-56	-33	40
H ₃ PO _{4(g)}	-1288	-1143	158		NaI _(s)	-288	-282	91
P ₄ O _{10(s)}	-2984	-2698	229		NaNO _{2(s)}	-359		
Potassium					NaNO _{3(s)}	-467	-366	116
K _(s)	0	0	64		Na ₂ O _(s)	-416	-377	73
KCl _(s)	-436	-408	83		NaOH _(s)	-427	-381	64
KClO _{3(s)}	-391	-290	143		NaOH _(aq)	-470	-419	50

Substance and State	ΔH_f^0 (kJ/mol)	ΔG_f^0 (kJ/mol)	ΔS (J/K·mol)		Substance and State	ΔH_f^0 (kJ/mol)	ΔG_f^0 (kJ/mol)	ΔS (J/K·mol)
Sulfur					Zinc			
S _(s) rhombic	0	0	32		Zn _(s)	0	0	402
S _(s) clinic	0.3	0.1	33		ZnO _(s)	-348	-318	44
S ²⁻ _(aq)	33	86	-15		Zn(OH) _{2(s)}	-642		
S _{8(g)}	102	50	431		ZnS _(s) wurtz	-193		
SF _{6(g)}	-1209	-1105	292		ZnS _(s) blende	-206	-201	58
H ₂ S _(g)	-21	-34	206		ZnSO _{4(s)}	-983	-874	120
SO _{2(g)}	-297	-300	248					
SO _{3(g)}	-396	-371	257					
SO ₄ ²⁻ _(aq)	-909	-745	20					
H ₂ SO _{4(l)}	-814	-690	157					
H ₂ SO _{4(aq)}	-909	-745	20					
Tin								
Sn _(s) (white)	0	0	52					
Sn _(s) (gray)	-2	0.1	44					
SnO _(s)	-285	-257	56					
SnO _{2(s)}	-581	-520	52					
Sn(OH) _{2(s)}	-561	-492	155					
Titanium								
TiCl _{4(g)}	-763	-727	355					
TiO _{2(s)}	-945	-890	50					
Uranium								
U _(s)	0	0	50					
UF _{6(s)}	-2137	-2008	228					
UF _{6(g)}	-2113	-2029	380					
UO _{2(s)}	-1083	-1029	78					
U ₃ O _{8(s)}	-3575	-3393	282					
UO _{3(s)}	-1230	-1150	99					
Xenon								
Xe _(g)	0	0	170					
XeF _{2(g)}	-108	-48	254					
XeF _{4(s)}	-251	-121	146					
XeF _{6(g)}	-294							
XeO _{3(s)}	402							