

Commonly Used Thermodynamic Data

- Remember, values can vary depending on which source you look at.
- Always make sure to use the values given in the question. Only look them up if not given them!
- Values on this chart are (mostly) from <https://tinyurl.com/rk58rof>



Formula and phase	ΔH° kJ/mol	ΔS° J/molK	ΔG° kJ/mol
Al (s)	0	28.3	0
Al ₂ O ₃ (l)	-1581.13	89.58	-1499.25
AlCl ₃ (s)	-705.63	109.3	-630.07
C (s)graphite	0	5.7	0
C ₂ H ₄ (g)	52.30	219.20	68.24
C ₂ H ₅ OH (l)	-276.98	161.04	-174.18
C ₂ H ₆ (g)	-84.68	229.12	-32.80
C ₃ H ₈ (l)	-103.8	269.9	-23.5
Ca (s)	0.00	41.42	0.00
Ca ²⁺ (aq)	-542.83	-53.14	-553.54
CaCl ₂ (s)	-795	114	-750.2
CaCO ₃ (s)	-1206.92	92.88	-1128.84
CaO (s)	-635.13	38.20	-603.54
CaSO ₄ (s)	-1434.11	106.69	-1321.85
CH ₃ Cl (g)	-83.7	234	-60.2
CH ₃ OH (l)	-239.03	127.24	-166
CH ₄ (g)	-74.85	186.27	-50.84
Cl ₂ (g)	0	223.1	0
CO(g)	-110.54	197.90	-137
CO ₂ (g)	-393.5	213.7	-394.4
COCl ₂ (g)	-220	283.76	-206
CS ₂ (l)	87.9	151.34	63.6
Cu ²⁺ (aq)	64.39	-98.7	64.98
F ₂ (g)	0	202.8	0
Fe (s)	0	27.28	0
Fe ₂ O ₃ (s)	-824.25	87.40	-742.24
H ⁺ (aq)	0	0	0
H ₂ (g)	0	130.7	0
H ₂ O (g)	-241.8	188.8	-228.6
H ₂ O (l)	-285.8	69.4	-237.0

Formula and phase	ΔH° kJ/mol	ΔS° J/molK	ΔG° kJ/mol
H ₂ O ₂ (l)	-187.6	109.5	-120.2
H ₂ S (g)	-20.17	205.77	-33.05
H ₂ SO ₄ (l)	-814.00	156.90	-690.07
HCl (g)	-92.5	186.77	-95.31
HCN (g)	135.14	201.67	124.68
HCO ₃ ⁻ (aq)	-691.11	95.0	-587.06
HF (g)	-273.3	173.8	-275.4
K ₂ SO ₄ (s)	-1437.8	175.6	-1321.4
KCl (s)	-436.69	82.55	-436.69
Mg ²⁺ (aq)	-461.96	-118	-456.01
N ₂ (g)	0	191.50	0
N ₂ H ₄ (g)	95.40	238.5	159.28
N ₂ H ₄ (l)	50.63	121.2	149.24
Na ⁺ (aq)	-240.1	59.0	-261.9
Na ₂ CO ₃ (s)	-1130.94	135.98	-1047.67
NH ₃ (g)	-46.11	192.8	-16.48
NH ₄ Cl (s)	-314.4	94.56	-202.97
NO (g)	91.3	210.8	87.6
NO ₂ (g)	34.0	240.5	51.84
NOCl (g)	51.7	261.7	66.4
O ₂ (g)	0	205.1	0
Pb (s)	0	64.77	0
PbO (s)	-218.99	66.53	-189.24
SO ₂ (g)	-296.83	248.11	-300.19
SO ₃ (g)	-395.72	256.65	-371.08
TiCl ₄ (l)	-804.2	252.3	-737.2
TiO ₂ (s)	-939.7	49.9	-884.5
Zn (s)	0.00	41.63	0.00
Zn ²⁺ (aq)	-152.4	-106.5	-147.21

Please tell me if anything looks really wrong, not just slight variation between sources!
I was cutting and pasting so many numbers...something is bound to be wrong! Ha!