

## 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/yc2bmmmpx>

Formula and phase	$\Delta H^\circ$ kJ/mol	$\Delta S^\circ$ J/molK	$\Delta G^\circ$ kJ/mol
Al (s)	0	28.3	0
Al <sub>2</sub> O <sub>3</sub> (l)	-1581.13	89.58	-1499.25
AlCl <sub>3</sub> (s)	-705.63	109.3	-630.07
C (s)graphite	0	5.7	0
C <sub>2</sub> H <sub>4</sub> (g)	52.30	219.20	68.24
C <sub>2</sub> H <sub>5</sub> OH (l)	-276.98	161.04	-174.18
C <sub>2</sub> H <sub>6</sub> (g)	-84.68	229.12	-32.80
C <sub>3</sub> H <sub>8</sub> (l)	-103.8	269.9	-23.5
Ca (s)	0.00	41.42	0.00
Ca <sup>2+</sup> (aq)	-542.83	-53.14	-553.54
CaCl <sub>2</sub> (s)	-795	114	-750.2
CaCO <sub>3</sub> (s)	-1206.92	92.88	-1128.84
CaO (s)	-635.13	38.20	-603.54
CaSO <sub>4</sub> (s)	-1434.11	106.69	-1321.85
CH <sub>3</sub> Cl (g)	-83.7	234	-60.2
CH <sub>3</sub> OH (l)	-239.03	127.24	-166
CH <sub>4</sub> (g)	-74.85	186.27	-50.84
Cl <sub>2</sub> (g)	0	223.1	0
CO(g)	-110.54	197.90	-137
CO <sub>2</sub> (g)	-393.5	213.7	-394.4
COCl <sub>2</sub> (g)	-220	283.76	-206
CS <sub>2</sub> (l)	87.9	151.34	63.6
Cu (s)	0	33.15	0
Cu <sup>2+</sup> (aq)	64.39	-98.7	64.98
F <sub>2</sub> (g)	0	202.8	0
Fe (s)	0	27.28	0
Fe <sub>2</sub> O <sub>3</sub> (s)	-824.25	87.40	-742.24
H <sup>+</sup> (aq)	0	0	0
H <sub>2</sub> (g)	0	130.7	0
H <sub>2</sub> O (g)	-241.8	188.8	-228.6

Formula and phase	$\Delta H^\circ$ kJ/mol	$\Delta S^\circ$ J/molK	$\Delta G^\circ$ kJ/mol
H <sub>2</sub> O (l)	-285.8	69.4	-237.0
H <sub>2</sub> O <sub>2</sub> (l)	-187.6	109.5	-120.2
H <sub>2</sub> S (g)	-20.17	205.77	-33.05
H <sub>2</sub> SO <sub>4</sub> (l)	-814.00	156.90	-690.07
HCl (g)	-92.5	186.77	-95.31
HCN (g)	135.14	201.67	124.68
HCO <sub>3</sub> <sup>-</sup> (aq)	-691.11	95.0	-587.06
HF (g)	-273.3	173.8	-275.4
K <sub>2</sub> SO <sub>4</sub> (s)	-1437.8	175.6	-1321.4
KCl (s)	-436.69	82.55	-436.69
Li (s)	0	29.12	0
Li <sup>+</sup> (aq)	-278.5	13.4	-293.3
Mg (s)	0	32.69	0
Mg <sup>2+</sup> (aq)	-461.96	-118	-456.01
MgO(s)	-601.7	26.94	-591.79
Mg(OH) <sub>2</sub> (aq)	-924.54	63.18	-833.51
N <sub>2</sub> (g)	0	191.50	0
N <sub>2</sub> H <sub>4</sub> (g)	95.40	238.5	159.28
N <sub>2</sub> H <sub>4</sub> (l)	50.63	121.2	149.24
Na <sup>+</sup> (aq)	-240.1	59.0	-261.9
Na <sub>2</sub> CO <sub>3</sub> (s)	-1130.94	135.98	-1047.67
NH <sub>3</sub> (aq)	-80.89	111	-26.6
NH <sub>3</sub> (g)	-46.11	192.8	-16.48
NH <sub>4</sub> <sup>+</sup> (aq)	-132.51	113.39	-79.37
N <sub>2</sub> H <sub>4</sub> (l)	50.63	121.2	149.24
NH <sub>4</sub> Cl (s)	-314.4	94.56	-202.97
NO (g)	91.3	210.8	87.6
NO <sub>2</sub> (g)	34.0	240.5	51.84
NOCl (g)	51.7	261.7	66.4
O <sub>2</sub> (g)	0	205.1	0

