

THERMODYNAMIC DATA

SOLID					
Substances	ΔH_f° kJ/mol	S° J.K ⁻¹ .mol ⁻¹	Substances	ΔH_f° kJ/mol	S° J.K ⁻¹ .mol ⁻¹
Ag	0	42.6	K	0	64.2
AgBr	-100.4	107.1	KBr	-393.8	95.9
AgCl	-127.01	96.2	KClO ₄	-432.8	151.0
AgNO ₃	-124.4	140.9	KCl	-436.7	82.6
Al	0	28.3	KClO ₃	-397.7	143.1
Al ₂ O ₃	-1675.7	50.9	KNO ₃	-494.6	133.0
AlCl ₃	-704	110.7	Mg	0	32.7
Ba	0	62.8	Mg(OH) ₂	-924.5	63.2
Ba(NO ₃) ₂	-992	214.0	MgCl ₂	-641.3	89.6
Ba(OH) ₂	-998.2	112.0	MgCO ₃	-1095.8	65.7
BaCl ₂	-858.6	123.7	MgO	-601.6	26.9
BaCO ₃	-1216.3	112.1	MgSO ₄	-1284.9	91.6
BaO	-553.5	70.4	Mn	0	32.0
BaSO ₄	-1473.2	132.2	MnO	-385.2	59.7
C	0	5.7	MnO ₂	-520	53.0
Ca	0	41.4	Na	0	51.2
Ca(OH) ₂	-986.1	83.4	NaCl	-411.2	72.1
CaCl ₂	-795.8	104.6	NaF	-573.6	51.5
CaCO ₃	-1206.9	92.9	NaOH	425.6	64.5
CaO	-634.92	39.8	NH ₄ Cl	-314.4	94.6
CaSO ₄	-1434.1	106.7	NH ₄ NO ₃	-365.6	151.1
Cd	0	51.8	Ni	0	29.9
CdCl ₂	-391.5	115.3	NiO	-239.7	38.0
CdO	-258.35	54.8	P ₄	0	164.4
Cr	0	23.8	Pb	0	64.8
Cu	0	33.2	PbBr ₂	-278.7	161.5
Cu ₂ O	-168.6	93.1	PbCl ₂	-359.4	136.0
Cu ₂ S	-79.5	120.9	PbO	-219	66.5
CuO	-157.3	42.6	PbO ₂	-277.4	68.6
CuS	-53.1	66.5	S	0	31.8
CuSO ₄	-771.4	107.6	Si	0	18.8
Fe	0	27.3	SiO ₂	-910.7	41.8
Fe(OH) ₃	-823	106.7	Sn	0	51.6
Fe ₂ O ₃	-824.2	87.4	SnO ₂	-577.63	52.3
Fe ₃ O ₄	-1118.4	146.4	Zn	0	41.6
HgO	-90.79	70.3	ZnI ₂	-208	161.1
I ₂	0	116.1	ZnO	-350.46	43.6

LIQUID					
Substances	ΔH_f° kJ/mol	S° J.K ⁻¹ .mol ⁻¹	Substances	ΔH_f° kJ/mol	S° J.K ⁻¹ .mol ⁻¹
Br ₂	0	152.2	H ₂ O	-285.83	69.9
CH ₃ CH ₂ OH	-277.7	160.7	Hg	0	76.0
CH ₃ OH	-238.7	126.8	HNO ₃	-174.1	155.6
CCl ₄	-135.4	216.4	N ₂ H ₄	50.6	121.2
CHCl ₃	-134.5	201.7			

GASEOUS					
Substances	ΔH_f° kJ/mol	S° J.K ⁻¹ .mol ⁻¹	Substances	ΔH_f° kJ/mol	S° J.K ⁻¹ .mol ⁻¹
C ₂ H ₂	226.7	200.8	HCl	-92.31	186.8
C ₂ H ₄	52.3	219.5	HF	-273.3	173.7
C ₂ H ₆	-84.7	229.5	HI	26.5	206.5
C ₃ H ₈	-103.8	269.9	N ₂	0	191.5
CH ₄	-74.8	186.2	N ₂ O ₄	9.2	304.2
Cl ₂	0	223.0	NH ₃	-45.9	192.3
CO	-110.53	197.6	NO	90.2	210.7
CO ₂	-393.51	213.6	NO ₂	33.2	240.0
F ₂	0	202.7	O ₂	0	205.0
H ₂	0	130.6	PCl ₃	-287	311.7
H ₂ O	-241.83	188.7	PCl ₅	-374.9	364.5
H ₂ S	-20.6	205.7	SO ₂	-296.81	248.1
HBr	-36.29	198.6	SO ₃	-395.7	256.7

AQUEOUS					
Substances	ΔH_f° kJ/mol	S° J.K ⁻¹ .mol ⁻¹	Substances	ΔH_f° kJ/mol	S° J.K ⁻¹ .mol ⁻¹
Ag ⁺	105.79	72.7	I ⁻	-56.78	111.3
Al ³⁺	-538.4	-321.7	K ⁺	-252.14	102.5
Ca ²⁺	-543	-53.1	Mg ²⁺	-467	-138.1
Cd ²⁺	-75.9	-73.2	Mn ²⁺	-220.8	-73.6
ClO ₄ ⁻	-128.1	182	Na ⁺	-240.34	59.0
Cl ⁻	-167.08	56.5	NH ₄ ⁺	-133.26	113.4
CO ₃ ²⁻	-675.23	-56.9	NO ₂ ⁻	-104.6	123.0
Cu ²⁺	64.8	-99.6	NO ₃ ⁻	-206.85	146.4
F ⁻	-335.35	-13.8	OH ⁻	-230.02	-10.8
H ⁺	0	0.0*	Pb ²⁺	0.9	10.5
H ₂ PO ₄ ⁻	-1302.6	90.4	PO ₄ ³⁻	-1277.4	-222
HCO ₃ ⁻	-689.93	91.2	S ²⁻	33.1	-14.6
Hg ²⁺	170.21	-32.2	Sn ²⁺	-8.9	-17.4
HPO ₄ ²⁻	-1299	-33.5	SO ₄ ²⁻	-909.34	20.1
HSO ₄ ⁻	-886.9	131.8	Zn ²⁺	-153.39	-112.1

* H⁺(aq) ion is used as the reference: $S^\circ = 0$.