

**Heats of Formation (kJ/mole) at 25°C and 1atm**

AgBr(s)	-99.5	C <sub>2</sub> H <sub>2</sub> (g)	226.7	H <sub>2</sub> O(l)	-285.8	NH <sub>4</sub> Cl(s)	-315.4
AgCl(s)	-127.0	C <sub>2</sub> H <sub>4</sub> (g)	52.3	H <sub>2</sub> O <sub>2</sub> (l)	-187.6	NH <sub>4</sub> NO <sub>3</sub> (s)	-365.1
AgI(s)	-62.4	C <sub>2</sub> H <sub>6</sub> (g)	-84.7	H <sub>2</sub> S(g)	-20.1	NO(g)	90.4
Ag <sub>2</sub> O(s)	-30.6	C <sub>3</sub> H <sub>8</sub> (g)	-103.8	H <sub>2</sub> SO <sub>4</sub> (l)	-811.3	NO <sub>2</sub> (g)	33.9
Ag <sub>2</sub> S(s)	-31.8	C <sub>4</sub> H <sub>10</sub> (g)	-124.7	HgO(s)	-90.7	NiO(s)	-244.3
Al <sub>2</sub> O <sub>3</sub> (s)	-1669.8	C <sub>5</sub> H <sub>12</sub> (l)	-173.1	HgS(s)	-58.2	PbBr <sub>2</sub> (s)	-277.0
BaCl <sub>2</sub> (s)	-860.1	C <sub>2</sub> H <sub>5</sub> OH(l)	-277.6	KBr(s)	-392.2	PbCl <sub>2</sub> (s)	-359.2
BaCO <sub>3</sub> (s)	-1218.8	CoO(s)	-239.3	KCl(s)	-435.9	PbO(s)	-217.9
BaO(s)	-558.1	Cr <sub>2</sub> O <sub>3</sub> (s)	-1128.4	KClO <sub>3</sub> (s)	-391.4	PbO <sub>2</sub> (s)	-276.6
BaSO <sub>4</sub> (s)	-1465.2	CuO(s)	-155.2	KF(s)	-562.6	Pb <sub>3</sub> O <sub>4</sub> (s)	-734.7
CaCl <sub>2</sub> (s)	-795.0	Cu <sub>2</sub> O(s)	-166.7	MgCl <sub>2</sub> (s)	-641.8	PCl <sub>3</sub> (g)	-306.4
CaCO <sub>3</sub> (s)	-1207.0	CuS(s)	-48.5	MgCO <sub>3</sub> (s)	-1113.0	PCl <sub>5</sub> (g)	-398.9
CaO(s)	-635.5	CuSO <sub>4</sub> (s)	-769.9	MgO(s)	-601.8	SiO <sub>2</sub> (s)	-859.4
Ca(OH) <sub>2</sub> (s)	-986.6	Fe <sub>2</sub> O <sub>3</sub> (s)	-822.2	Mg(OH) <sub>2</sub> (s)	-924.7	SnCl <sub>2</sub> (s)	-349.8
CaSO <sub>4</sub> (s)	-1432.7	Fe <sub>3</sub> O <sub>4</sub> (s)	-1120.9	MgSO <sub>4</sub> (s)	-1278.2	SnCl <sub>4</sub> (l)	-545.2
CCl <sub>4</sub> (l)	-139.5	HBr(g)	-36.2	MnO(s)	-384.9	SnO(s)	-286.2
CH <sub>4</sub> (g)	-74.8	HCl(g)	-92.3	MnO <sub>2</sub> (s)	-519.7	SnO <sub>2</sub> (s)	-580.7
CHCl <sub>3</sub> (l)	-131.8	HF(g)	-268.6	NaCl(s)	-411.0	SO <sub>2</sub> (g)	-296.1
CH <sub>3</sub> OH(l)	-238.6	HI(g)	25.9	NaF(s)	-569.0	SO <sub>3</sub> (g)	-395.2
CO(g)	-110.5	HNO <sub>3</sub> (l)	-173.2	NaOH(s)	-426.7	ZnO(s)	-348.0
CO <sub>2</sub> (g)	-393.5	H <sub>2</sub> O(g)	-241.8	NH <sub>3</sub> (g)	-46.2	ZnS(s)	-202.9

**Heats of Formation (kJ/mole) of Aqueous Ions at 25°C, 1M**

Cations				Anions			
Ag <sup>+</sup> (aq)	105.9	K <sup>+</sup> (aq)	-251.2	Br <sup>-</sup> (aq)	-120.9	H <sub>2</sub> PO <sub>4</sub> <sup>-</sup> (aq)	-1302.5
Al <sup>3+</sup> (aq)	-524.7	Li <sup>+</sup> (aq)	-278.5	Cl <sup>-</sup> (aq)	-167.4	HPO <sub>4</sub> <sup>2-</sup> (aq)	-1298.7
Ba <sup>2+</sup> (aq)	-538.4	Mg <sup>2+</sup> (aq)	-462.0	ClO <sub>3</sub> <sup>-</sup> (aq)	-98.3	I <sup>-</sup> (aq)	-55.9
Ca <sup>2+</sup> (aq)	-543.0	Mn <sup>2+</sup> (aq)	-218.8	ClO <sub>4</sub> <sup>-</sup> (aq)	-131.4	MnO <sub>4</sub> <sup>-</sup> (aq)	-518.4
Cd <sup>2+</sup> (aq)	-72.4	Na <sup>+</sup> (aq)	-239.7	CO <sub>3</sub> <sup>2-</sup> (aq)	-676.3	NO <sub>3</sub> <sup>-</sup> (aq)	-206.6
Cu <sup>2+</sup> (aq)	64.4	NH <sub>4</sub> <sup>+</sup> (aq)	-132.8	CrO <sub>4</sub> <sup>2-</sup> (aq)	-863.2	OH <sup>-</sup> (aq)	-229.9
Fe <sup>2+</sup> (aq)	-87.9	Ni <sup>2+</sup> (aq)	-64.0	F <sup>-</sup> (aq)	-329.1	PO <sub>4</sub> <sup>3-</sup> (aq)	-1284.1
Fe <sup>3+</sup> (aq)	-47.7	Pb <sup>2+</sup> (aq)	1.6	HCO <sub>3</sub> <sup>-</sup> (aq)	-691.1	S <sup>2-</sup> (aq)	41.8
H <sup>+</sup> (aq)	0	Sn <sup>2+</sup> (aq)	-10.0			SO <sub>4</sub> <sup>2-</sup> (aq)	-907.5
		Zn <sup>2+</sup> (aq)	-152.4				