Table 5.1 General Solubility Guidelines for Ionic Compounds in Water

Soluble	Exceptions
Ammonium compounds (NH_4^+)	None
Lithium compounds (Li^+)	None
Sodium compounds (Na^+)	None
Potassium compounds (K^+)	None
Nitrates (NO_3^-)	None
Perchlorates (ClO_4^-)	None
Acetates ($CH_3CO_2^-$)	None
Chlorides (Cl^-)	Ag^+, Hg_2^{2+}, and Pb^{2+} compounds
Bromides (Br^-)	Ag^+, Hg_2^{2+}, and Pb^{2+} compounds
Iodides (I^-)	Ag^+, Hg_2^{2+}, and Pb^{2+} compounds
Sulfates (SO_4^{2-})	Ba^{2+}, Hg_2^{2+}, and Pb^{2+} compounds

Table 7.1 Average Bond Dissociation Energies

Bond	Bond Dissociation Energy kcal/mol (kJ/mol)	Bond	Bond Dissociation Energy kcal/mol (kJ/mol)	Bond	Bond Dissociation Energy kcal/mol (kJ/mol)
C—H	99 (413)	N—H	93 (391)	C=C	147 (614)
C—C	83 (347)	N—N	38 (160)	C≡C	201 (839)
C—N	73 (305)	N—Cl	48 (200)	C=O*	178 (745)
C—O	86 (358)	N—O	48 (201)	O=O	119 (498)
C—Cl	81 (339)	H—H	103 (432)	N=O	145 (607)
Cl—Cl	58 (243)	O—H	112 (467)	O≡N	213 (891)
H—Cl	102 (427)	O—Cl	49 (203)	N≡N	226 (946)

*The C=O bond dissociation energies in CO_2 are 191 kcal/mol (799 kJ/mol).

$$\Delta G = \Delta H - T\Delta S$$

$$K_{eq} = \frac{\prod_{Products}[I]^i}{\prod_{Reactants}[J]^j}$$

$$\Delta H_{rxn} = \sum_{Broken} Bond\ energy - \sum_{Formed} Bond\ Energy$$