Solubility Rules

SOLUBLE *INSOLUBLE*

1. Compounds containing alkali metal cations and the ammonium ion are soluble.
2. Compounds containing NO_3^-, NO_2^-, ClO_4^-, ClO_3^-, and $C_2H_3O_2^-$ anions are soluble.
3. Chlorides, bromides, and iodides are soluble *except* those containing Ag^+, Hg^{2+}, Pb^{2+}, or Hg^+.
4. Sulfates (SO_4^-) are soluble *except* those containing Hg^+, Hg^{2+}, Pb^{2+}, Ag^+, Sr^{2+}, Ca^{2+}, or Ba^{2+}.
5. Hydroxides (OH^-) are *insoluble* except compounds of the alkali metals, Ca^{2+}, Sr^{2+}, and Ba^{2+}.
6. Compounds containing PO_4^{3-}, S^{2-}, CO_3^{2-}, SiO_3^{2-} and SO_3^{2-} ions are *insoluble* unless containing alkali metals or NH_4^+.
7. Metallic oxides (O^{2-}) are *insoluble* unless containing NH_4^+ or alkali metals.
8. Sulfides (S^{-2}) are *insoluble* unless containing NH_4^+ or alkali metals or alkaline earth metals.
9. Fluorides are *insoluble* unless containing alkali metals or NH_4^+.

Commonly Evolved Gases

F_2, Cl_2, H_2, N_2, O_2, SO_2, SO_3, CO, CO_2, H_2S, NO, NO_2,
NH_3, P_2O_3, P_2O_5, SiF_4, HCl, HBr, HI, HF, N_2O_5, N_2O_3, N_2O