

GENERAL SOLUBILITY RULES*

Solubility of Ionic Compounds

Soluble Compounds:

Exceptions:

1. Almost all salts of sodium (Na^+), potassium (K^+) and ammonium (NH_4^+).
2. All chlorides (Cl^-), Bromides (Br^-) and iodides (I^-) [halide salts] Halide salts of Ag^+ , Hg_2^{2+} , Pb^{2+}
3. Compounds containing fluoride (F^-) Fluorides of Mg^{2+} , Ca^{2+} , Sr^{2+} , Ba^{2+} , Pb^{2+}
4. All nitrates (NO_3^-), chlorates (ClO_3^-), perchlorates (ClO_4^-), acetates ($\text{C}_2\text{H}_3\text{O}_2^-$) Acetates of Ag^+ and Hg_2^{2+} only moderately soluble
5. All sulfate salts (SO_4^{2-}) Sr^{2+} , Ba^{2+} , Pb^{2+} , (Ca^{2+} , Ag^+ are moderately soluble)

Poorly Soluble Salts:

Exceptions:

6. All carbonates (CO_3^{2-})
Phosphates (PO_4^{3-})
Chromates (CrO_4^{2-})
Oxalates ($\text{C}_2\text{O}_4^{2-}$) Na^+ , K^+ , NH_4^+
7. All sulfides (S^{2-}) Group 1 & 2 cations and NH_4^+
8. All hydroxides (OH^-) & oxides (O^{2-}) Group 1 & NH_4^+ , (Ca^{2+} , Sr^{2+} and Ba^{2+} are moderately soluble)

* Adapted from Kotz & Treichel, 4th Ed., "Chemistry and Chemical Reactivity", p. 184.