

## SOLUBILITY RULES

1. Salts of ammonium ( $\text{NH}_4^+$ ) and Group IA are always soluble
2.
  - a. All chlorides ( $\text{Cl}^-$ ) are soluble except  $\text{AgCl}$ ,  $\text{Hg}_2\text{Cl}_2$ , and  $\text{PbCl}_2$  which are insoluble
  - b. All bromides ( $\text{Br}^-$ ) are soluble except  $\text{AgBr}$ ,  $\text{Hg}_2\text{Br}_2$ ,  $\text{HgBr}_2$  and  $\text{PbBr}_2$  which are insoluble
  - c. All iodides ( $\text{I}^-$ ) are soluble except  $\text{AgI}$ ,  $\text{Hg}_2\text{I}_2$ ,  $\text{HgI}_2$  and  $\text{PbI}_2$  which are insoluble
3. Chlorates ( $\text{ClO}_3^-$ ), Nitrates ( $\text{NO}_3^-$ ) and Acetates ( $\text{CH}_3\text{COO}^-$ ) are soluble.
4. Sulfates ( $\text{SO}_4^{2-}$ ) are soluble except  $\text{CaSO}_4$ ,  $\text{SrSO}_4$ ,  $\text{BaSO}_4$ ,  $\text{Hg}_2\text{SO}_4$ ,  $\text{HgSO}_4$ ,  $\text{PbSO}_4$ , and  $\text{Ag}_2\text{SO}_4$  which are insoluble
5. Phosphates ( $\text{PO}_4^{3-}$ ), and carbonates ( $\text{CO}_3^{2-}$ ) are insoluble except  $\text{NH}_4^+$  and Group IA compounds.
6. All metallic oxides ( $\text{O}^{2-}$ ) are insoluble except  $\text{NH}_4^+$  and Group IA compounds.
7. All metallic hydroxides ( $\text{OH}^-$ ) are insoluble except  $\text{NH}_4^+$  and Group IA and Group IIA from calcium down.
8. All sulfides ( $\text{S}^{2-}$ ) are insoluble except  $\text{NH}_4^+$  and Groups IA and IIA.

