

## **SOLUBILITY GUIDELINES** (for ionic compounds in water at 25°C)

1. Alkali metal (Group IA) compounds are soluble.
2. Ammonium ( $\text{NH}_4^+$ ) compounds are soluble.
3. All compounds containing nitrate ( $\text{NO}_3^-$ ), chlorate ( $\text{ClO}_3^-$ ), perchlorate ( $\text{ClO}_4^-$ ), and acetate ( $\text{C}_2\text{H}_3\text{O}_2^-$ ) are soluble.
4. Most compounds containing chlorides ( $\text{Cl}^-$ ), bromides ( $\text{Br}^-$ ), or iodides ( $\text{I}^-$ ) are soluble. The exceptions are those containing  $\text{Ag}^+$ ,  $\text{Hg}_2^{2+}$ ,  $\text{Hg}^{2+}$ , and  $\text{Pb}^{2+}$ .
5. Most sulfates ( $\text{SO}_4^{2-}$ ) are soluble. Calcium sulfate,  $\text{CaSO}_4$ , and silver sulfate,  $\text{Ag}_2\text{SO}_4$ , are only slightly soluble. Sulfates of  $\text{Ba}^{2+}$ ,  $\text{Hg}_2^{2+}$ ,  $\text{Hg}^{2+}$ ,  $\text{Pb}^{2+}$ , and  $\text{Sr}^{2+}$  are *insoluble*.
6. Most hydroxides ( $\text{OH}^-$ ) are *insoluble*. The exceptions are the alkali metal hydroxides and barium hydroxide,  $\text{Ba}(\text{OH})_2$ . Calcium hydroxide,  $\text{Ca}(\text{OH})_2$ , is slightly soluble.
7. All carbonates ( $\text{CO}_3^{2-}$ ), phosphates ( $\text{PO}_4^{3-}$ ), and sulfides ( $\text{S}^{2-}$ ) are *insoluble*; the exceptions are those of alkali metals and the ammonium ion.