

## Solubility Rules for Ionic Compounds in Water

Soluble Ionic Compounds	Insoluble Ionic Compounds
1. All common compounds of Group 1A ions ( $\text{Li}^+$ , $\text{Na}^+$ , $\text{K}^+$ , etc.) and ammonium ion ( $\text{NH}_4^+$ ) are soluble.	1. All common metal hydroxides are insoluble, <i>except</i> those of Group 1A and the larger members of Group 2A (beginning with $\text{Ca}^{2+}$ ).
2. All common nitrates ( $\text{NO}_3^-$ ), acetates ( $\text{CH}_3\text{COO}^-$ ), and most perchlorates ( $\text{ClO}_4^-$ ) are soluble.	2. All common carbonates ( $\text{CO}_3^{2-}$ ) and phosphates ( $\text{PO}_4^{3-}$ ) are insoluble, <i>except</i> those of Group 1A and $\text{NH}_4^+$ .
3. All common chlorides ( $\text{Cl}^-$ ), bromides ( $\text{Br}^-$ ), and iodides ( $\text{I}^-$ ) are soluble, <i>except</i> those of $\text{Ag}^+$ , $\text{Pb}^{2+}$ , $\text{Cu}^+$ , and $\text{Hg}_2^{2+}$ . All common fluorides ( $\text{F}^-$ ) are soluble, <i>except</i> those of $\text{Pb}^{2+}$ and Group 2A.	3. All common sulfides are insoluble <i>except</i> those of Group 1A, Group 2A, and $\text{NH}_4^+$ .
4. All common sulfates ( $\text{SO}_4^{2-}$ ) are soluble, <i>except</i> those of $\text{Ca}^{2+}$ , $\text{Sr}^{2+}$ , $\text{Ba}^{2+}$ , $\text{Ag}^+$ , and $\text{Pb}^{2+}$ .	