

Solubility Rules

Rule	Ion	Rule	Exceptions
1a	Group I-A (Li^{+1} , Na^{+1} , K^{+1})	Always Soluble	None
1b	Ammonium (NH_4^{+1})	Always Soluble	None
2	Nitrate, Acetate, Permanganate (NO_3^{-1} , $\text{CH}_3\text{COO}^{-1}$, and MnO_4^{-1})	Always Soluble	None
3	Group VII-A except F^{-1} (Cl^{-1} , Br^{-1} , and I^{-1})	Usually Soluble	Cu^{+1} , Ag^{+1} , Hg_2^{+2} , Hg^{+2} , and Pb^{+2} (Hg^{+2} , Pb^{+2} slightly sol. w/ Cl^{-1} , Br^{-1})
4	Sulfate (SO_4^{-2})	Usually Soluble	Hg_2^{+2} , Pb^{+2} , Sr^{+2} , and Ba^{+2} (Ag^{+1} , Ca^{+2} are slightly soluble)
5,6,7	Carbonate, Phosphate, Sulfide (CO_3^{-2} , PO_4^{-3} , and S^{-2})	Usually Insoluble	Group I-A and NH_4^{+1} (MgCO_3 and Group II-A sulfides are slightly soluble)
8	Oxide (O^{-2}) and Hydroxide (OH^{-1})	Usually Insoluble	Group I-A, NH_4^{+1} , Ba^{+2} , and Sr^{+2} (Ca^{+2} is slightly soluble)