

Appendix 3: Solubility Rules

Negative ions	Positive Ions	Solubility
essentially all	alkali ions (Li^+ , Na^+ , K^+ , Rb^+ , Cs^+)	soluble
essentially all	hydrogen ion $\text{H}^+_{(\text{aq})}$	soluble
essentially all	ammonium ion (NH_4^+)	soluble
nitrate, NO_3^-	essentially all	soluble
acetate, CH_3COO^-	essentially all (EXCEPT Ag^+)	soluble
chloride, Cl^- bromide, Br^- iodide, I^-	Ag^+ , Pb^{2+} , Hg_2^{2+} , Cu^+ , Tl^+	low solubility
	all others	soluble
sulfate, SO_4^{2-}	Ca^{2+} , Sr^{2+} , Ba^{2+} , Pb^{2+} , Ra^{2+}	low solubility
	all others	soluble
sulfide, S^{2-}	alkali ions, $\text{H}^+_{(\text{aq})}$, NH_4^+ , Be^{2+} , Mg^{2+} , Ca^{2+} , Sr^{2+} , Ba^{2+} , Ra^{2+}	soluble
	all others	low solubility
hydroxide, OH^-	alkali ions, $\text{H}^+_{(\text{aq})}$, NH_4^+ , Sr^{2+} , Ba^{2+} , Ra^{2+} , Tl^+	soluble
	all others	low solubility
phosphate, PO_4^{3-} carbonate, CO_3^{2-} sulfite, SO_3^{2-}	alkali ions, $\text{H}^+_{(\text{aq})}$, NH_4^+	soluble
	all others	low solubility
chromate, CrO_4^{2-}	Ba^{2+} , Sr^{2+} , Pb^{2+} , Ag^+	low solubility
	all others	soluble