

Solubility Rules:

(whether an ionic compound can be dissolved in water)

1. Classes of SOLUBLE COMPOUNDS

- a. Compounds of the alkali metals (1A)
- b. Ammonium (NH_4^+) compound
- c. Nitrates (NO_3^-), chlorates (ClO_3^-), perchlorates (ClO_4^-) acetates (CH_3CO_2^-)
- d. Chlorides, bromides, iodides
 - i. EXCEPT: Pb^{2+} , Ag^+ , Hg_2^{2+}
- e. Sulfates
 - i. Except Sr^{2+} , Ba^{2+} , Pb^{2+} , Ca^{2+} , Hg_2^{2+} , Ag^+
 - 1. Last three are slightly soluble

2. Classes of INSOLUBLE COMPOUNDS

- a. Carbonates, phosphates, oxalates, chromates
 - i. EXCEPT: alkali metals, NH_4^+
- b. Sulfides
 - i. EXCEPT: alkali metals, NH_4^+ , alkaline earth metals
 - 1. CaS , SrS , and BaS are slightly to moderately soluble
- c. Hydroxides and oxides
 - i. EXCEPT: alkali metals, alkaline earth metals
 - 1. $\text{Ca}(\text{OH})_2$ and $\text{Sr}(\text{OH})_2$ are only slightly soluble, $\text{Mg}(\text{OH})_2$ is only very slightly soluble

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