

Solubility rules

Worksheet 8.2 – Solubility Rules

Name _____

Class Period _____

Note that precipitates are insoluble and are followed by (s). Species in solution are followed by (aq). Note the list of insoluble salts. These are precipitates.

Precipitation Reactions:

1. Which of the following substances would you expect to be insoluble in water?

Barium hydroxide

Silver chloride

Strontium hydroxide

Hydrochloric acid

Lithium carbonate

Ammonium nitrate

Lithium sulfate

Calcium carbonate

Silver nitrate

Ammonium nitrate

Barium sulfate

Cadmium acetate

2. Solutions of lead (II) nitrate and potassium iodide are mixed write a balanced chemical equation (Does a precipitation reaction occur)?

3. $\text{Ba}(\text{NO}_3)_2 (\text{aq}) + \text{K}_2\text{SO}_4 (\text{aq}) \rightarrow$

4. $\text{AgNO}_3 (\text{aq}) + \text{NaBr} (\text{aq}) \rightarrow$

5. $\text{FeCl}_3 (\text{aq}) + 3 \text{KOH} (\text{aq}) \rightarrow$

6. $\text{Pb}(\text{NO}_3)_2 (\text{aq}) + \text{K}_2\text{SO}_4 (\text{aq}) \rightarrow$

7. $\text{Cu}(\text{NO}_3)_2 (\text{aq}) + 2 \text{NaOH} \rightarrow$

Solubility Rules

1. Most Nitrate (NO_3^{-1}) salts are soluble.
2. Most salts containing the alkali metal ions (Li^+ , Na^+ , K^+ , Cs^+ , Rb^+) and the ammonium ion (NH_4^+) are soluble.
3. Most chloride, bromide, and iodide salts are soluble. Notable exceptions are salts containing the ions Ag^+ , Pb^{+2} , and Hg_2^{+2} .
4. Most sulfate salts are soluble. Notable exceptions are BaSO_4 , PbSO_4 , and CaSO_4 .
5. Most hydroxide salts are only slightly soluble. The important soluble hydroxides are NaOH and KOH . The compounds $\text{Ba}(\text{OH})_2$, $\text{Sr}(\text{OH})_2$, and $\text{Ca}(\text{OH})_2$ are marginally soluble.
6. Most sulfide (S^{-2}), carbonate (CO_3^{-2}), chromate (CrO_4^{-2}), and phosphate (PO_4^{-3}) salts are only slightly soluble.
7. Most acetates are soluble except for those of silver which are only slightly soluble.

