

Chapter 4: Worksheet #2: Solubility and Electrolytes

1. Which of the following substances are likely to be soluble in water? Write the reaction that happens when each **soluble** substance is dissolved in water.
 - a. $\text{Ba}(\text{NO}_3)_2$
 - b. ZnS
 - c. $(\text{NH}_4)_2\text{CO}_3$
 - d. Fe_2O_3
 - e. PbCl_2
 - f. NaClO_4
 - g. BaCrO_4
 - h. FeBr_2
 - i. Ag_2SO_4
 - j. $\text{Ca}(\text{OH})_2$
 - k. $\text{Hg}_2(\text{ClO}_3)_2$
 - l. K_3PO_4
 - m. $\text{Mg}_3(\text{PO}_4)_2$
 - n. NH_4NO_3
 - o. ZnCrO_4
 - p. NiSO_4
 - q. AlCl_3
 - r. AgI
 - s. CaBr_2
 - t. CuS
 - u. K_2SO_3

Predictions using **solubility rules** (empirical). Apply **in order**:

1. All Na^+ , K^+ , and NH_4^+ compounds (salts) **soluble**.
2. All NO_3^- , $\text{C}_2\text{H}_3\text{O}_2^-$, ClO_3^- and ClO_4^- salts **soluble**.
3. All Ag^+ , Pb^{2+} , and Hg_2^{2+} salts **insoluble**.
4. All Cl^- , Br^- , and I^- salts are **soluble**.
5. All CO_3^{2-} , O^{2-} , S^{2-} , OH^- , SO_3^{2-} , CrO_4^{2-} , and PO_4^{3-} salts **insoluble**, except CaS , SrS , BaS and $\text{Ba}(\text{OH})_2$.
6. All SO_4^{2-} salts **soluble** except CaSO_4 , SrSO_4 , and BaSO_4 .