Chemistry: Chemical Word Equations

Directions: Write a balanced chemical equation for each of the word equations below.

1. aqueous sodium chloride reacts with aqueous lead (II) nitrate to yield a lead (II) chloride precipitate and aqueous sodium nitrate

\[ 2 \text{NaCl} + Pb(NO_3)_2 \rightarrow PbCl_2 + 2 \text{NaNO}_3 \]

2. aqueous barium nitrate reacts with sulfuric acid [H_2SO_4(aq)] to yield a barium sulfate precipitate and nitric acid [HNO_3(aq)]

\[ Ba(NO_3)_2 + H_2SO_4 \rightarrow BaSO_4 + 2HNO_3 \]

3. silver nitrate reacts in solution with potassium chromate to yield a silver chromate precipitate and soluble potassium nitrate

\[ 2AgNO_3 + K_2CrO_4 \rightarrow Ag_2CrO_4 + 2KNO_3 \]

4. solid calcium carbonate reacts with hydrochloric acid [HCl(aq)] to yield aqueous calcium chloride, carbon dioxide gas, and liquid water

\[ CaCO_3 + 2HCl \rightarrow CaCl_2 + CO_2 + H_2O \]

5. aqueous zinc chloride reacts with dihydrogen monosulfide gas to yield a zinc sulfide precipitate and hydrochloric acid

\[ ZnCl_2 + H_2S \rightarrow ZnS + 2HCl \]

6. magnesium nitrate reacts in solution with potassium hydroxide to yield a magnesium hydroxide precipitate and soluble potassium nitrate

\[ Mg(NO_3)_2 + 2KOH \rightarrow Mg(OH)_2 + 2KNO_3 \]
7. solid aluminum hydroxide reacts with nitric acid to yield soluble aluminum nitrate and liquid water

\[ 2 \text{Al(OH)}_3 + 3\text{HNO}_3 \rightarrow 2\text{Al(NO}_3)_3 + 3\text{H}_2\text{O} \]

\[ \text{Al(OH)}_3 + 3\text{HNO}_3 \rightarrow \text{Al(NO}_3)_3 + 3\text{H}_2\text{O} \]

8. aqueous lead (IV) nitrate reacts with aqueous sodium sulfate to yield a lead (IV) sulfate precipitate and soluble sodium nitrate

\[ \text{Pb(NO}_3)_4 + 2\text{Na}_2\text{SO}_4 \rightarrow \text{Pb(SO}_4)_2 + 4\text{NaNO}_3 \]

9. aqueous sodium hydroxide reacts with carbon dioxide gas to yield soluble sodium carbonate and liquid water

\[ 2\text{NaOH} + \text{CO}_2 \rightarrow \text{Na}_2\text{CO}_3 + \text{H}_2\text{O} \]

10. solid magnesium oxide reacts with hydrochloric acid to yield a solution of magnesium chloride and liquid water

\[ \text{MgO} + 2\text{HCl} \rightarrow \text{MgCl}_2 + \text{H}_2\text{O} \]

11. solid zinc metal reacts with sulfuric acid to yield aqueous zinc sulfate and hydrogen gas

\[ \text{Zn} + \text{H}_2\text{SO}_4 \rightarrow \text{ZnSO}_4 + \text{H}_2 \]

12. solid ferric oxide reacts with solid aluminum metal to yield solid aluminum oxide and solid iron metal

\[ \text{Fe}_2\text{O}_3 + 2\text{Al} \rightarrow \text{Al}_2\text{O}_3 + 2\text{Fe} \]