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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

   $2NaCl(aq) + Pb(NO_3)_2(aq) \rightarrow 2NaNO_3(aq) + PbCl_2(s)$

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

   $Ba(NO_3)_2(aq) + H_2SO_4(aq) \rightarrow 2HNO_3(aq) + BaSO_4(s)$

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

   $2Ag(NO_3)(aq) + K_2(CrO_4)(aq) \rightarrow 2KNO_3(aq) + Ag_2(CrO_4)(s)$

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

   $CaCO_3(s) + 2HCl(aq) \rightarrow CaCl_2(aq) + CO_2(g) + H_2O(l)$

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

   $ZnCl_2(aq) + H_2S(g) \rightarrow 2HCl(aq) + ZnS(s)$

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

   $Mg(NO_3)_2(aq) + 2KOH(aq) \rightarrow 2KNO_3(aq) + Mg(OH)_2(s)$

7. solid aluminum hydroxide reacts with nitric acid to yield soluble aluminum nitrate and liquid water

   $Al(OH)_3(s) + 3HNO_3(aq) \rightarrow Al(NO_3)_3(aq) + 3H_2O(l)$

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

   $Pb(NO_3)_4(aq) + 2Na_2(SO_4)(aq) \rightarrow 4Na(NO_3)(aq) + Pb(SO_4)_2(s)$

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

   $2Na(OH)(aq) + CO_2(g) \rightarrow Na_2CO_3(aq) + H_2O(l)$

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

    $MgO(s) + 2HCl(aq) \rightarrow MgCl_2(aq) + H_2O(l)$

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

    $Zn(s) + H_2SO_4(aq) \rightarrow ZnSO_4(aq) + H_2(g)$

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

$$Fe_2O_3(s) + 2Al(s) \rightarrow Al_2O_3(\mathrm{s}) + 2Fe(s)$$