AP Chemistry

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Reactions in Aqueous Solution

Precipitate Practice #1

Write balanced molecular and detailed ionic equations. Strike out any spectator ions and write the net ionic equation.

1. Solutions of lead nitrate and potassium chloride are mixed.

   Molecular: $Pb(NO3)_2(aq) + 2KCl(aq) \rightarrow 2KNO_3(aq) + PbCl_2(s)$
   Ionic: $Pb(aq) + 2NO_3(aq) + 2K(aq) + 2Cl(aq) \rightarrow 2K(aq) + 2NO_3(aq) + PbCl_2(s)$
   Net Ionic: $Pb(aq) + 2Cl(aq) \rightarrow PbCl_2(s)$

2. Solutions of sodium sulfate and calcium bromide are mixed.

   Molecular: $Na_2SO_4(aq) + CaBr_2(aq) \rightarrow 2NaBr(aq) + CaSO_4(s)$
   Ionic: $2Na(aq) + SO_4(aq) + Ca(aq) + 2Br(aq) \rightarrow 2Na(aq) + 2Br(aq) + CaSO_4(s)$
   Net Ionic: $Ca(aq) + SO_4(aq) \rightarrow CaSO_4(s)$

3. Solutions of aluminum acetate and lithium hydroxide are mixed.

   Molecular: $Al(C_2H_3O_2)_3(aq) + 3LiOH(aq) \rightarrow 3LiC_2H_3O_2(aq) + Al(OH)_3(s)$
   Ionic: $Al(aq) + 3C_2H_3O_2(aq) + 3Li(aq) + 3OH(aq) \rightarrow 3Li(aq) + 3C_2H_3O_2(aq) + Al(OH)_3(s)$
   Net Ionic: $Al(aq) + 3OH(aq) \rightarrow Al(OH)_3(s)$

4. Solutions of iron(III) sulfate and sodium sulfide are mixed.

   Molecular: $Hg_2(SO_4)_3(aq) + 3Na_2S(aq) \rightarrow 3Na_2SO_4(aq) + Hg_2S_3(s)$
   Ionic: $2Hg(aq) + 3SO_4(aq) + 6Na(aq) + 3S(aq) \rightarrow 6Na(aq) + 3SO_4(aq) + Hg_2S_3(s)$
   Net Ionic: $2Hg(aq) + 3S(aq) \rightarrow Hg_2S_3(s)$

5. Solutions of aluminum sulfate and calcium hydroxide are mixed.

   Molecular: $Al_2(SO4)_3(aq) + 3Ca(OH)_2(aq) \rightarrow 3CaSO_4(aq) + 2Al(OH)_3(s)$
   Ionic: $2Al(aq) + 3SO_4(aq) + 3Ca(aq) + 6OH(aq) \rightarrow 3Ca(aq) + 3SO_4(aq) + 2Al(OH)_3(s)$
   Net Ionic: $2Al(aq) + 6OH(aq) \rightarrow 2Al(OH)_3(s)$

6. Solutions of potassium chromate and lead acetate are mixed.

   Molecular: $K_2CrO_4(aq) + Pb(C_2H_3O_2)_2(aq) \rightarrow 2KC_2H_3O_2(aq) + PbCrO_4(s)$
   Ionic: $2K(aq) + CrO_4(aq) + Pb(aq) + 2C_2H_3O_2(aq) \rightarrow 2K(aq) + 2C_2H_3O_2(aq) + 2PbCrO_4(s)$
   Net Ionic: $CrO_4(aq) + Pb(aq) \rightarrow PbCrO_4(s)$

7. Solutions of silver nitrate and ammonium sulfide are mixed.

   Molecular: $2AgNO_3(aq) + (NH_4)_2S(aq) \rightarrow 2NH_4NO_3(aq) + Ag_2S(s)$
   Ionic: $2Ag(aq) + 2NO_3(aq) + 2NH_4(aq) + S(aq) \rightarrow 2NH_4(aq) + 2NO_3(aq) + Ag_2S(s)$
   Net Ionic: $2Ag(aq) + S(aq) \rightarrow Ag_2S(s)$