Chemistry
9.3 Percent Yield Practice

Name Partial Key

1. When excess potassium chromate is added to a solution containing 0.500 g silver nitrate, solid silver chromate forms. At the reaction's completion, 0.455 grams of silver chromate was obtained.

   a. Write a balanced chemical equation for this reaction (phases not needed).

   $K_2CrO_4(s) + 2\,AgNO_3(aq) \rightarrow Ag_2CrO_4(s) + 2\,KNO_3(aq)$

   b. Mass of limiting reactant: 0.500 g Mass of actual yield: 0.455 g

   c. Calculate the theoretical yield and percent yield of silver chromate.

   $\frac{0.500\text{g } AgNO_3}{1}\left(\quad\right)\left(\quad\right)\left(\quad\right) = 0.488\text{g } Ag_2CrO_4$ (theo yield)

   $\%\text{ yield} = \frac{0.455\text{g } Ag_2CrO_4}{0.488\text{g } Ag_2CrO_4} \times 100 = 93.2\%\text{ yield } Ag_2CrO_4$

2. When 10.0 grams of magnesium metal reacts with excess hydrochloric acid, 29.5 grams of magnesium chloride was produced.

   a. Write a balanced chemical equation for this reaction (phases not needed).

   b. Mass of limiting reactant: _____ Mass of actual yield: _____

   c. Calculate the theoretical yield and percent yield of magnesium chloride.

   $= 75.3\%\text{ yield } MgCl_2$

3. When 13.2 grams of salicylic acid reacts with excess acetic anhydride, 5.9 grams of aspirin is produced. Chemical equation for this reaction:

   $2\,C_7H_6O_3$ (salicylic acid) + $C_4H_6O_3$ (acetic anhydride) -----> $2\,C_9H_8O_4$ (aspirin) + H_2O

   b. Mass of limiting reactant: _____ Mass of actual yield: _____

   c. Calculate the theoretical yield and percent yield of aspirin.

   $= 34\%$