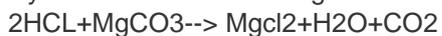


Answer on Question #56617 - Chemistry - Inorganic Chemistry

Question:

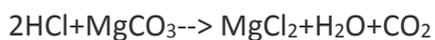
Hydrochloric acid and magnesium carbonate react according to the following equation:



(A) when 0.84g of MgCO_3 reacts with excess HCL, what is the mass of MgCl_2 that will be formed?

(B) if the amount of MgCl_2 obtained is only 0.750g, calculate the percentage yield.

Solution



$$\text{A) } M(\text{MgCO}_3) = 24 + 12 + 16 \cdot 3 = 84 \text{ (g/mol)}$$

$$n(\text{MgCO}_3) = m/M = 0.84 / 84 = 0.01 \text{ (mol)}$$

$$n(\text{MgCl}_2) = n(\text{MgCO}_3) = 0.01 \text{ mol}$$

$$M(\text{MgCl}_2) = 24 + 35.5 \cdot 2 = 95 \text{ (g/mol)}$$

$$m(\text{MgCl}_2) = M \cdot n = 95 \cdot 0.01 = 0.95 \text{ (g)}$$

$$\text{B) } \text{Yield} = m/m_t \cdot 100\% = 0.750 / 0.95 \cdot 100\% = 78.95\%$$

Answer

$$\text{A) } m(\text{MgCl}_2) = 0.95 \text{ g}$$

$$\text{B) } \text{Yield} = 78.95\%$$