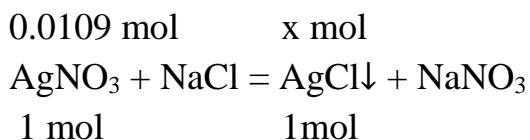


Question #85350

When 95.0 mL of 0.115 M AgNO_3 reacts with excess NaCl (aq), an experimental (actual) yield of 1.43 g of AgCl is recovered. What is the theoretical yield and what is the percent yield for the reaction

$$n(\text{AgNO}_3) = C(\text{AgNO}_3) \times V(\text{AgNO}_3) = 0.115 \text{ M} \times 0.095 \text{ L} = 0.0109 \text{ mol.}$$

$$m(\text{AgNO}_3) = n(\text{AgNO}_3) \times M(\text{AgNO}_3) = 0.0109 \text{ mol} \times 170 \text{ g/mol} = 1.853 \text{ g.}$$



$$x = \frac{0.0109 \times 1}{1} \text{ mol} = 0.0109 \text{ mol.} \quad n_{\text{theor}}(\text{AgCl}) = 0.0109 \text{ mol.}$$

$$m_{\text{theor}}(\text{AgCl}) = n_{\text{theor}}(\text{AgCl}) \times M(\text{AgCl}) = 0.0109 \text{ mol} \times 143.5 \text{ g/mol} = 1.5642 \text{ g} \approx 1.56 \text{ g.}$$

$$\eta = m_{\text{exper}} / m_{\text{theor}} \times 100 \% = 1.43 \text{ g} / 1.56 \text{ g} \times 100 \% = 91.67 \%.$$

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