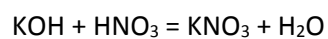


#67792 Chemistry, Other

8.4 g of mixture of potassium hydroxide and potassium chloride were made up to 1 litre of aqueous solution. 20 cm³ of this solution required 24.2 cm³ of 0.1 mole of nitric acid for neutralization. Calculate the percentage by mass of potassium chloride in the mixture?

Answer:

First of all neutralization reaction undergoes according to equation:



$$C_M = n/V \qquad n = C_M \cdot V$$

$$n(\text{KOH}) = n(\text{HNO}_3) = 0.1 \cdot (24.2/1000) = 0.002 \text{ mol}$$

$$n = m/M \qquad m = n \cdot M$$

$$M(\text{KOH}) = 56 \text{ g/mol}$$

$$m(\text{KOH}) = 0.002 \cdot 56 = 0.14 \text{ g}$$

$$\text{Mass of KOH in 1 litre: } (0.14/20) \cdot 1000 = 6.8 \text{ g}$$

$$\text{Mass of KCl: } 8.4 - 6.8 = 1.6 \text{ g}$$

$$\%(\text{KCl}) = (1.6/8.4) \cdot 100 = 19\%$$