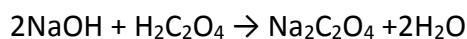


Answer on Question #63559 - Chemistry - General Chemistry

Question: (c) In an experiment, 25.0 cm³ of aqueous sodium hydroxide, 0.4 mol/dm³, was neutralized by 20.0 cm³ of aqueous oxalic acid, H₂C₂O₄.



Calculate the concentration of the oxalic acid in mol/dm³.

(i) Calculate the number of moles of NaOH in 25.0 cm³ of 0.4 mol/dm³ solution.

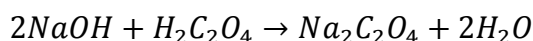
(ii) Use your answer to (i) and the mole ratio in the equation to find out the number of moles of H₂C₂O₄ in 20 cm³ of solution.

Solution

1) Calculate the amount of substance of NaOH:

$$v(\text{NaOH}) = C_M(\text{NaOH}) * V(\text{NaOH}) = 0.4 * 0.025 = 0.01 \text{ mol}$$

2) Calculate the amount of substance of oxalic acid according to the reaction (2 moles of hydroxide react with 1 mole of acid)



$$v(\text{H}_2\text{C}_2\text{O}_4) = \frac{v(\text{NaOH})}{2} = \frac{0.01}{2} = 0.005 \text{ mol}$$

3) Calculate the concentration of oxalic acid:

$$C_M(\text{H}_2\text{C}_2\text{O}_4) = \frac{v(\text{H}_2\text{C}_2\text{O}_4)}{V(\text{H}_2\text{C}_2\text{O}_4)} = \frac{0.005}{0.02} = 0.25 \text{ mol/dm}^3$$

Answer: the concentration of oxalic acid is 0.25 mol/dm³.