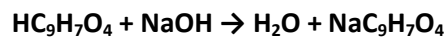


TITRATION LAB:

Q: what is the concentration of acid in aspirin?

The Balanced equation is this:



Here is the data table:

	Trial 1	Trial 2	Trial 3	Trial 4
Mass of Aspirin (g)	0.6 g	0.59 g	0.6 g	0.57 g
Initial volume of NaOH (ml)	0.5 ml	14 ml	27.7 ml	8.7 ml
Final volume of NaOH (ml)	14 ml	27.7 ml	40.9 ml	18.7ml

Answer:

$$n(\text{HC}_9\text{H}_7\text{O}_4) = n(\text{NaOH})$$

$$C_M(\text{HC}_9\text{H}_7\text{O}_4) \cdot V(\text{HC}_9\text{H}_7\text{O}_4) = n(\text{HC}_9\text{H}_7\text{O}_4) = C_M(\text{NaOH}) \cdot V(\text{NaOH})$$

$$C_M = n/V$$

$$n = C_M V$$

$$n = m/M$$

$$M(\text{HC}_9\text{H}_7\text{O}_4) = 180 \text{ g/mol}$$

$$1) \quad n(\text{HC}_9\text{H}_7\text{O}_4) = 0.1 \times 13.5 = 0.00135 \text{ mol}$$

$$m(\text{HC}_9\text{H}_7\text{O}_4) = 0.00135 \times 180 = 0.243 \text{ g}$$

$$\%(\text{HC}_9\text{H}_7\text{O}_4) = 0.243/0.6 \times 100 = 40.5\%$$

$$2) \quad n(\text{HC}_9\text{H}_7\text{O}_4) = 0.1 \times 13.7 = 0.00137 \text{ mol}$$

$$m(\text{HC}_9\text{H}_7\text{O}_4) = 0.00137 \times 180 = 0.247 \text{ g}$$

$$\%(\text{HC}_9\text{H}_7\text{O}_4) = 0.247 / 0.59 \times 100 = 41.8\%$$

$$3) \quad n(\text{HC}_9\text{H}_7\text{O}_4) = 0.1 \times 10 = 0.001 \text{ mol}$$

$$m(\text{HC}_9\text{H}_7\text{O}_4) = 0.001 \times 180 = 0.18 \text{ g}$$

$$\%(\text{HC}_9\text{H}_7\text{O}_4) = 0.18 / 0.57 \times 100 = 31.6\%$$

$$\%(\text{HC}_9\text{H}_7\text{O}_4)_{av} = (40.5 + 41.8 + 31.6)/3 = 37.9\%$$

Answer provided by AssignmentExpert.com