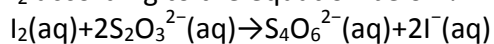


Answer on Question #52429, Chemistry, Organic Chemistry

Question

How many milliliters of 0.290M $\text{Na}_2\text{S}_2\text{O}_3$ solution are needed for complete reaction with 2.350g of I_2 according to the equation below?



Solution

- 1) Calculate the amount of substance of I_2 :

$$n(\text{I}_2) = 2.35 \text{ (g)} / 253.8 \text{ (g/mol)} = 9.26 \text{ mmol}$$

- 2) The amount of substance of $\text{Na}_2\text{S}_2\text{O}_3$ according to equation will be double the amount of substance of I_2 : $n(\text{Na}_2\text{S}_2\text{O}_3) = 9.26 \cdot 2 = 18.5 \text{ mmol}$ (0.0185 mol)

- 3) Calculate the volume of 0.290M $\text{Na}_2\text{S}_2\text{O}_3$ solution needed for complete reaction:

$$V(\text{Na}_2\text{S}_2\text{O}_3) = n/C = 0.0185 \text{ (mol)} / 0.29 \text{ (mol/L)} = 0.0638 \text{ L (63.8 mL)}$$

Answer: 63.8 mL.