

Answer on Question #63229, Chemistry / Inorganic Chemistry

What volume of Hydrochloric acid can be used in 25cm³ of Sodium Carbonate?

Solution:

Balanced equation:



Molar mass of Na₂CO₃ = 106 g mol⁻¹

$$\rho (\text{Na}_2\text{CO}_3) = 2.54 \text{ g/cm}^3$$

$$m = \rho V = 25\text{cm}^3 \times 2.54 \text{ g/cm}^3 = 63.5 \text{ g}$$

Under normal conditions, the molar volume of any gas is 22.4 L / mol.

$$x / 22.4 \text{ L mol}^{-1} = 63.5 \text{ g} / 106 \text{ g mol}^{-1}$$

$$x = 63.5 \text{ g} * 22.4 \text{ L mol}^{-1} / 106 \text{ g mol}^{-1} = 13.4 \text{ L} = 13400 \text{ cm}^3$$

Answer: 13.4 L

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