

Answer on Question #48733 - Chemistry – Inorganic Chemistry

Question

Copper(II) carbonate is heated in a test tube. Gas produced is passed in lime water through a delivery tube. 6.2g of copper(ii) carbonate is used in the reaction. Calculate the volume of carbon dioxide gas produced at room condition.

Answer:

Heating of copper(II) carbonate:



CO₂ is a produced gas.

Number of moles of copper(II) carbonate equals:

$$n(\text{CuCO}_3) = \frac{m(\text{CuCO}_3)}{M(\text{CuCO}_3)} = \frac{6.2}{123.55} = 0.05 \text{ moles}$$

According to the reaction equation, number of moles of CO₂ produced is equal to that of copper(II) carbonate:

$$n(\text{CO}_2) = n(\text{CuCO}_3) = 0.05 \text{ moles}$$

Then the volume of carbon dioxide (CO₂) is:

$$V(\text{CO}_2) = n(\text{CO}_2) \cdot V_m = 0.05 \cdot 22.4 = 1.12 \text{ L}$$

Answer: 1.12 L of CO₂