

OCR Chemistry A-Level

PAG 01a - Moles Determination

Determination of the composition of copper (II)
carbonate

Flashcards

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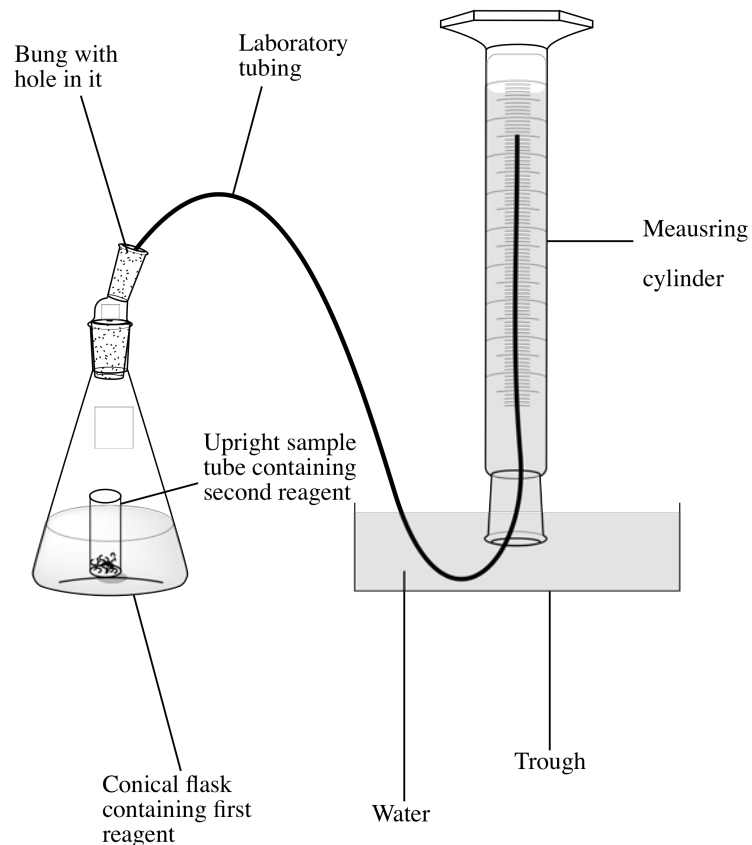


Describe how to set up the apparatus to measure the volume of gas produced in a reaction



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A gas syringe or an upside-down water-filled measuring cylinder in a trough of water may be used to collect the gas.



How can the number of moles of CO_2 be calculated from the volume of CO_2 collected during an experiment?



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- If at room temperature and pressure (RTP), use the equation $n = V/24$ where V is the volume in dm^3 .
- If not at RTP, rearrange the ideal gas law $PV = nRT$ and plug in the numbers for R (8.31), T in Kelvin, P in Pascals and V in m^3 .



What is used to accurately measure mass?



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A digital balance that records mass to 2 decimal places



CuCO_3 reacts with HCl to produce 15 moles of CO_2 . How many moles of CuCO_3 reacted?



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How many moles of CuCO_3 reacted?



Ratio of $\text{CuCO}_3:\text{CO}_2$ is 1:1

15 moles of CuCO_3 reacted



How could you find the percentage mass
of CuCO_3 in $\text{CuCO}_3 \cdot \text{Cu}(\text{OH})_2$?



How could you find the percentage mass of CuCO_3 in $\text{CuCO}_3 \cdot \text{Cu}(\text{OH})_2$?

1. Record the mass of $\text{CuCO}_3 \cdot \text{Cu}(\text{OH})_2$
2. React with acid and measure the volume of CO_2 collected. Use this to work out the number of moles of CO_2 produced (number of moles = volume in $\text{dm}^3 / 24$)
3. Use the ratio in the chemical equation to work out the number of moles of CuCO_3 that reacted.
4. Calculate the mass of CuCO_3 (number of moles = mass/Molar mass)
5. Calculate the percentage of mass of CuCO_3 in the original sample:
(mass of CuCO_3 / mass of $\text{CuCO}_3 \cdot \text{Cu}(\text{OH})_2$) x 100



Why is it important to rapidly put the bung into the conical flask after adding sulfuric acid to $\text{CuCO}_3 \cdot \text{Cu}(\text{OH})_2$?



Why is it important to rapidly put the bung into the conical flask after adding sulfuric acid to



The reaction starts as soon as the acid is added so CO_2 will start to be produced.

To reduce the amount of CO_2 that escapes, the bung should be inserted

rapidly.



Give 3 possible sources of error when investigating the volume of gas produced in a reaction



Give 3 possible sources of error when investigating the volume of gas produced in a reaction

- Some gas could have escaped before the bung is put in the conical flask
- The reaction may be incomplete
- Some gas may dissolve in the water meaning a smaller volume would be collected than was released



What safety precautions should be taken when conducting an experiment with $\text{CuCO}_3 \cdot \text{Cu}(\text{OH})_2$ and sulfuric acid?



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- $\text{CuCO}_3 \cdot \text{Cu}(\text{OH})_2$ is harmful if swallowed so avoid putting it near your face and wash hands after use. It is also an irritant so wear safety goggles and avoid contact with skin.
- H_2SO_4 causes skin and eye irritation so wear safety goggles and avoid contact with skin

