

Carbonate Decomposition

Aim: To investigate the decomposition of a carbonate.

Equipment:

- Copper Carbonate (CuCO_3)
- Limewater
- Bunsen Burner
- Matches
- Test tubes
- Clamp and stand
- Hydrochloric Acid
- Electronic Scales

Method:

1. Weighed Copper Carbonate by taring empty test tube.
2. Placed some Copper Carbonate in a test tube fitted with gas delivery tube and stopper.
3. Clamped the test tube to the stand at a slight angle.
4. Half filled another test tube with limewater and placed the other end of gas delivery tube into it.
5. Using a small blue flame gently heated the carbonate. Observed what happened.
6. Removed gas tube from limewater before turning off the Bunsen burner.
7. Allowed to cool
8. Weighed the remaining Copper Carbonate.
9. Added approximately 5ml of Hydrochloric Acid to the solid residue (Copper Oxide) from the decomposition reaction.
10. Transferred a small amount of original Copper Carbonate to new test tube and added same amount of Hydrochloric Acid to that. Recorded observations.

Results: **Observations from Decomposition:** The limewater turned milky.
Observations from HCl & Copper Oxide: Small bubbles. Hardly a reaction.
Observations from HCl & Copper Carbonate: Bubbles & fizzing. Small amount of heat generated. Turned milky green in colour. Reacted immediately.

Conclusion: The limewater proved that Carbon Dioxide was produced as a result of the decomposition reaction.
The Copper Oxide test showed that theoretically there should be no reaction with HCl. Copper Carbonate, however, theoretically, should react.

Evaluation: Overall, the experiment was a success except for the fact that the HCl shouldn't have reacted with the Copper Oxide but did. This is probably due to the fact there was some Copper Carbonate still stuck to the side of the test tube and the HCl reacted with that.