

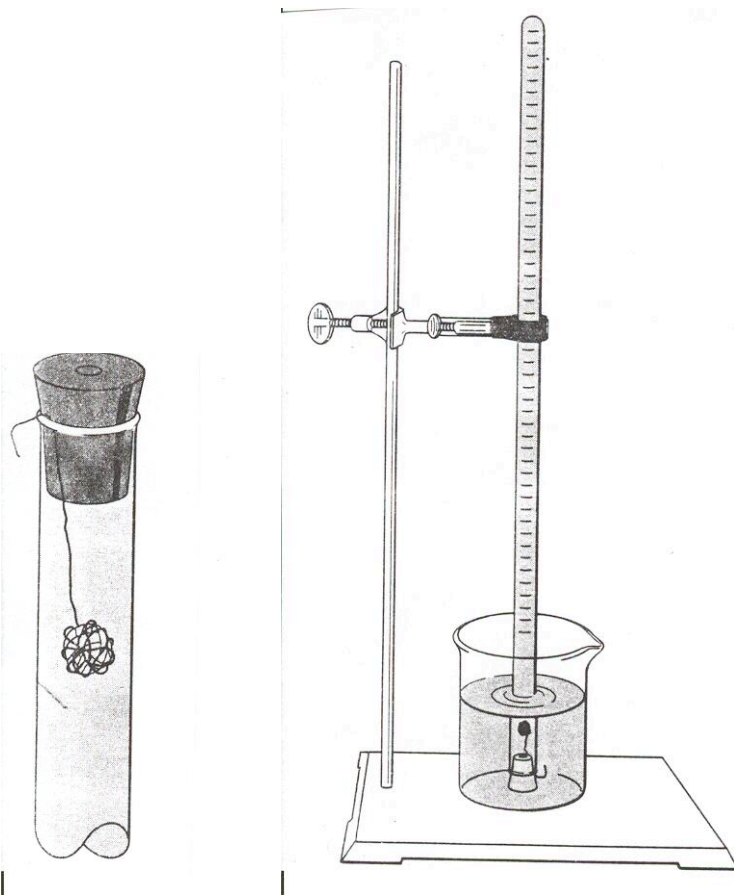
Honors Chemistry Rates of Reactions Lab

Prelab Questions

- 1) What are the six factors that affect reaction rate?
- 2) Write the balanced equation for the reaction of magnesium with hydrochloric acid.
- 3) How can you detect the production of a gas?
- 4) Is volume proportional to concentration for a gas?
- 5) The magnesium reacts with the acid to produce hydrogen gas. Why do we wrap it in a cage of copper and not some other metal?

Procedure

- 1) Cut a 5 cm piece of magnesium ribbon from the roll.
- 2) Rub the piece of ribbon with sandpaper until it is shiny.
- 3) Roll it into a loose coil and wind a piece of copper wire around it until it is trapped in a loose “cage” of copper. See the diagram for an example of how to do this.
- 4) Pour 5 mL of 6 M hydrochloric acid into the bottom of the gas collecting tube. Fill the rest entirely to the top with water.
- 5) Fill a 1 L beaker within an inch of the top with water and have it close to the gas collecting tube.
- 6) Place the cage in the tube and while covering the mouth with your finger, turn the tube over, immerse the mouth below the water level of the beaker and release it.
- 7) Clamp the gas collecting tube to a ring stand with a burette clamp and observe. See the diagram for an example of how to do this.
- 8) Every 15 seconds record the volume of hydrogen gas that forms in the gas collection tube. Continue this until done.
- 9) Clean up!



Prepare a formal report for this experiment. It will contain an attached graph

Post Lab Questions

Prepare a graph of volume of gas collected (y axis) versus time (x axis).

- 1) Calculate the rate of reaction ($\Delta V/\Delta T$) for the time period from 0 minutes to 1 minute. Do this for each of the one-minute periods for the entire 15 minutes.
- 2) Why is the rate slow at first?
- 3) When is the reaction at its fastest? Specify the time period in your experiment.
- 4) Why do you sand the magnesium before you begin?