Reaction Rate Lab

Purpose

To determine the rate of production of hydrogen gas in the reaction:

$$HCl(aq) + Mg(s) \rightarrow H_2(g) + MgCl_2(aq)$$

Procedure

Part A

1. Set up the gas collection apparatus.
2. Combine 20 *mL* of 1.0 *M HCl* with a 3.50 *cm* sample of magnesium metal, as described below:
   a) Place the magnesium ribbon in a copper wire basket that is attached to a 1 hole rubber stopper.
   b) Add the *HCl* to the gas collection tube.
   c) Carefully add water to the gas collection tube until it is completely full.
   d) Insert the rubber stopper and invert the gas collection tube.
   e) Place the tube in a titration clamp, so that the stoppered end of the tube is immersed in a bucket of water.
3. Record the volume of water displaced (gas produced) in the gas collecting tube every 10 – 30 seconds.
4. Continue to record the volume of gas produced until you feel that you have sufficient data.

Part B

1. Set up the gas collection apparatus.
2. Combine 20 *mL* of 2.0 *M HCl* with a 3.50 *cm* sample of magnesium metal, as described below:
   a) Place the magnesium ribbon in a copper wire basket that is attached to a 1 hole rubber stopper.
   b) Add the *HCl* to the gas collection tube.

c) Carefully add water to the gas collection tube until it is completely full.

d) Insert the rubber stopper and invert the gas collection tube.

e) Place the tube in a titration clamp, so that the stoppered end of the tube is immersed in a bucket of water.

3. Record the volume of water displaced (gas produced) in the gas collecting tube every 10 – 30 seconds.

4. Continue to record the volume of gas produced until you feel that you have sufficient data.

Part C

1. Set up the gas collection apparatus.

2. Combine 20 *mL* of 3.0 *M HCl* with a 3.50 *cm* sample of magnesium metal, as described below:

a) Place the magnesium ribbon in a copper wire basket that is attached to a 1 hole rubber stopper.

b) Add the *HCl* to the gas collection tube.

c) Carefully add water to the gas collection tube until it is completely full.

d) Insert the rubber stopper and invert the gas collection tube.

e) Place the tube in a titration clamp, so that the stoppered end of the tube is immersed in a bucket of water.

3. Record the volume of water displaced (gas produced) in the gas collecting tube every 10 – 30 seconds.

4. Continue to record the volume of gas produced until you feel that you have sufficient data.