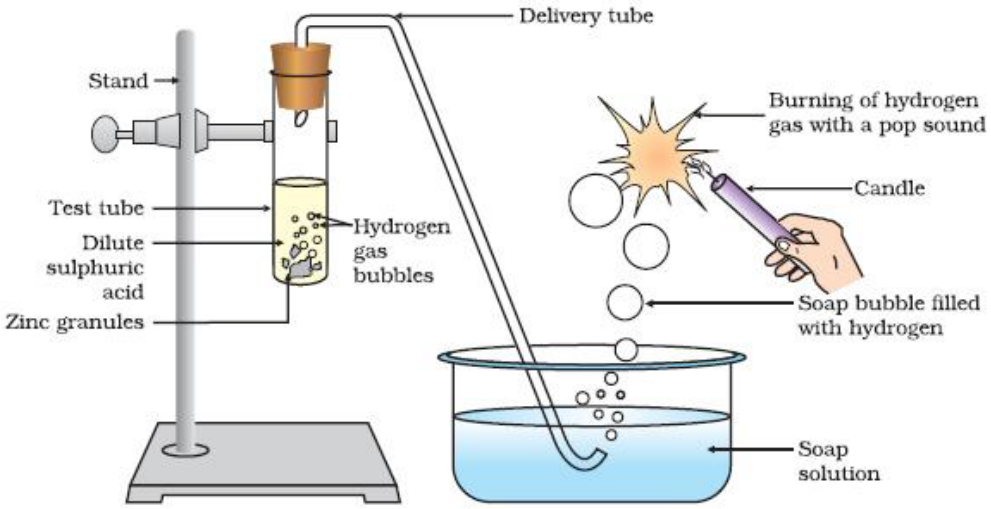
Mr. Hanson's Chemistry Lab



In this lab you will combine the Element Zinc and Aluminum with Hydrochloric Acid (HCl)

Safety: You must wear gloves when working with HCl and all students must wear eye protection. Danger: 6 Molar concentration of HCl will burn skin, clothes, and lab books! It looks like water, but it must be treated with great respect. Immediately clean up *any* spills of this strong acid. Aqueous Hydrochloric Acid (HCl) is a strong acid. It is highly corrosive, and will cause burns. It will make holes in your clothes. Avoid all contact with it. HCl looks just like water, so be very sure to clean up any spills immediately. Just wiping up with a paper towel and throwing it in the trash is sufficient. Hydrochloric acid gives off HCl fumes, which can burn your nose; avoid the fumes above this reagent.

Materials:

- 40-100ml beaker
- 3 ml droppers
- Forceps
- Hydrochloric Acid
- Zinc
- Aluminum
- 2 Test tubes
- Test tube rack
- Vernier Labquest
- Temperature probe
- Scales
- Gloves
- Goggles
- Tape
- Paper towel
- Science Journal

Duties and responsibilities of each team member:

1. One person will read the procedures and write down data and observations in their journal.
2. One person will put on gloves and be working with the Hydrochloric Acid
3. One person will put on gloves and use the Vernier Labquest and temperature probe – they will be putting the temperature probe tip at the bottom of the test tube.
4. All students will wear goggles during this experiment.

Procedures:

1. You will work in a group with three people in it. Mr. Hanson will select the teams.
2. In your science journal write the name of the lab and date.
3. Gather your materials above
    a. You will need a 40-100 ml beaker. Mr. Hanson will give you your zinc and aluminum and put it in your beaker one at a time. Zero out the scale. Pour your zinc or aluminum very carefully on to the scale. Measure the mass in grams of your zinc and aluminum using my scales. Write in your journal what both the zinc and aluminum looks like, the atomic number and symbol, and what it's mass that you measured in your journal. MASS OF ZINC _____ MASS OF ALUMINUM ___
    b. Place your zinc in one test tube and the aluminum in the other – Label both.
    c. Place the test tubes in the test tube racks.
4. Smartboard lesson:
    a. On the smartboard Mr. Hanson will discuss what zinc and aluminum are.
    b. On the smartboard Mr. Hanson will discuss what Hydrochloric Acid and safety precautions for its use.
    c. Exothermic Reactions and Endothermic Reactions will be discussed.
    d. Products and Reactants will be discussed as well as chemical equations.

First Experiment:

1. Put on your goggles.
2. One person from you group will put on gloves and they alone will work with the Hydrochloric Acid.
3. Another person will put on gloves and they will work with the temperature probe only.
4. Turn on your Labquest and plug the temperature probe in. One person will take the temperature and determine if this is an exothermic reaction or not.
5. The third person will make the observations (as well as the rest). Discuss your observations with each other as the reaction occurs.
6. Immediately take the temperature of the room and record that in your journal as Room Temperature.
7. IMPORTANT: **Point the test tube away from people whenever it contains HCl. Do not put your face near the top of the test tube. You may look at the bottom of the test tube where the reaction is happening only.**
8. Mr. Hanson will bring the HCl around to the teams. Place 3 mls of HCl in the test tube with zinc.
9. Immediately place the temperature probe in the test tube so that the tip of the probe is at the bottom of the test tube.
    a. After 2 minutes right down the temperature in your Journal as REACTION TEMPERATURE for Zinc.
    b. Take the temperature probe out of the test tube and swish the metal tip in a beaker of water (labeled water) and wipe off with a paper towel.
    c. Write down your observations about what you see happening in the test tube. Be specific and give details.
10. When finished bring your test tube to Mr. Hanson to dispose of the compound.

Second Experiment:

1. Put on your goggles.
2. One person from you group will put on gloves and work with the Hydrochloric Acid.
3. Another person will put on gloves and they will work with the temperature probe only.
4. Turn on your Labquest and plug the temperature probe in. One person will take the temperature and determine if this is an exothermic reaction or not.
5. Immediately take the temperature of the room and record that in your journal as Room Temperature.
6. IMPORTANT: **Point the test tube away from people whenever it contains HCl. Do not put your face near the top of the test tube. You may look at the bottom of the test tube where the reaction is happening only.**
7. Place 3 mls of HCl in the test tube with Aluminum.
8. Immediately place the temperature probe in the test tube so that the tip of the probe is at the bottom of the test tube.
    a. After 2 minutes right down the temperature in your Journal as REACTION TEMPERATURE for Aluminum.
    b. Take the temperature probe out of the test tube and swish the metal tip in a beaker of water (labeled water) and wipe off with a paper towel.
    c. Write down your observations about what you see happening in the test tube. Be specific and give details.
9. When finished bring your test tube to Mr. Hanson to dispose of the compound and wash the test tubes.
10. Clean your area and put away all materials where you found them. Turn off the Labquests. After you are completely done with the experiment and you have given your test tubes to Mr. Hanson, you may take off your gloves and goggles.

Online Research:

1. Go online and research the chemical reaction equation for Zinc and HCL and Aluminum and HCl.
2. Mr. Hanson will show the video of the reactions.

Questions:

1. In your journal write, what type of reaction was the Zinc and HCl and why?
2. In your journal write, what type of reaction was the Aluminum and HCl and why?
3. In your journal, write two balanced chemical reactions, one for the reaction of aluminum with hydrochloric acid and the other for the reaction of zinc with hydrochloric acid.
4. Write in your journal what the reactants are.
5. Write in your journal what the products are.
6. Write in your journal if the reactants have the same number of atoms as the products do. If so we call this a balanced reaction.