

The Equation Lab

Purpose: **To study reaction types**

Procedure:

1. Light a Bunsen burner. Using tongs, place a small piece of steel wool in the flame. There are two reactions. Methane is CH_4 . Assume formation of Fe^{+++}
2. Use tongs to hold a piece of Mg in a Bunsen burner flame. **DO NOT STARE DIRECTLY AT THE FLAME!!!**
3. Use tongs to hold a piece of Cu in a Bunsen burner flame.
(Assume that a copper (II) compound forms).
4. Add about **.5** g of manganese dioxide to about 5 ml of hydrogen peroxide. Test the gas with a glowing splint. MnO_2 plays the role of a catalyst and should be written above the arrow in this equation. (You don't have to write the splint reaction this time!) (TEST TUBE)
5. Mix 2 - 3 drops of HCl with about .5 grams of sodium hydrogen carbonate.
(TEST TUBE)
6. Put 5 ml of 2 propanol in an evaporating dish. **CAREFULLY** light the liquid with a burning splint. (You don't have to write the splint reaction)
7. Add a few pieces of Zn to about five ml of hydrochloric acid in a test tube. Light a wooden splint and hold it over the mouth of the test tube. (there are three reactions in number four). Assume that wood is cellulose, $(\text{C}_6\text{H}_{10}\text{O}_5)_n$.

8. Put 1-2 drops of aqueous plumbous nitrate on a piece of acetate sheet with 1-2 drops of aqueous potassium iodide. Place the sheet in the trash when finished.

9. Place about 25 grams of *sodium hydrogen carbonate* (baking soda) in a CLEAN, DRY 250 mL flask. Place a watch glass over the opening of the flask. Using a ring stand, ring clamp, wire gauze, and Bunsen burner, heat the baking soda. Place an ice cube on the watch glass and then observe the watch glass closely for a minute or two. Now remove the watch glass with beaker tongs or a hot hand and place a burning splint into the flask and observe. Remove the flask from the ring stand set-up using a hot hand. Gently shake the flask and observe what happens. Set the hot flask in the cooling pan. CLEAN OUT THE FLASK!!

10. Put about 75 ml of dihydrogen monoxide in a 125 ml or 250 ml flask. Add about 10 drops of bromothymol blue indicator. Use a straw to blow bubbles in the flask until something changes. (The bromothymol blue is an indicator which is yellow at an acidic pH. It is not involved in the "blowing" reaction).

11. Place an *aluminum* pellet in a test tube. Add enough *copper (II) chloride* to cover the aluminum. Wait several minutes and observe. Discard extra aluminum into garbage can. Wash solution down the sink with water.

12. Add about 3 ml of nitric acid to a test tube. Add a small piece of magnesium to the tube and observe. Wash contents down the sink with water.

13. Place about 5 ml of phosphoric acid (aq) into about the same volume of aqueous sodium carbonate in a test tube.