

THE TOOLS OF THE CHEMIST

Reminder – Goggles must be worn at all times in the lab!

PRE-LAB DISCUSSION:

In this lab, you will be introduced to the various pieces of equipment that you will be using in this class. Be sure to take this opportunity to become familiar with each piece of equipment and its use.

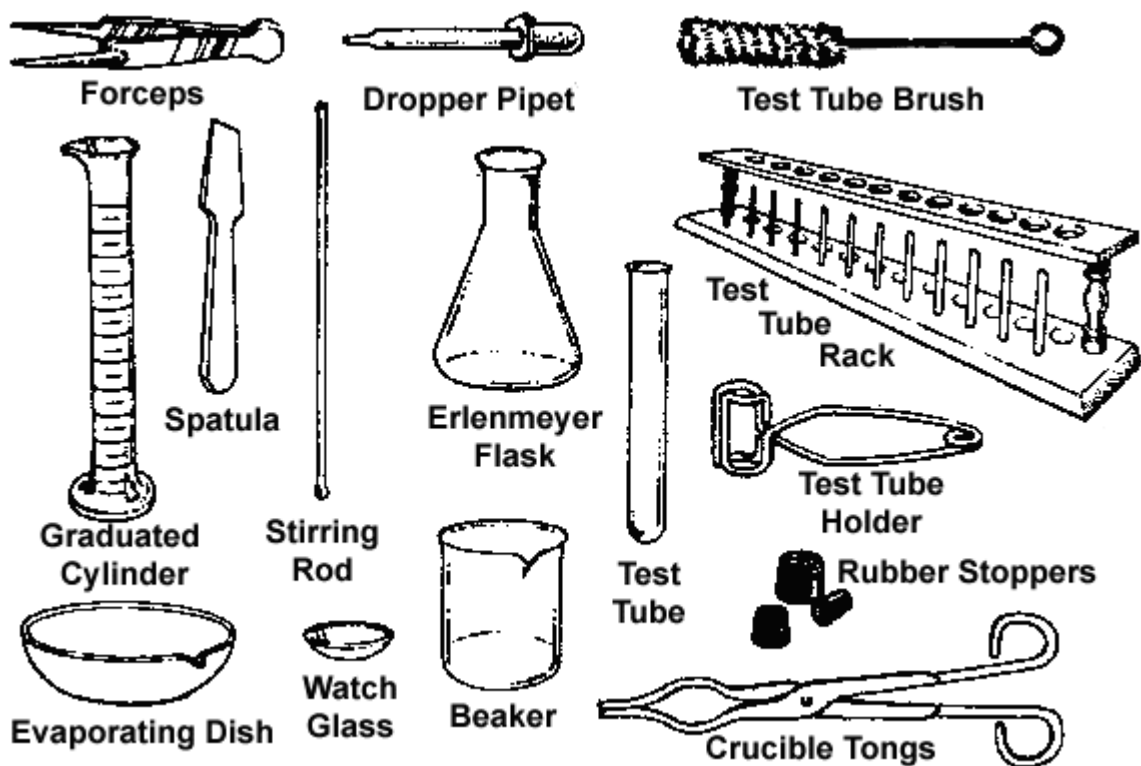
PURPOSE:

To carefully check in your lab drawer, to familiarize yourselves with the equipment, and to practice using the Bunsen Burner.

PROCEDURE:

I. Drawer Check In.

Your teacher will pass out a check-list of those items to be found in your lab drawer. Check each item carefully for breaks or cracks. Throughout the year, as items are broken or damaged, they should be replaced **immediately**. Damaged equipment is a danger to everyone in the lab. Do not leave it to the next class to discover that something has been broken. Except in the event of intentional damage, you will not be billed for the damage. The following chart may help you identify items you are not familiar with. After you have checked in your drawer, sign the sheet, and return it to your teacher. SOME of the equipment in your drawer is represented below.



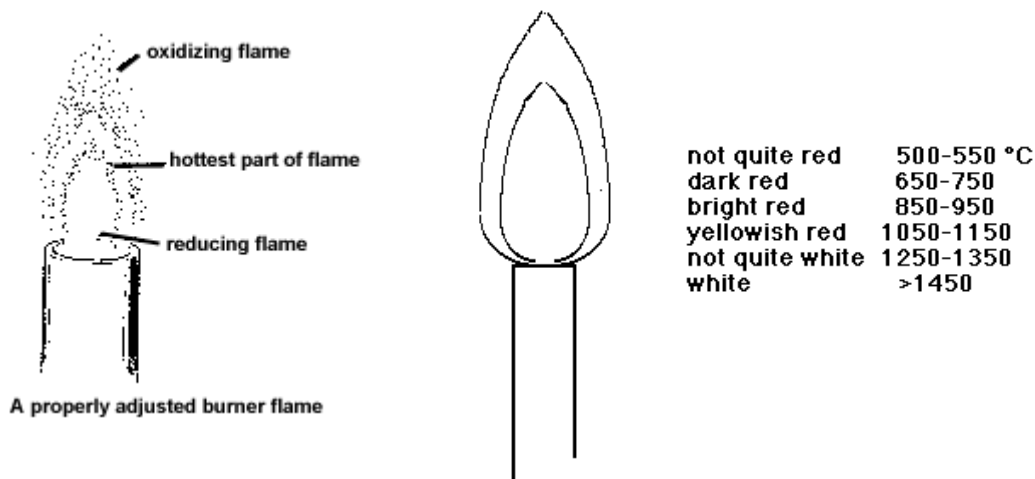
II. The Bunsen Burner

The Bunsen burner is a tool that you will use most frequently in the lab. It is important that you understand its operation and how to use it correctly. Safety must always be your first consideration. Long hair must be tied back, and loose, long sleeves rolled up. Remove paper and other flammable materials from the area around the Bunsen burner. Be certain that you know the locations of fire extinguishers and fire blankets. If you are uncertain where to find these items, ask your instructor BEFORE lighting the Bunsen burner.

To light the burner, close the air vents. (If they are open, the gas escapes before reaching the top of the barrel.) Turn the gas on. Use the striker directly above the barrel. After lighting the burner, make any adjustments necessary to produce a properly adjusted flame.

Laboratory burners use a mixture of gas and air as fuel. The amount of gas that mixes with the air must be correct in order to obtain the most effective flame. The burner is connected to the gas valve by a piece of tubing. The gas valve is used to turn the gas on and off, and to control the supply of gas to the burner. The gas flow controls the HEIGHT of the flame. The supply of air is regulated by adjusting the vent at the bottom of the Bunsen burner. The more air allowed in, the hotter the flame. Practice adjusting your gas and air intake. Each lab group must demonstrate to your instructor that you know how to produce a hot flame and a (relatively) cool flame. In your lab write-up, describe the differences in appearance between a hot and a cool flame.

See the following diagram and notice where THE HOTTEST FLAME is located.



Questions for your discussion

1. Air is primarily a mixture of oxygen gas and nitrogen gas. What part of that mixture is essential for the combustion of the natural gas used by your Bunsen burners?
2. Why does opening the vent at the bottom of the burner create a hotter flame? Why does closing the vent produce a cooler flame?
3. What substances are produced by the combustion of the natural gas used by the Bunsen burners? Complete the following equation:

natural gas + _____ --> _____ + _____