

Lab Equipment



Familiarize yourself with the following:



1. Know the names of the individual pieces of lab equipment.
2. Know the use of each piece. **Note:** Only limited explanations are provided in this slide presentation. The use of some equipment may need to be researched.
3. Be familiar with the safety precautions which need to be undertaken with the use of each piece.
4. Know the possible forms of laboratory error which may occur with the use of each piece.

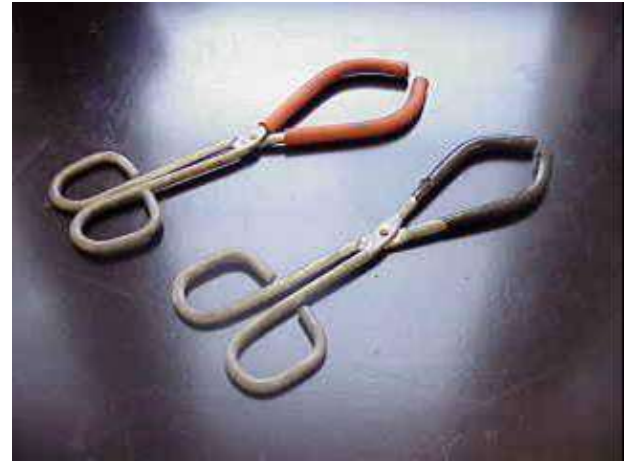
Beaker



- Beakers hold solids or liquids that will not release gases when reacted or are unlikely to splatter if stirred or heated.

Beaker Tongs

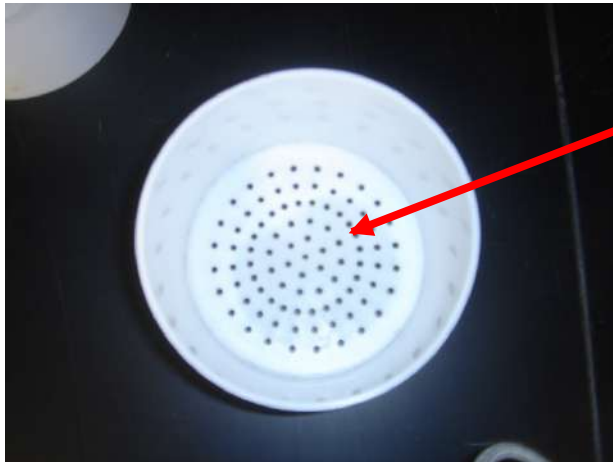
- Beaker tongs are used to move beakers containing hot liquids.
- Beaker tongs can be used in conjunction with rubber **hot hands**.



Buchner Funnel with collar



- A buchner funnel is mainly used in suction filtration.



- Notice the holes!

Bunsen Burners and their Components

1



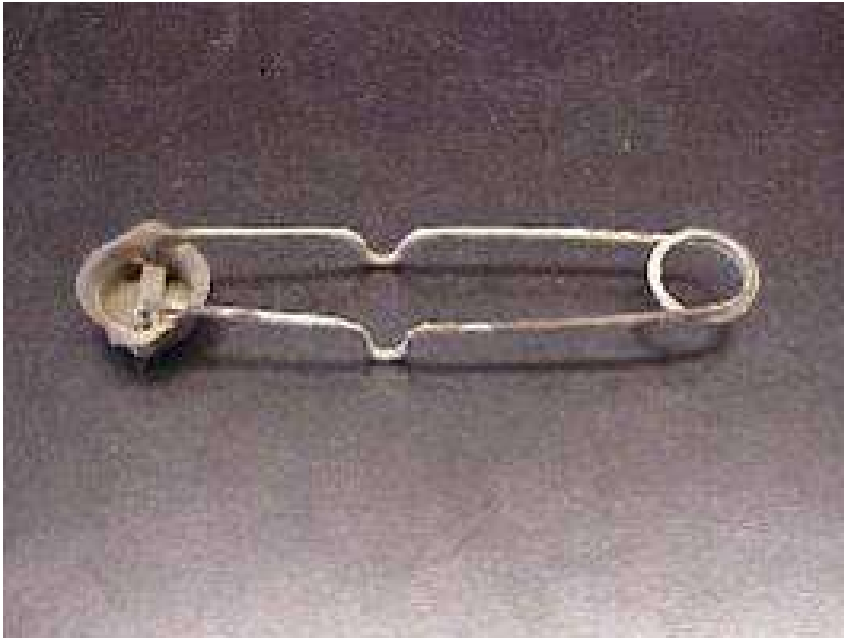
- Bunsen burners are used for the heating of nonvolatile liquids and solids. A hose is also pictured.



- A meker burner is another type of bunsen burner. Notice the difference in the top!

Striker

2



- Strikers are used to light **bunsen burners**.
- The flints on strikers are expensive. **Do not** operate the striker repeatedly just to see sparks!

Erlenmeyer Flask

- Erlenmeyer flasks hold solids or liquids that may release gases during a reaction or that are likely to splatter if stirred or heated.

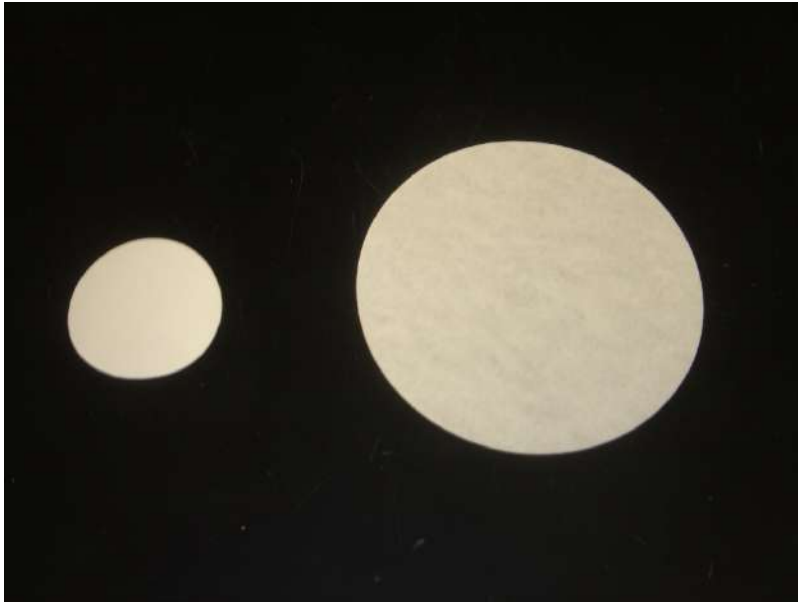


Evaporating Dish

- The evaporating dish is used as a container for heating, usually when you want to evaporate a liquid from some chemicals.



Filter Paper



- Filter paper is used to separate mixtures.
- Pay attention to the flow rates on the sides of the containers these come in!

Filtering Flask

- The filtering flask has a side-arm which is connected to a low pressure source. This can increase the speed of filtration.



Florence Flask



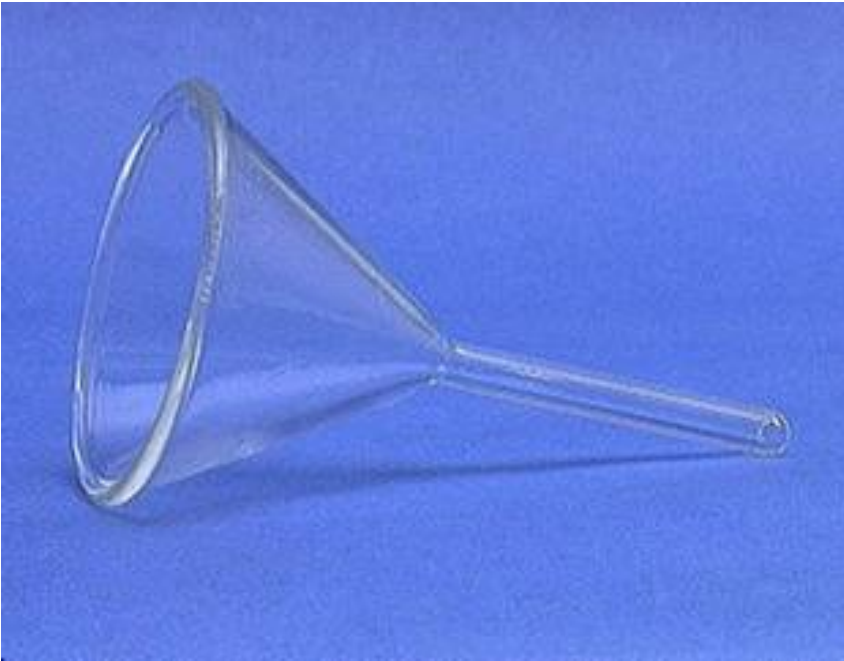
- Used sparingly in general chemistry – it is used for the mixing of chemicals. The narrow neck prevents splash exposure.

Forceps

- Forceps (or tweezers) are used to pick up small objects.



Funnel



- A funnel is used to aid in the transfer of liquid from one vessel to another.

Gas Collecting Bottle(s)

- Gas collecting bottles are used when large volumes of gases are produced and must be collected by the displacement of water. These can easily hold liquids as well.



Glass Stir Rod with Rubber Policeman



- A glass stir rod is used to manually stir solutions. It can also be used to transfer a single drop of solution.

Goggles

- Goggles are used to protect your eyes from broken glass, chemicals and flames.



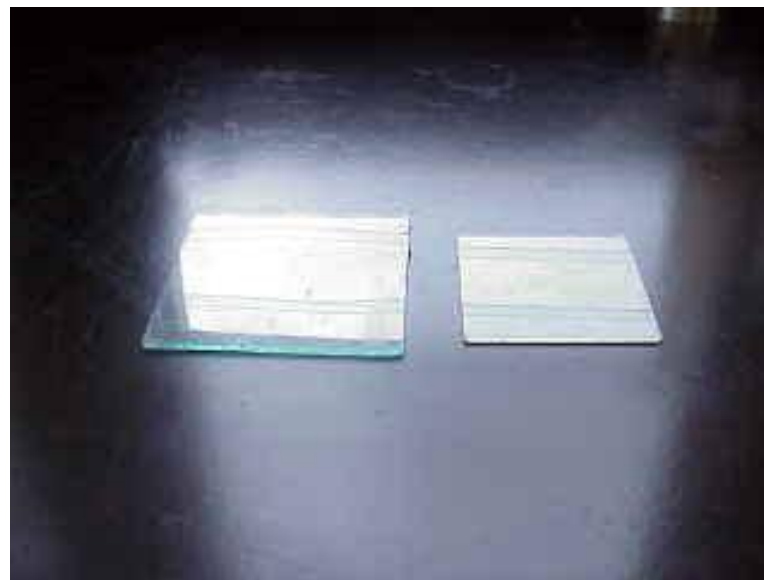
Graduated Cylinder(s)



- A graduated cylinder is used to measure volume of liquids.

Glass Plates

- Glass plates provide a surface for semi-micro scale experiments, such as drop reactions and the testing of acids and bases.

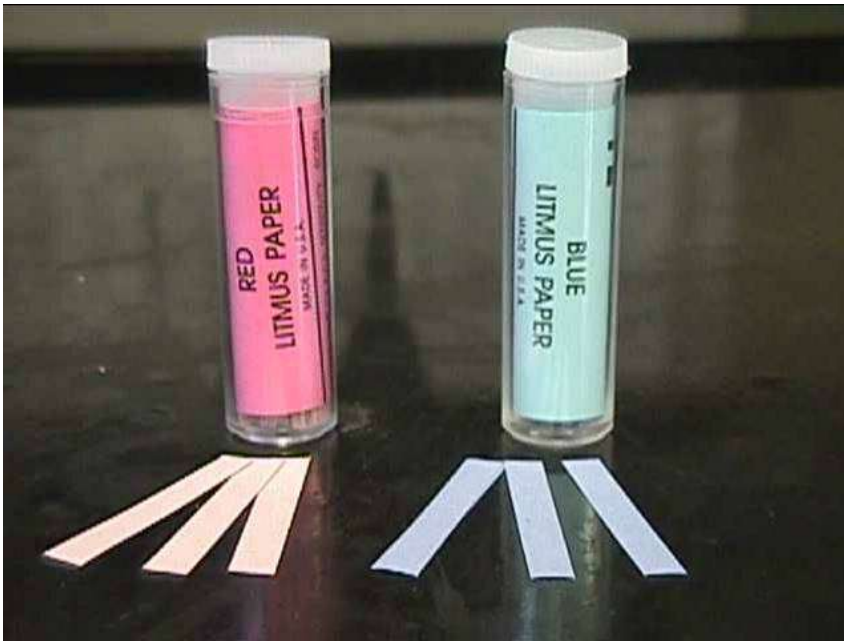


Hot Plate

- A hot plate is used as an alternate heat source from the **bunsen burner**.

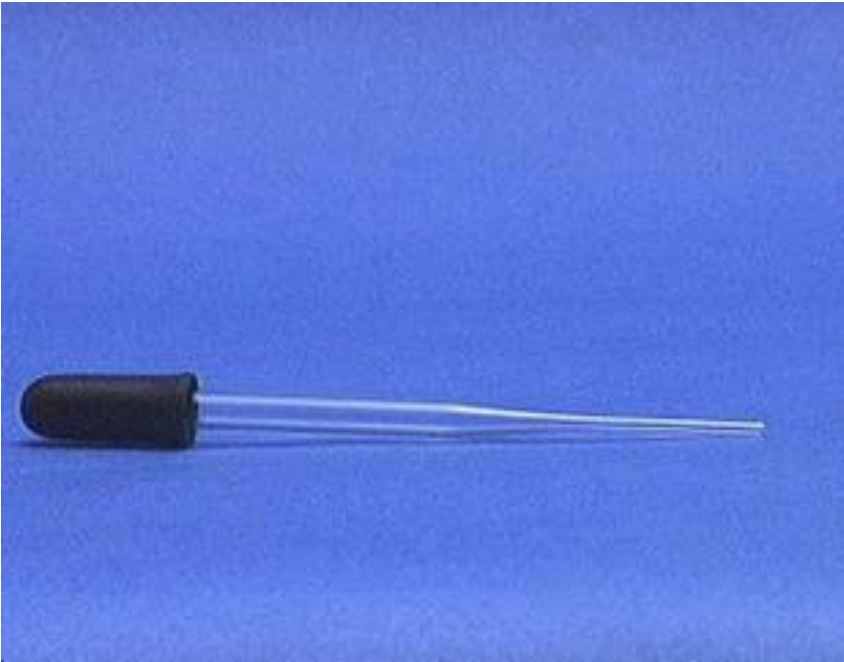


Litmus Paper



- Red litmus paper is used to identify acids.
- Blue litmus paper is used to identify bases.

Medicine Dropper



- A medicine dropper is used to transfer a small volume of liquid (less than 1 mL).

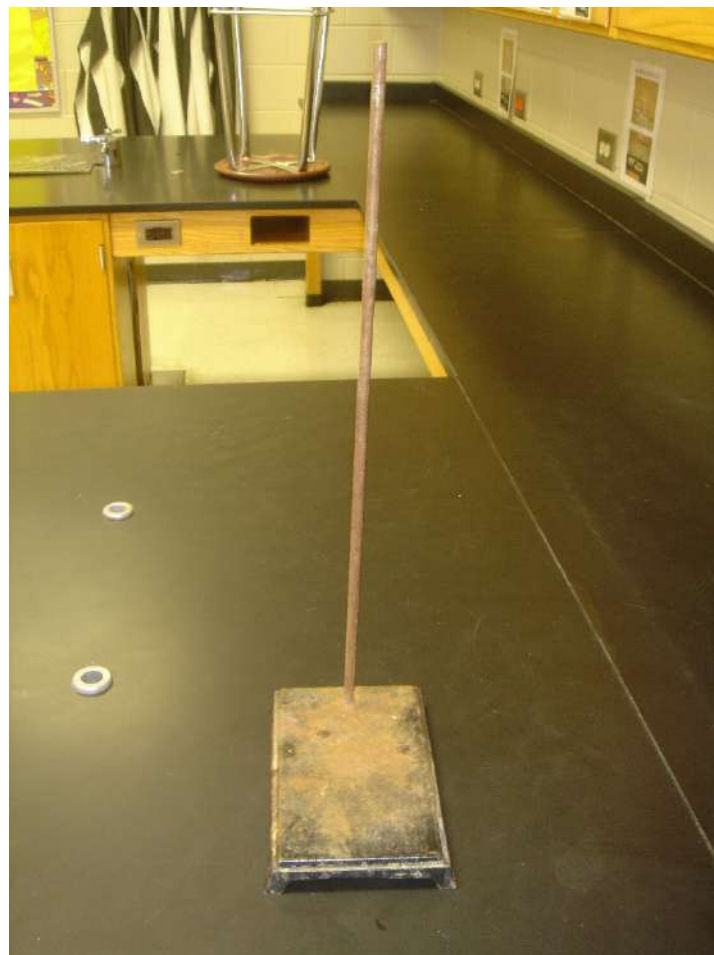
Mortar and Pestle

- A mortar and pestle is used to grind up chemicals.



Ringstands and their Components ¹

- Ringstands are a safe and convenient way to perform reactions that require heating using a **bunsen burner**.



Buret Clamp(s)

2



- Double buret clamps are used to secure **burets** for reactions.



- **Burets** are used to perform titration reactions.

Iron Rings

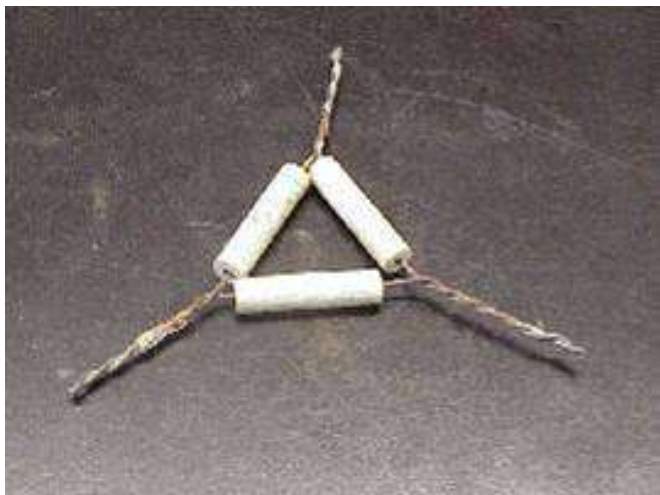
3

- Iron rings connect to a **ringstand** to provide a stable, elevated platform for a reaction.



Clay Triangle with Crucible

4



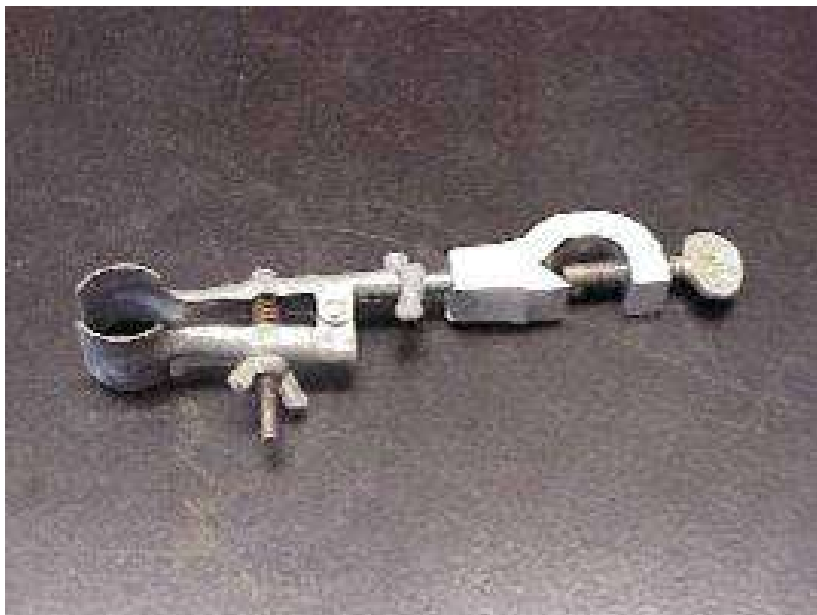
A clay triangle is used in conjunction with a ring stand and crucible.

The crucible and its cover are used to hold small amounts of chemicals during heating at high temperatures, especially if you want to keep oxygen out of the reaction (just put the cover on the crucible).



Utility Clamp

5

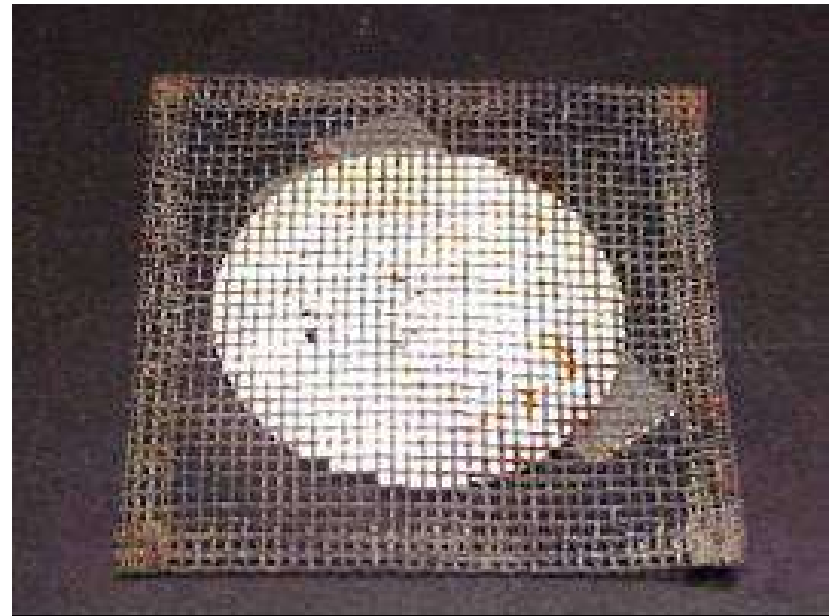


- Utility clamps are used to secure test tubes, distillation columns, and burets to ringstands.

Wire Gauze

6

- Wire gauze sits on the **iron ring** to provide a place to stand a beaker.
- White asbestos appears on older wire gauze.



Pressed Fiber Pad



- A 4" x 4" square of ceramic fiber provides a surface for hot **beakers** so that the **beaker** does not come into contact with a cold countertop and shatter.

Rubber Stoppers

- Rubber stoppers are used to close containers to avoid spillage or contamination.
- Containers should never be heated when there is a stopper in place.

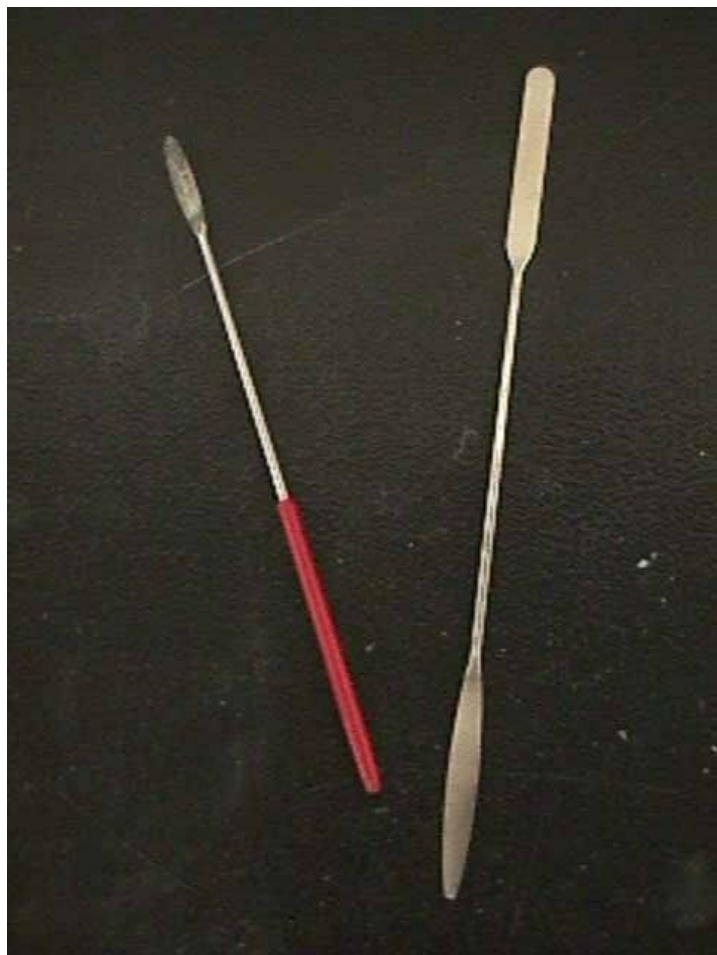


Scoopula



- Scoopulas are used to dispense solid chemical from their containers.
- Chemicals should **never** be transferred with your bare hands or transferred back into the container!

Spatulas



- Spatulas are used to dispense solid chemical from their containers.
- Chemicals should **never** be transferred with your bare hands or transferred back into the container!

Spot Plates



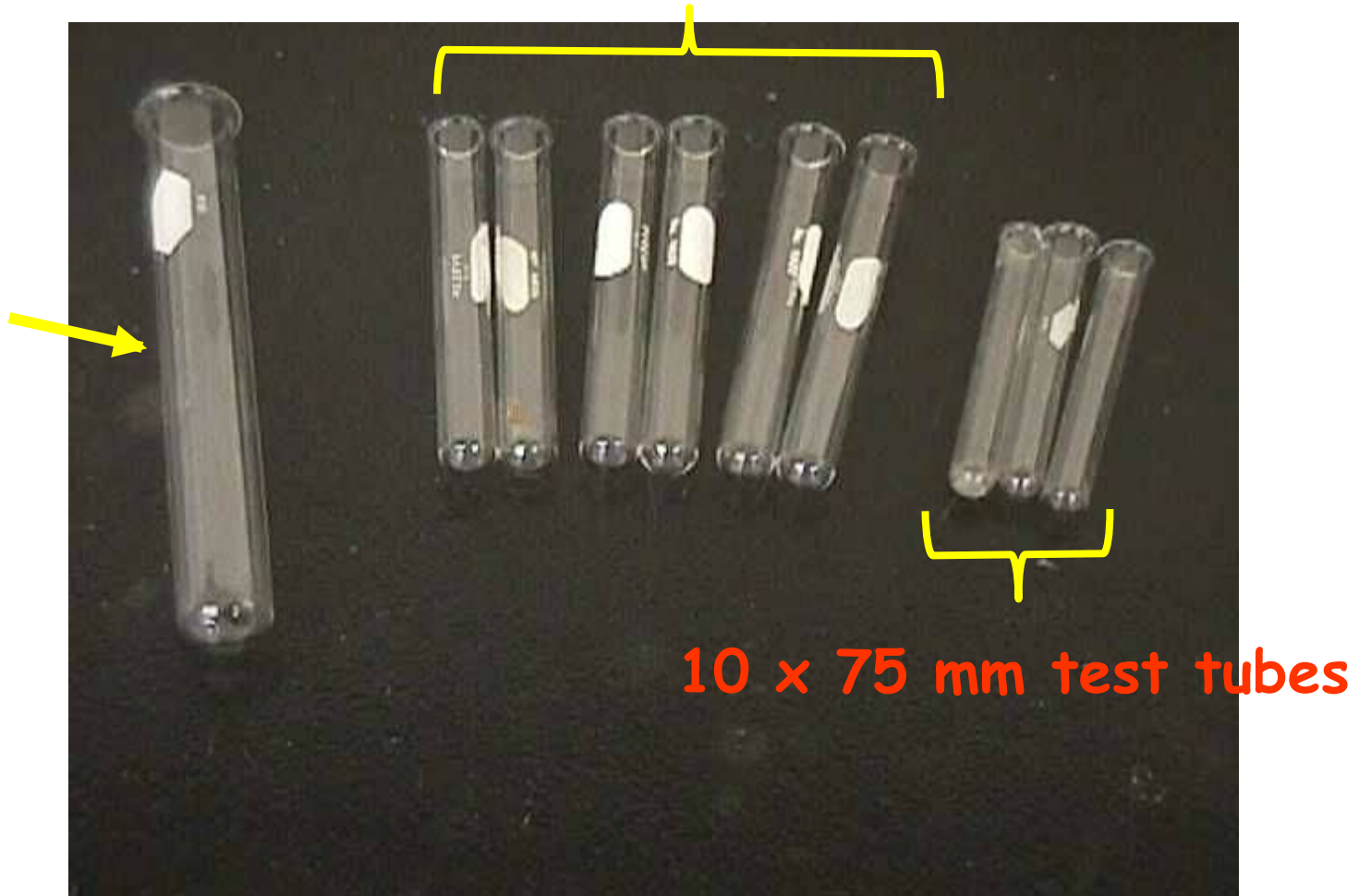
- Spot plates are used to perform many small scale reactions in one location.

Test Tubes & Accessories

1

13 x 100 mm test tubes

Ignition
tube

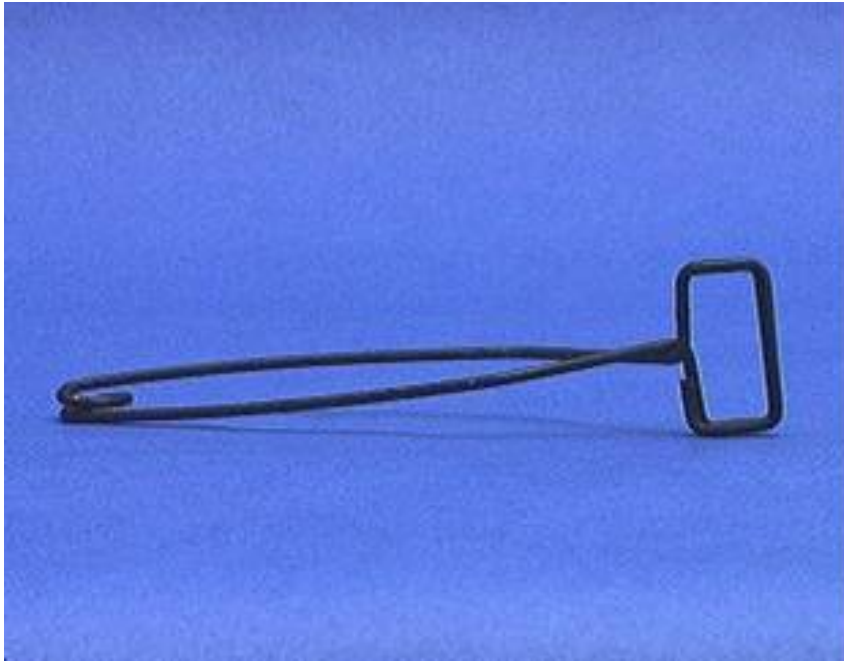


Test Tube Brushes

- Test tube brushes are often used to clean test tubes and graduated cylinders.
- Forcing a large brush into a small test tube will often break the tube.



Test Tube Holder



- A test tube holder is useful for holding a test tube which is too hot to handle. Applying pressure releases the tube. Applying no pressure holds the tube.

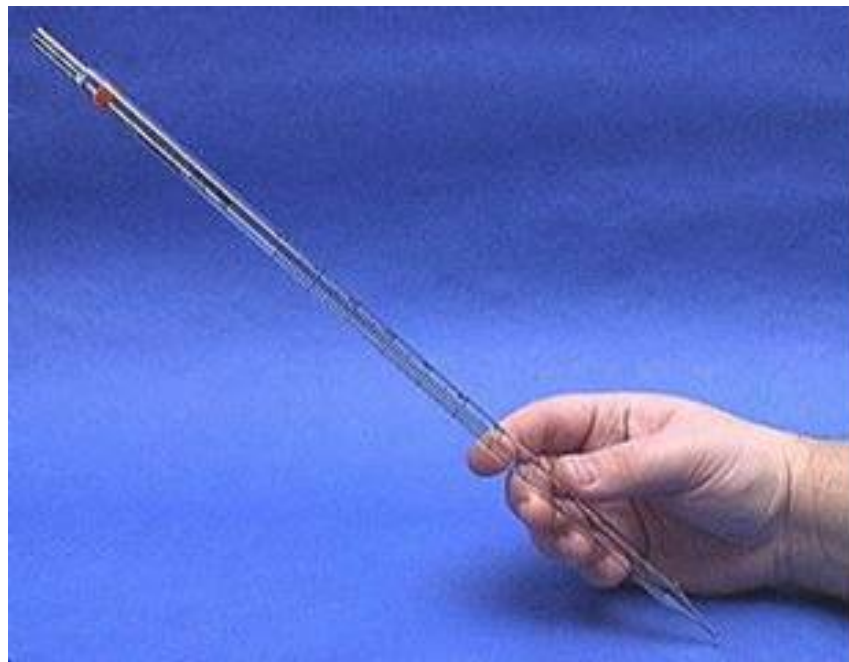
Test Tube Racks



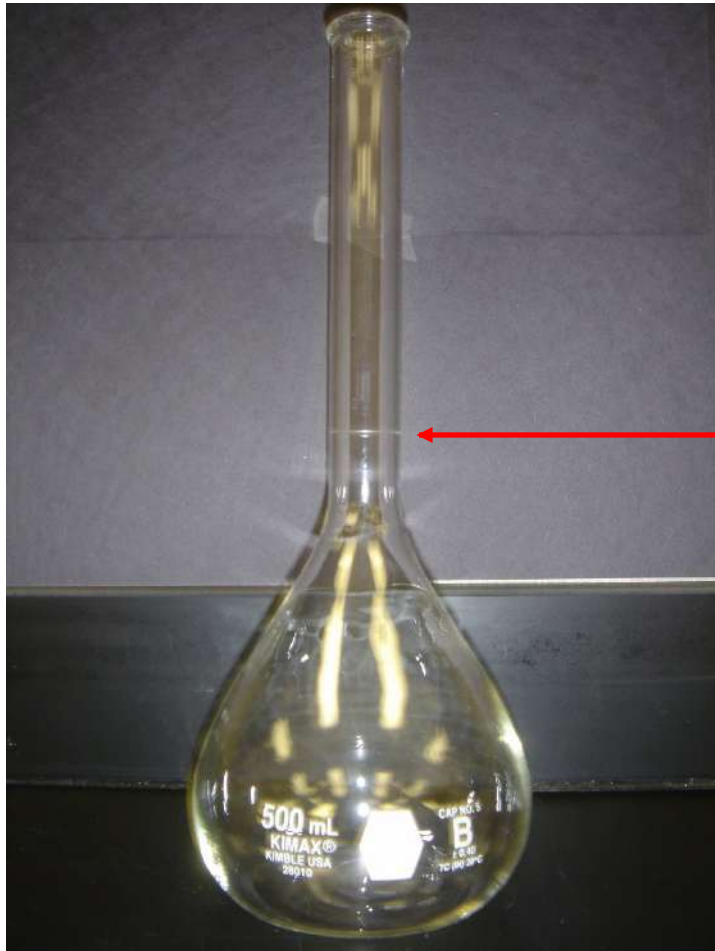
- Test tube racks are for holding and organizing test tubes on the laboratory counter. Plastic racks may melt when in contact with very hot tubes.

Mohr Pipet

- A mohl pipet measures and delivers exact volumes of liquid.



Volumetric Flask



- A volumetric flask is used to measure an exact quantity of a liquid. Notice the single white line on the column of the container!

Volumetric Pipet with pumps

- A volumetric pipet is used in conjunction with a pipet or bulb pump to measure an exact volume of liquid.



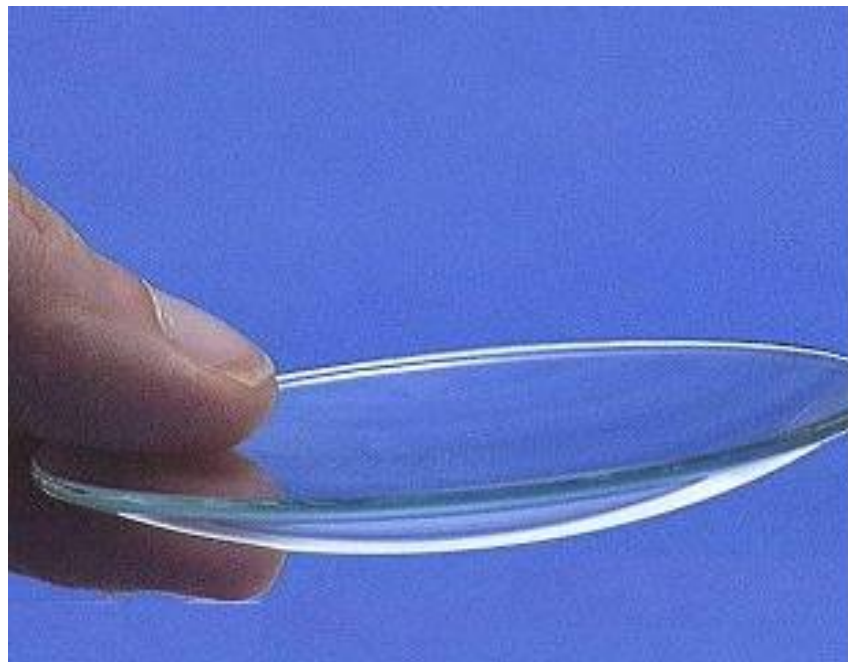
Wash Bottle



- A wash bottle has a spout that delivers a wash solution to a specific area. It is also good for rinsing solids from beakers.
Distilled water is the only liquid that should be used in a wash bottle.

Watch Glass

- A watch glass is used to hold a small amount of solid (such as the product of a reaction).



Weighing Boats



- Weighing boats are used to weigh solid that will be transferred to another vessel. **No** material should ever be placed “**naked**” on a scale or balance.