

# Laboratory Apparatus & Their Uses

Compound microscopes are common in laboratories



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Just as a [business](#) person has an office and a crafts person has a shop, a scientist has a laboratory. Like any other workspace, a laboratory holds the tools of the trade. The apparatus found in any given laboratory will vary based on the field of research and level of the researchers, such as high [school](#), collegiate or professional. Most general purpose laboratories will contain key pieces of apparatus, such as microscopes, beakers, and Bunsen burners.

## Microscopes

- A compound microscope allows the user to view specimens too small for the human eye to discern. Slides hold the specimen and often come prepared and stained ahead of time. Slide preparation can also occur at the time of viewing. Items commonly observed with compound microscopes include plant or [animal](#) cells and bacteria. According to Meiji Techno, a microscope manufacturing company, some compound microscopes can also magnify inorganic materials.

## Beakers

A beaker is a cylindrical glass or plastic vessel used for holding liquids. It is a multi-purpose piece of equipment used for containing a chemical reaction, measuring liquids, heating them over a Bunsen burner's flame or collecting them in a titration experiment.

- Beakers serve multiple functions in a laboratory, according to Truman State University. At the most basic level, they hold samples for later use. They can be used to contain a small chemical reaction. In experiments that yield a liquid product, beakers are used to catch the liquid.

## Bunsen Burners

A Bunsen burner provides concentrated and adjustable heat for experiments. A tube connects the burner to the laboratory gas supply. When the Bunsen burner is lit, the flame can be adjusted using the air hole. Closing the air hole produces an easily visible, luminous flame is produced that is not good for heating. It should be opened when the Bunsen burner is used to heat chemicals.

- A Bunsen burner serves to provide a ready source of heat in the laboratory. A typical Bunsen burner, according to Practical Chemistry, employs a tube in which a gas (such as methane) mixes with air. Once that gas is lit, an air hole in the tube allows the user to adjust the size of the flame.

## Balances

- Another common apparatus found in laboratories is the balance. A balance determines the mass of something, such as a dry chemical. While balances once used two flat trays--one to hold the material and the other to hold weights--electronic balances represent the norm in most laboratories.

## Test Tube



- Test tubes - basic laboratory equipment
- A test tube is a relatively slim glass or plastic vessel with a rounded bottom. They are designed to hold small quantities of chemicals and feature a flared lip to make pouring easier. Test tubes can hold liquid or solid chemicals and can be used to contain small chemical reactions. The slimness of the test tube reduces the spread of any vapors that may be produced by the reaction.
- In the lab, test tubes typically hold samples or provide a small vessel for reactions, according to Truman State University. In experiments that require heating of the test tube, a test tube holder allows the user to move or hold the test tube safely.

## Multimeter

- Any laboratory that deals with experiments involving electricity or electronics will have a multimeter. Depending on the quality and type, multimeters can measure voltage, current and resistance. Most multimeters provide the option for measurements in alternating current (AC) or direct current (DC). Some may also provide capacitance and inductance measurements.

Equipment in any one scientific laboratory will depend on the research and the relative skills of the researchers. Whatever their sophistication and current field of scientific study, all scientists will have used some common pieces of laboratory apparatus at some point in their [careers](#).

## Graduated Cylinder

- A graduated cylinder is a relatively slim glass or plastic cylinder used specifically for calibrating beakers or measuring a liquid's volume. Graduated cylinders come in a variety of sizes such as 10 ml, 25 ml, 50 ml, 100 ml, 500 ml and 1,000 ml. Scientists take measurements by viewing, at eye-level, the lowest point of the convex dip that the liquid in the cylinder makes.

## Evaporating Dish

- An evaporating dish is a glazed porcelain vessel used to heat and consequently evaporate liquids. In this way experiments can increase a liquid's concentration. The dish is relatively shallow and features a lip to facilitate pouring the liquids.

## Pipet

- A pipet transfers relatively small amounts of liquid. In the most commonly used pipettes, experimenters draw liquid into one end of a glass or plastic cylinder by the prior squeezing of the rubber or plastic ball at the opposite end. The amount of liquid able to be drawn into the pipette is usually fixed, to enable accuracy in measurement.