

What Is Simple Microscope?

A simple microscope is a magnifying glass that has a double convex lens with a short focal length. The examples of this kind of instrument include the hand lens and reading lens. When an object is kept near the lens, then its principal focus with an image is produced, which is erect and bigger than the original object. The formed image is virtual and cannot be projected on a screen like a real image.



What Are The Parts Of Simple Microscope?

Following are the parts of the simple microscope with their functions:

- **Eyepiece:** It is the lens that is used to study the samples and is placed at the top. It has a magnification of 10X to 15X.
- **Base:** This provides support to the microscope.
- **Tube:** This is used to connect the eyepiece to the objective lenses.
- **Objective lenses:** These are found with the magnification of 10X, 40X and 100X and are colour coded. The lower power lenses are the shortest lens and the highest power lenses are the longest lens.



- **Revolving nose-piece:** This is also known as the turret. It is used for holding of other objective lens and can be rotated while viewing the samples.
- **Diaphragm:** It is used to control the amount of light that passes through the stage.
- **Stage:** It is the platform used for placing the slides with samples.
- **Stage clip:** These are used to hold the slides in the proper place.
- **Coarse adjustment knob:** It is used to focus on scanning.
- **Fine adjustment knob:** It is used to focus on oil.
- **Arm:** It is used to support the tube and connects to the base of the microscope.
- **Power switch:** The main power switch used to turn on or off the microscope.
- **Condenser:** It is used to focus the light on the sample and 400X power lenses are used.

Magnification of Simple Microscope

The magnifying power formula of a simple microscope is given as:

$$M = 1 + \frac{D}{F}$$

Where,

- D is the least distance of the distinct vision
- F is the focal length of the convex lens

Difference between Simple And Compound Microscope

Characteristics	Simple microscope	Compound microscope
Number of lenses used	1 objective lens	2 to 4 objective lens

Adjusting knobs	Has a small hollow cylindrical knob attached to the base which is used to hold the microscope	Has a curved knob which is used to hold the microscope
Adjustment screw	Has one adjustment screw used for focusing by moving the limb up and down	Has a coarse adjustment screw for fine and sharp focus
Mirror	Concave reflecting type is used	Plane on one side and the other side is concave

Working of Simple Microscope

As we know that simple microscope is used to get a magnified view of the samples, it is widely used in microbiology. Light from the light source is made to pass through a thin object which is transparent. To get an enlarged virtual image, a biconvex lens is used. For higher magnification and resolution, the lens must be close to the sample. By viewing the details of the sample contrast can be obtained. This is done by staining the sample. To obtain contrast image, the size and intensity of the light beam can be modified with the help of condenser or the diaphragm.

Simple Microscope Experiments

Aim: To make a simple microscope with the help of water.

Apparatus Required

- A glass of water
- Fuse wire
- Object to view (newspaper works well due to its fine print)

Procedure

- Make a loop of the fuse wire around 2 mm wide.



- Dip it in water so that a drop is made in the loop.
- Hold it near to your eye and take a close look at the object you have chosen.
- You may be required to get the correct distance, but you should view a magnified image, mainly if the drop is as close as possible to your eyes.

Conclusion

This experiment is similar to the pioneers of early microscopes that used tiny glass globules of water to magnify objects. The water droplet develops a shape of the convex lens that refracts the light and converges it to the point where it can be seen clearly. Later with the introduction of the method of grinding glass, modern microscopes consists of many lenses and lets us see extremely minute objects.

Uses of Simple Microscope

- It is used in pedology (a study of soil particles)
- It is used by a dermatologist to find out various skin diseases.
- It is used in microbiology to study samples of algae, fungi etc
- It is used by the jewellers to get a magnified view of the fine parts of the jewellery.