

CASSINITM

C-1200M 300X/600X/1200X

98 PC. MICROSCOPE KIT

Instructions



Welcome to the Microscopic World

We take great pleasure in introducing you to the world of the microscope. Your new microscope is an instrument with lenses for making very small objects appear much larger so they can be studied. There are millions of tiny living plants and animals that can be easily seen with your microscope.

In today's technological world every science from the most fundamental biology to the highly skilled field of astro-physiology use microscopes. Microscopes are used by geologists for studying rocks and minerals, archaeologists who study very old items, police departments who can study very small pieces of evidence, and even by astronomers when they study fallen meteorites. Your microscope will let you see the basic building blocks of life on Earth.

Your new Microscope Set contains the following parts:

Check your microscope kit and make sure that you have all of these parts. Put a check mark in the box beside each item you find.

- 1 - 300X/600X/1200X Illuminated microscope
- 1 - Scalpel
- 1 - Spatula
- 1 - Tweezers
- 4 - Specimen vials
- 1 - Test tube with cap
- 1 - Petri dish
- 1 - Pipette
- 5 - Prepared slides
- 18 - Blank slides
- 18 - Slide labels
- 36 - Plastic slide covers
- 2 - Empty dye vials
- 1 - Spare light bulb
- 1 - Stirring rod
- 1 - Magnifying glass
- 1 - Measuring graduate
- 1 - Storage and carrying case
- 1 - Camera adapter
- 1 - Projection / viewing device

What are all of these things for?

300X/600X/1200X Microscope – The microscope holds samples of very small things on clear glass slides. It shines a bright light from its mirror through the small sample, and then lenses make the sample look very big. This microscope can make things look 300 times, 600 times, or even 1,200 times bigger than you can see them with just your eyes.

Scalpel – A scalpel is a sharp blade that is used to cut very thin pieces of material so you can look at them with your microscope.

Spatula - The spatula has a large flat blade, but it is not as sharp as the scalpel. It is used for scraping off bits of material for testing and to push down on soft samples to mash them flat.

Tweezers – The tweezers are like little pinchers. They are used to pick up small samples and to handle samples that you don't want to touch with your hands – like slimy mold! Yuck!

Specimen vials – These are little plastic bottles with tight-fitting lids. They are used to carry your samples from where you collected them to where you have your microscope set up.

Test tube with cap – This thin, clear tube is used to hold liquid samples when you want to see if anything is happening, like when a sample changes color.

Petri dish – This is a round, flat dish with a clear cover. It is used to grow and observe samples such as mold.

Pipette – This is a plastic device that you can dip into a liquid to transfer a drop or two to a slide for examination.

Prepared slides – These are glass slides that have samples on them that have been prepared by professionals for you to examine.

Blank slides – These are the clear slides that you will place prepared samples on for examination under your microscope.

Slide labels – These are little pieces of paper with sticky backs. You can write on them and stick them on your slides to record information such as when the sample was prepared.

Plastic slide covers – These are little circles or squares made of thin, clear plastic. They are used to cover very small samples on a slide. When they are clean and dry they stick to the glass slide with a static electricity charge.

Dye vials – In your set you will find two small plastic bottles intended to hold dyes for staining samples. If you add a drop of methylene blue dye to a sample, like a thin slice of an onion, you will be able to see the cells much more clearly. methylene blue dye can be obtained from an aquarium supply shop.

Spare lightbulb – This spare bulb will replace the one in the illuminator lamp when it eventually wears out.

Stirring rod – Use this rod to mix liquids until they are well blended. An example is when you mix salt in with water.

Magnifying glass – This is useful for taking a close look at a sample before you examine it under the high-power magnification of your microscope.

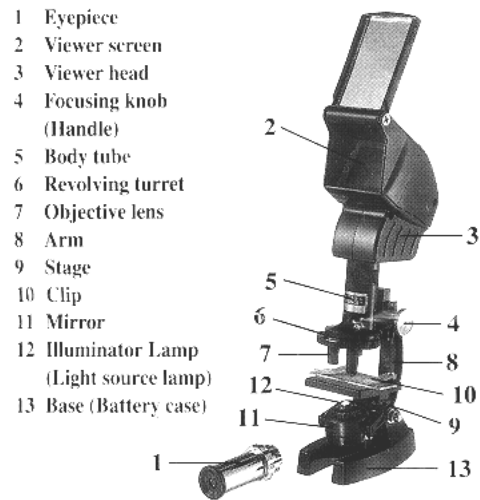
Measuring graduate – This plastic cup is marked with measuring lines so that you can accurately measure quantities of liquids in your experiments.

Storage and carrying case – This heavy-duty case has been specially made to hold the components of your microscope set safely and securely.

Camera adapter – Now you can take pictures through your microscope. This device attaches most single-use 35-mm cameras and many compact 35-mm cameras directly to your microscope.

Projection / viewing device – This device lets you project an image of the slide you are examining either on a white wall, onto its own small viewing screen, or onto a piece of white paper. You can share your discoveries with friends or trace the image to create your own drawings.

Parts of Your Microscope:



We constantly improve and update our products. Sometimes, as a result of these improvements, what is seen on the package or in the instructions may differ somewhat in color or content from the product in the package.

- 1. Eyepiece** – The eyepiece is where you look into the microscope. It is a small magnifying lens that collects the image projected up by the three objective lenses.
- 2. Viewer screen** – The observed image can be projected onto this screen so that more than one person can look at it at a time.
- 3. Viewer head** – The viewer head contains a mirror that will divert the viewed image for projection.
- 4. Focusing knob** – Turn these knobs very slowly to bring the image of your sample into focus so you can see it sharply.
- 5. Body tube** – This is the main tube of the telescope. The image from the sample travels up this tube to the eyepiece.
- 6. Revolving turret** – The turret holds the three objective lenses. Turn the turret so that each lens clicks into position.

7. Objective lenses – These lenses give three different magnifying powers. They make samples look 300 times (300X), 600 times (600X), or 1,200 times (1,200X) bigger than you can see them with your eyes alone.

8. Arm – This curved piece is the “backbone” of the microscope and holds everything together. You can tilt the arm backward to get a more comfortable viewing position.

9. Stage – The stage is the flat platform where your slides are held for studying.

10. Clips – The two clips on the stage hold your slide in position so that it doesn’t slide around while you are looking at it.

11. Mirror – The mirror aims light from a bright source, like a daylight window or a table lamp, up through the slide you are studying so you can see it more clearly.

12. Illuminator lamp – When there is not enough light available for the mirror to do its job, you can turn the mirror over and see the bright electric illuminator bulb light up.

13. Battery compartment (base) – Turn the microscope over. Use a Phillips head (+) screwdriver to remove the two screws. Lift off the rubber anti-skid cover and insert two AA batteries, observing the correct positioning.

Read all instructions before use. Follow them and keep them for future reference. Keep small children and animals away from any experiments or projects. Store your microscope set out of reach of small children. Eye protection is not included.

Your microscope has been designed to provide hours of enjoyment. Have fun! Always wash your hands carefully after handling any samples and always dispose of any samples in a safe manner. When working with samples, keep your hands away from your mouth and eyes.

WARNING: Only for use by children 8 or older. Only for use under the supervision of an adult. This toy contains glass parts.

Helpful Hints

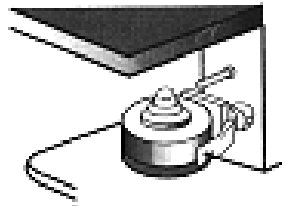
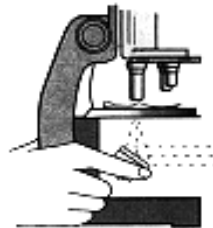
- 1) The most important parts of your microscope are the lenses. Handle them with care. If the lenses are dirty or dusty you can clean them with a soft cotton cloth or a special lens cleaning tissue. Do not wipe them with a finger or a regular facial tissue.
- 2) Protect your microscope from dust and moisture by always storing it in its case.

Getting Started

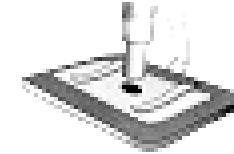
- 1) First, turn the microscope over. Insert two AA alkaline batteries in the base of the microscope. In order to remove the bottom cover of the microscope you will need a Phillips head (+) screwdriver. Insert the batteries as shown, making sure that the (+) and (-) terminals are properly identified. Replace the bottom cover and reinsert the screw. Do not overtighten.



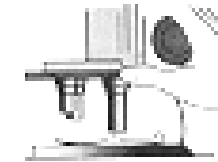
- 2) Place the microscope on a flat surface near a bright light, or in the daytime, a window. Locate the mirror and adjust the angle so that when you look into the eyepiece you see a bright circle of light. **Do not point the mirror toward the sun as eye damage may result.** If there is no bright light available or, if the room lighting is poor, you can use the microscope's electric illuminator. To turn on the illuminator, flip the mirror over so that the light bulb is aimed upward. The light will come on by itself. Look through the eyepiece and adjust the angle of the light until you see a bright circle.



- 3) Once you can see a bright light circle in the eyepiece your microscope is ready for use.
- 4) Choose one of the prepared sample slides from your set. Place it under the two spring clips on top of the stage.



- 5) Next, choose the magnifying power you want to use. Your microscope can provide magnifying powers of 300X, 600X, and 1,200X. Remember that the longer objective lenses provide the higher powers. Most observing is done at low power.
- 6) To change the magnifying strength turn the revolving lens turret until you hear a click.



- 7) Turn the focusing knob until the objective lens is almost touching the slide. Don't let the lens touch the slide as you may break the slide and damage the lens. Now look through the eyepiece and slowly turn the focusing knob back until you see the sample clearly.

How to Make a Prepared Slide

Samples for examination should be very thin so that light can pass through them. If the sample is too thick it will appear dark in the microscope.

Cloth fibers, pollen, dust, or salt crystals will be easy to see and make good samples for beginners to observe.

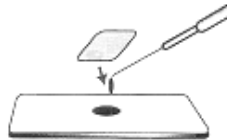
If the sample is very thin and clear a drop of dye may make details show more clearly. Methylene blue dye can be obtained from an aquarium

supply store. You can transfer a drop of dye from the bottle to your slide with the pipette.

Be careful with dyes as they can stain clothing, furniture, or carpets.

Making a Temporary Slide

- 1) Wipe the slide clean.
- 2) Prepare a thin sample. You may have to slice it with a scalpel or a razor blade. Be very careful. Ask for adult help.
- 3) Pick up your sample with the tweezers and put it on the center section of the slide. Add one drop of water. Or, if needed, you can now add a drop of dye.
- 4) Gently place a temporary slide cover (plastic) over the sample, being careful not to allow any air bubbles in.
- 5) Remove any excess water or dye with a piece of paper towel by pressing it down gently over the slide cover.
- 6) Now you can observe your slide.



Making a Permanent Slide

- 7) Start with a clean slide and slide cover. Take care when handling these slide covers.
- 8) Follow Steps 2 and 3 above.
- 9) Before placing the slide cover over your sample add several drops of gum media, Canada balsam, or transparent glue.

- 10) Place the cover glass gently over the sample and gently squeeze out any air bubbles.

- 11) Place your new slide in a safe place and let it dry for a day.

IMPORTANT NOTICE: Wash your hands before and after every project. Use warm water and soap. Also wash any of your microscope kit equipment that you may have used. Be very careful when handling the glass slides and slide covers. Make sure that an adult knows what you are doing and is available to help you.

How to Use the Camera Adapter

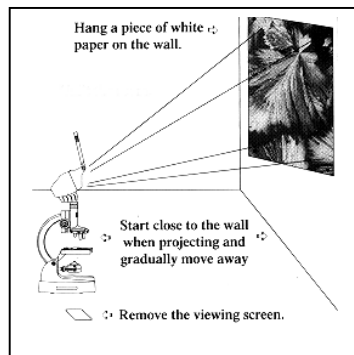
The camera adapter can hold a personal still video camera or a single-use camera loaded with ISO400-type film. To position the adapter, remove the microscope eyepiece and place the camera adapter over the focusing tube. Place the camera on the camera adapter baseplate so that the camera lens is directly over the hole in the baseplate. Then place the U-shaped camera holder over the camera and push it down until the camera is held tightly.

If your camera has a video display screen you can preview the image for positioning and focus sharpness. If your camera does not have this screen you may have to experiment with different focus positions and checking the results. Depending on the camera design you may not need to make any adjustment. Take your first pictures with the objective lens almost touching the glass slide. Measure the position of the focusing tube carefully and keep records of each picture-taking focus position. When you find the best position that gives a sharp picture you may want to make a small mark on the focusing tube so that the microscope can be set at the same position for the next pictures you take. Your best results will be at the 300X setting.



How to Use the Projection Device

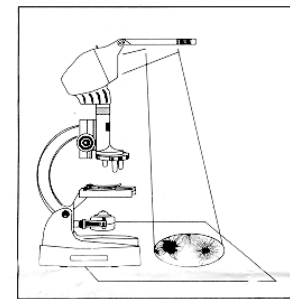
- 1) Twist the eyepiece counterclockwise and gently pull up to remove it. Insert the viewer head over the focusing tube.
- 2) Face the viewer head toward a white wall or a piece of white paper.
- 3) Turn out the room lights and close any curtains. For best results the room should be dark.
- 4) Turn on the electric illuminator and place a prepared slide on the stage.
- 5) Try a distance of 1 to 1.5 meters (3 to 4 feet) from the wall or paper.
- 6) Adjust the illuminator lamp so that the image is as bright as possible.
- 7) Carefully adjust the focus until you see a sharp image. You may have to readjust the illuminator position.
- 8) You should now see a clear projected image. If you use a higher magnification you will have to refocus the microscope.



How to Use the Drawing Device

You can observe the image on the unit's projection screen, or you can project an enlarged image onto a white surface.

- 1) Make sure that the plastic viewing screen is in place in the slot on the top of the viewing hood.
- 2) Adjust the focus and illuminator until you see a clear image on the screen.
- 3) To see an enlarged image, remove the plastic viewing screen from its slot.
- 4) Make sure that the microscope is in the upright position.
- 5) Place a piece of white paper horizontally in front of the base of the microscope.
- 6) Darken the room and adjust the angle of the viewer hood mirror until you see the image projected on the white paper. Adjust the focus and illuminator lamp position for the best result.



IMPORTANT SUGGESTIONS: When you are using the drawing device or the projection device you must be in a darkened room. You will see the brightest views in a very dark room. Make sure that the batteries are fresh and all lenses and mirrors are clean. Before studying your slides in the dark, give your eyes a few minutes to adjust.

When using the projection device you may get some "light spill." This is unwanted light that comes directly from the illuminator or bounces off of reflective surfaces. This unwanted light can overpower the projected image, making it very hard to see. If light spill is affecting your projected image you might try placing your hand in front of the illuminator to block this extra light.

FAQs – Frequently Asked Questions

What can I see with my microscope?

You can see thousands of things that are difficult or impossible to see with your eyes. You can see tiny plants and animals. You can observe plant and animal cells. You can see the differences between different plants, different papers, different fibers and hairs from different people. You can study crystals, rocks, and minerals. The uses for your microscope are practically endless.

What is meant by power?

Power is a measure of the seeing ability of your microscope. It is really a short way of saying “magnifying power.” Your microscope has three powers. They are 300X (pronounced “300 times”), 600X, and 1,200X. This means that your microscope can magnify the view of a sample so that it appears 300 times, 600 times, or 1,200 times larger than the way you see it with your eyes alone.

I look through my microscope and all I see is darkness. Why?

This could be because the mirror is not positioned properly to aim light up into your microscope. Or maybe the sample you are looking at is too thick so that the light cannot shine through it.

All I can see is a partial circle of light. Why?

To see your sample properly, you need to have even light shining up through the slide. If you are using the mirror for light, try gently moving it about while looking through the microscope until you see an evenly lit full circle.

I have a very thin sample on my slide, but I can't see any detail.

First, make sure that the image is in sharp focus by adjusting the focusing knobs. If the problem still exists you should add a drop of dye or stain to the sample. Stains make hard-to-see objects like plant cells stand out.

BATTERY INFORMATION:

This unit uses two AA batteries. Always use fresh batteries. If the unit will not be used for an extended term remove the batteries. Do not try to recharge non-rechargeable batteries. Do not take batteries apart. Do not short-circuit the terminals. Do not dispose of batteries in fire. They may explode.



WARNING! CHOKING HAZARD –
Small parts. Not suitable for children
under 3 years.

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