

Using Micropipettes

Please take the time to learn how to use micropipettes properly. It will save you hours of time as well as extend the lifetime of your pipettes.

After studying and practicing the techniques in this overview of pipetting, you should be able to:

1. Select the appropriate micropipette and set the dial for the correct volume.
2. Distinguish the first and second stops and dispense the correct volume of liquid.
3. Draw up liquids without contaminating the micropipette barrel.

General Precautions

- Be careful to not drop the micropipette.
- The best way to avoid dropping the pipettes is to keep them away from the edge of the lab bench.
- When pipetting, hold the pipette upright.
- Do not release or depress the plunger too fast.

Overview

Micropipettes are used to pipet small volumes of liquid ranging in volume from 0.5 μl to 1 ml. Since 1 μl is 1/1000th the volume of 1 ml it is important to think about what volume you need, and which micropipette is most appropriate.

The table below references Rainin pipets with the corresponding volume ranges and tips.

Rainin Pipet	Volume Range	Color of Pipet Tip
L-2	0.1 – 2 μl	Red
L-20	2.0 – 20 μl	Red
L-200	20 – 200 μl	Green
L-1000	100 – 1000 μl	Blue

Selecting and Setting the Volume on the Micropipette

1. Think about which pipette you will want to use... what volume will you be pipetting? Then, select the appropriate pipette.
2. Set the dial to the desired volume. Be sure to “unlock” the black lever before changing the volume and to “lock” the lever when the desired volume is set.

Below is a table depicting each Rainin micropipette display set to the same reading, but resulting in different volumes. Be sure to understand how the decimal point changes with each micropipette display.

Micropipette	L2	L20	L200	L1000
Top Digit	0	0	0	0
Middle Digit	5	5	5	5
Bottom Digit	0	0	0	0
Total Volume	0.5 μ l	5.0 μ l	50 μ l	500 μ l

Do not overturn the dial when selecting your volume. Otherwise, you WILL damage the micropipette and possibly destroy it. Only select a volume within the set range. (Therefore, if the dial is becoming hard to turn, do NOT continue to turn it. Normally, the dials are not difficult to turn. If you feel resistance, check to make sure that you have selected the correct micropipette).

Selecting the Appropriate Tip and Using it to Transfer Liquid

1. Place a tip on the micropipette using the appropriate tip size (in the case of RAININ pipettes: Red, Green, or Blue).
 - a. NOTE: The cap of the RAININ micropipette plunger is color-coded to indicate which size tip to use.
1. IMPORTANT: Pipettes work by air displacement and a poor tip seal will give the wrong volume.
2. To transfer liquid, press down on the plunger to the FIRST stop and THEN insert the tip into the liquid.
3. Carefully and slowly, lift up your thumb to release the plunger (this draws the liquid up into the tip).
4. Remove the tip from the liquid. Move the tip to the receiving tube or parafilm and press on the plunger to expel the liquid. Depress the plunger to the SECOND stop position to remove all the liquid from the tip.
5. Eject the tip in to a waste container.