

Welcome to Nancy Gardner's Chemistry Lab Procedures from the California State University, Long Beach: Episode 3, Volumetric Pipettes, part one.

Volumetric pipettes are used in chemistry to deliver a specific volume of liquid. They're usually made of glass and are therefore quite fragile. There are two types of volumetric pipettes used in the lab.

Fixed volume pipettes come in various volumes up to 500 milliliters and can only be used to measure these exact amounts.

Graduated volume pipettes also come in many sizes, but are marked for volumes less than the stated milliliters. For example, for volumes such as 4.0 milliliters or 4.5 milliliters of liquid, a 5 milliliter graduated pipette would be the best choice.

Here's how to use a pipette:

First, examine the pipette; make sure there are no chips in the tip or at the top and note where the volume line is.

Next, make sure the pipette is clean and dry. If your pipette isn't clean and dry, rinse it multiple times with the liquid you are measuring.

Now place the pipette pump on the top of the pipette, making sure the pump plunger is fully depressed. Ensure that you have a good seal around the pipette to allow for maximum suction.

Gently place the pipette in the liquid you wish to measure.

Now, place your thumb on the pump roller and turn the roller, drawing up liquid into up the pipette.

When measuring liquids in a pipette, you'll notice that the top of the liquid has a slight curve to it due to the attractive forces between the water and glass. This is known as a meniscus.

When measuring the volume of liquid in a pipette the bottom of this meniscus must be touching the top of the line on the pipette.

Draw the liquid 1 to 1.5 inches past the volume mark on your pipette and then gently turn the pump roller to drain the liquid in the pipette until the meniscus rests on the line.

Now you can place the pipette with the liquid in the container you wish to hold your measured liquid. Remove the pump and let the liquid drain from the pipette.

A small amount of liquid will remain in the tip of the pipette.

Do not blow the liquid out of the pipette with your pump; the measured volume is calibrated for this small amount.