

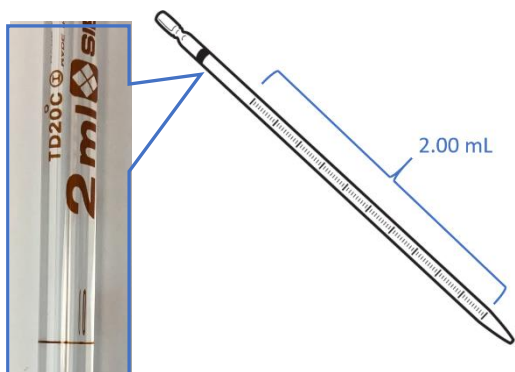
### Lab Technique 7: Using a Graduated Pipet

Pipets are used in the chemistry laboratory to measure and transfer liquids. Use a pipet when a high level of accuracy is needed. Use a graduated pipet when a wide range of volumes need to be measured.

**There are two main types of graduated pipets:**

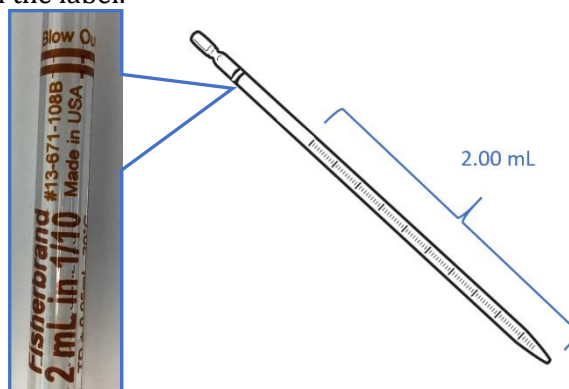
#### Mohr pipet

The Mohr pipet has graduations that end before the tip. It is calibrated "to deliver", meaning that the last volume of liquid should remain in the tip. "To deliver" pipets are indicated with TD on the label.



#### serological pipet

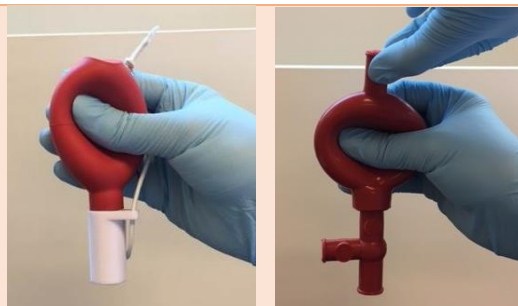
The serological pipet has graduations all the way to the tip. Sometimes, serological pipets are calibrated "to contain", which means that the liquid contained must all be transferred to be accurate; none should remain in the tip. "To contain" pipets are indicated with a double ring and the words "blow out" on the label.



#### Condition the Pipet:

If the pipet is wet on the outside dry it with a paper towel.

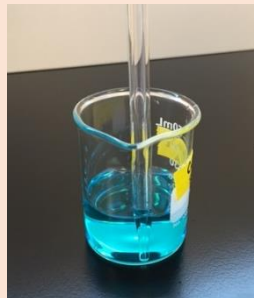
Depress the pipet bulb (left picture) or valve A on the three-way pipet bulb (right picture) to remove air.



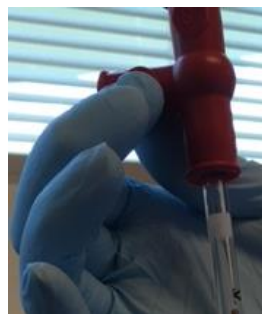
Gently place the bulb on the pipet end (do not force it on).



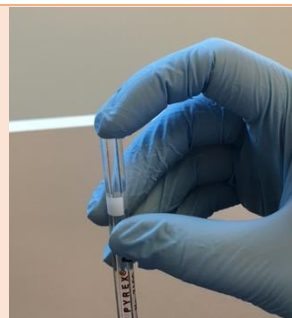
Place the tip of the pipet in the liquid.



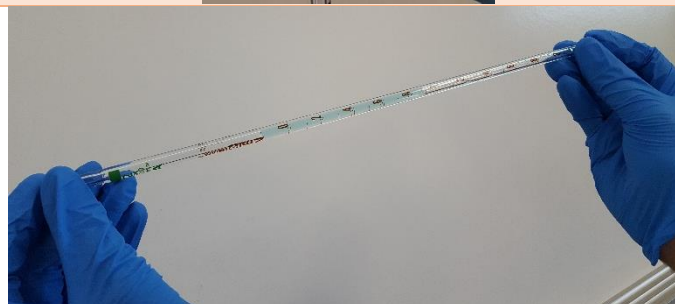
Release the pipet bulb to suction a little bit of liquid into the pipet (squeeze "S" on the three-way pipet bulb).



Remove the pipet bulb and quickly use your index finger to seal the top of the pipet.

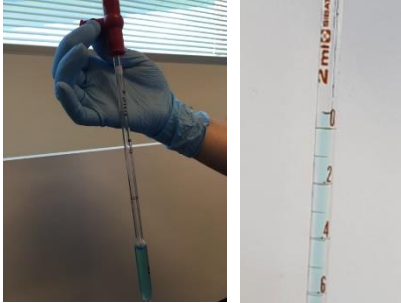
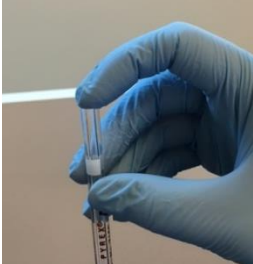
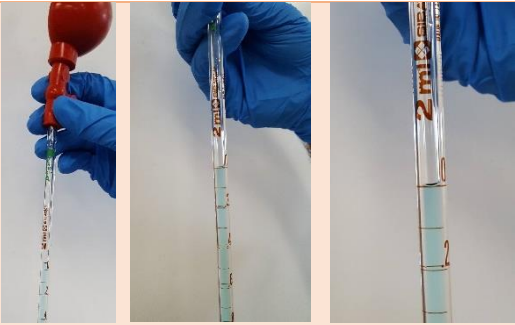



Turn the pipet on its side and rotate it as you change its angle to rinse the inside walls of the pipet with the solution.



Transfer the solution in the pipet into the waste beaker.



<p>Repeat this process at least one more time. Don't forget to dry the outside of the pipet before placing it inside the solution.</p>	
<p><b>Fill the Pipet:</b></p>	
<p>Depress the pipet bulb or valve A on the three-way pipet bulb to remove air as before.</p>	
<p>Release the pressure on the pipet bulb to suction liquid into the pipet until the meniscus is above the calibration line (squeeze "S" on the three-way pipet bulb).</p>	
<p>Raise pipet so that the tip is out of the solution.</p>	
<p>Remove the pipet bulb and quickly use your forefinger to seal the top of the pipet. (Skip this step if using the three-way pipet bulb).</p>	
<p>Raise the pipet so that you are at eye level to the calibration mark, allow liquid to come out of the pipet until the bottom of the meniscus lies on the calibration mark:</p> <ul style="list-style-type: none"> <li>- remove some pressure from your forefinger</li> <li>- or press "E" on three-way pipet bulb</li> </ul>	
<p>If there is a drop hanging on the tip, touch the tip to the beaker to remove it.</p>	

Transfer this carefully measured volume into a receiving flask. Since the pipet is graduated, you can measure the whole volume of the pipet or mark-to-mark following any of the graduations.

- replace the pressure from your forefinger
- or release "E" on three-way pipet bulb



Again, touch the pipet tip to the side of the receiving flask to transfer any drop left hanging.

If your pipet is TD, any solution that remains in the tip of the pipet should be left there. The Mohr pipet volume below the graduations should remain in the pipet tip.



Keep the liquid in the tip.

When you are completely done with the pipet, use your wash bottle to rinse it. Collect the rinse in the waste beaker.



Gently place the pipet in the pipet canister, tip up. It will be properly washed by the stock room personnel.

