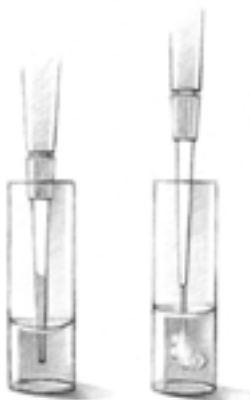


10 Tips to improve your pipetting technique



1. Prewet the Pipette Tip

Aspire and expel an amount of the sample liquid at least 3 times before aspirating a sample for delivery.

Evaporation within the tip can cause a significant loss of sample before delivery. Prewetting increases the humidity within the tip thus reducing both the amount of, and variation in, sample evaporation. Using the same tip (without prewetting) to deliver multiple sample results in lower volume for the first few samples.

2. Work at Temperature Equilibrium

Allow liquids and equipment to equilibrate to ambient temperature.

The volume of sample delivered by air displacement pipettes varies with air pressure, relative humidity and vapor pressure of the liquid, all of which are temperature dependent. Working at a single, constant temperature minimizes the variation.

3. Examine the Tip Before Dispensing Sample

Wipe the tip only if there is liquid on the outside of the tip, and then, very carefully.

Absorbent material rapidly wicks sample from the tip if it contacts the tip opening. Unnecessary tip wiping increases the possibility of sample loss.

4. Use Standard Mode Pipetting

Choose standard mode pipetting rather than “reverse mode”, for all but viscous samples, if accurate and precise results are desired.

In reverse mode pipetting, the plunger is depressed completely (past the first stop) to aspirate the sample and then depressed only to the first stop to deliver the sample.

5. Pause Consistently after Aspiration

Pause with the tip in the liquid for one or two seconds after aspirating the sample.

The amount of liquid in the tip “bounces” slightly when the plunger stops. Slow, even plunger release and a consistent, brief pause after aspiration minimize errors resulting from this phenomenon.



6. Pull the Pipette Straight Out

Pull the pipette straight out of the container after aspirating a sample. Do not touch the tip to the sides of the container.

This technique is especially important when pipetting small volumes (<50µL). Surface tension effects cause the sample volumes to vary if the exit angle varies. Touching the tip against the sides result in loss of sample.

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7. Minimize Handling of the Pipette and Tip

Set the pipette down between sample deliveries and avoid handling the tip.

Body heat transferred to equipment during handling disrupts temperature equilibrium. As explained in Tip # 2, the volume of sample delivered varies with temperature.



8. Immerse the Tip to the Proper Depth

Immerse the tip 2 to 5 mm below the meniscus and well clear of the container walls and bottom during sample aspiration.

Inserting the tip too far into the liquid causes excess droplets of liquid to cling to the outside of the tip. Pressing or resting the tip against the container walls or bottom restricts entry of the sample.

9. Use the Correct Pipette Tip

Securely attach a tip designed for use with the pipette.

Mismatching a tip and pipette or using poor quality tips can result in an inadequate seal between the pipette and the tip. Quality tips are flexible and have thin walls, providing an airtight seal and more dependable delivery of the sample.



10. Use Consistent Plunger Pressure and Speed

Depress and release the plunger smoothly and with consistent pressure and speed for each sample.

Pipettes, like all precision instruments, give more reproducible results when operated with attention to detail and with proper technique.