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Good Pipetting Practices

Achieving reliable results when pipetting depends largely on the user's skills. Errors resulting from poor pipetting techniques can significantly affect test results, as proper pipetting plays an important role in achieving accurate and repeatable measurements. Here are some tips on how to pipette properly.

Select the Most Appropriate Pipettor

Example: When you want to pipette a 10 µL sample, use a pipettor with the 0.5 to 10 µL volume range rather than a pipettor with the 10 to 100 µL volume range. The accuracy error is lower in the first case.

Pay Attention to Environmental Conditions

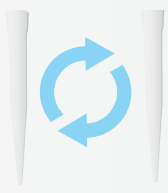
The volume of liquid measured using a pipettor varies with the temperature. The pipettor, the pipet tip, and the liquid should be constant in the range of 20°C to 25°C when pipetting at room temperature.

Prevent Cross-contamination Using Filter Tips

Filter tips are the best solution for applications demanding the highest level of purity (radioactive solutions, proteins, nucleic acids, cell cultures, etc.). They let you protect both the pipettor and the sample from cross-contamination. A filter prevents liquid from making contact with the pipettor's internal lower parts when aspirating, and also it prevents aerosols from alkalis or acids entering into the pipet shaft.

Change the Tip

Always replace the tip with a new one when changing dispensed liquid or if visible liquid droplets remained inside the tip. Applying the same tip repeatedly may result in an error of approximately 4%.

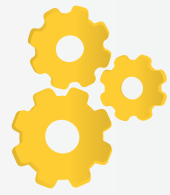


Clean and Calibrate the Pipettor Regularly

External surfaces of the pipettor may be cleaned using a cloth dampened in isopropyl alcohol. Calibrate your pipettors at least once each year to ensure that the parameters are consistent with the specifications.

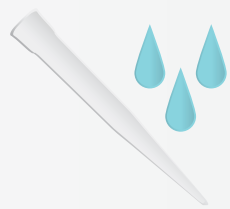
Use a Proper Pipetting Technique

- Hold the pipettor vertically when aspirating the liquid.
- Immerse the tip into the sample liquid at the proper depth. The depth to which the tip is immersed in the sample liquid depends on the pipet volume.
- Slowly release the plunger so the liquid enters the tip without the creation of bubbles.
- Wait one second before withdrawing the tip from the liquid.
- Placing the end of the tip against the inside wall of the vessel eliminates sample remaining in the tip after dispensing.



Consider Tip Pre-wetting

When your pipetting volumes are greater than 10 µL pre-wetting a pipet tip is highly recommended. Just aspirate some liquid and then dispense it back into the original container. Pre-wetting is recommended in most preparations for improved accuracy.



Store the Pipettor on a Stand

Leaving the pipettor flat on the bench, especially with liquid in the tip, could cause the liquid to enter the pipettor and result in corrosion of internal parts. Also important is the warmth of the hand during pipetting, as this can have an impact on the thermal equilibrium and consequently influence the volume of the dispensed sample. Therefore, do not hold the pipettor continuously in your hand between pipetting cycles.

Use Reverse Pipetting for Viscous Liquids

This technique is used for liquids of high density and viscosity, as well as for easy foaming. Push the piston down to the second stop and draw the liquid up. Then dispense the liquid into the receiving vessel by pressing the operating button gently and steadily to the first stop only. Some liquid will remain in the tip, and this should not be dispensed. The liquid remaining in the tip can be returned to the original source or discarded together with the tip.

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