



Best Practices

PIPETTE TIPS

For more than 22 years, Neptune has provided great value and proven quality. Our extensive line of universal fit pipette tips and barrier tips address the liquid handling needs of some of the busiest academic, clinical and research laboratories around the world. To ensure that Neptune pipette tips perform as well in your hands as they do in ours, we've outlined some best practices for using tips in the lab.

Compatibility

The single greatest contributing factor to liquid handling performance is fit. Pipette tips work with pipettors as a unified "system", and the better the fit, the greater the overall accuracy and precision. Verify the compatibility of Neptune tips with your pipettor by referring to the Neptune Product Catalog or online at www.neptunescientific.com. If you do not find your specific pipettor in the compatibility chart, request a sample for confirmation of fit.

Mounting tips onto a pipettor should be done with firm downward pressure. You should not have to repeatedly pound the pipettor onto the tips. This can not only cause damage to your pipettor, but also increase your risk for repetitive stress disorder (RSD).

A good seal will ensure complete draw and dispense of your sample. However, you should also verify that the pipettor you are using has been calibrated. Verify that your pipettor is both accurate and precise. For pipettors that are used daily, it is recommended to have them calibrated every three months.



Precise, but not Accurate



Accurate, but not Precise



Precise and Accurate

Product Handling

When stored properly, Neptune pipette tips have a long shelf life and maintain high quality performance. Store tips at room temperature and practice a first in, first out (FIFO) program for managing inventory. When not in use, keep the lids closed on tip racks to prevent contamination from airborne particulates. Avoid touching pipette tips with your fingers, even when gloved.

Depending on the sample solution that you are working with, there are options to consider in tips and pipetting technique. For example, Neptune's tips with S³ technology are ideal for viscous and/or precious samples where delivery of every drop counts. On the next page are general guidelines for pipetting with air displacement pipettes. Note that most all pipettor manufacturers will recommend a pre-rinsing of the pipette tip improve accuracy, but this is seldom done in practice and is only noticed as an improvement in positive displacement pipettes.

Forward Pipetting Techniques

- Press the operating button to the first stop
- Dip the tip into the solution and then slowly release the operating button
- Dispense the solution by pressing the operating button down to the first stop. Then continue pressing down to the second stop, known as the “blow-out”. Avoid tilting the pipettor side ways in your hand
- Release the operating button and eject tip

Reverse Pipetting Techniques

The reverse technique is used for pipetting solutions that are highly viscous (ie., whole blood or serum) or have a tendency to foam. An alternative is to use Neptune pipette tips with S³ technology.

- Press the operating button all the way down to the second stop
- Dip the tip into the solution and slowly release the operating button. This will fill the tip with a volume that is larger than the set volume
- Wait 1-2 seconds and withdraw the tip from the solution
- Dispense the solution by pressing the operation button gently and steadily to the first stop. This volume is equal to the set volume. Hold the button in this position. Some liquid will remain in the tip and should not be dispensed
- Release the operating button to the ready position and eject tip

Avoiding Contamination

Neptune PCR tubes are manufactured and tested to ensure the highest level of purity. Because they are certified as RNase, DNase, DNA, and endotoxin-free, it is not necessary to autoclave the tips before use. In fact, there have been several published reports where autoclaves have introduced contamination to products, particularly in busy labs that share the same autoclave.

Never directly touch or handle pipette tips, even when wearing gloves — tips should only ever make contact with a pipettor and solution. Change tips after pipetting of each sample and keep the pipettor vertical to prevent sample from running into the pipette shaft. Release the dispensing button slowly to prevent aerosol generation. Always use barrier filter tips when working with PCR, bacteria, viruses, or other sensitive substrates that can easily cross-contaminate via aerosols.

If autoclaving is required by your lab protocol, or if you are using bulk tips that are hand-racked in your lab, please adhere to the following guidelines

- Make sure that tips are loaded into the tip rack. Autoclaving tips when they are not racked risks warping the tips. A tip which is no longer straight can result in upwards of 10% error in accuracy
- Use a piece of autoclave indicator tape to secure the lid of the tip rack
- Set autoclave for 121° C, 15 PSI (1 atm) for 15 minutes
- Unlike glassware, do not use a “dry cycle” as this may distort and warp the tips
- Remove tips when autoclave has cooled and store as described in the Product Handling section above