TECHNICAL NOTE

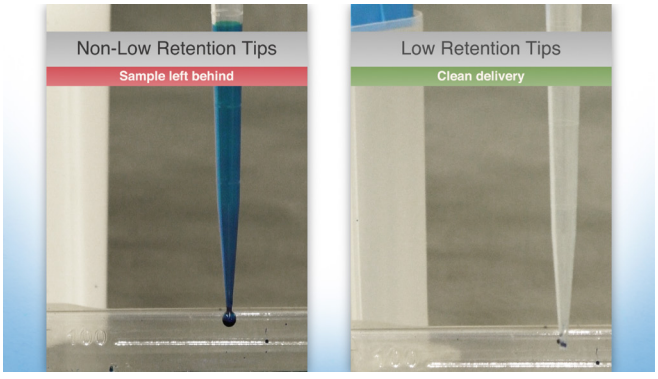
INCREASE ACCURACY AND PRECISION FOR THE RAININ PIPET-LITE XLS+ PIPETTORS WITH XTIP® PIPETTE TIPS BY BIOTIX

Can a pipette tip really improve your results?

Traditional pipette tips can have several issues that compromise results including: nonspecific binding of sample to the pipette tip, droplet formation, and poor fit. Engineers at Biotix have spent years developing technologically advanced pipette tips for better performance. Innovations in the xTIP Pipette Tips include:

- **X-Resin® technology** — xTIP Pipette Tips are made from a high caliber uniform resin that requires no coating, providing intrinsic low retention (non-stick) qualities across all volume ranges
- **Blade® technology** — eliminates droplet formation and the need for tip touch-off, reducing sample carryover and contamination
- **FlexFit® technology** — a patented technology that enables a secure seal with less force resulting in a better sample draw

How does xTIP compare?

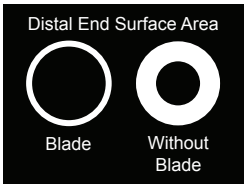


Low retention with X-Resin

Sample retention (as seen on the left), or non-specific binding of sample to pipette tips, is a known problem especially with genomic DNA and proteins. Valuable sample can be left in the tip and out of the analysis. Most pipette tip manufacturers make both natural and low retention style tips. However, many researchers think they are using a low retention pipette tip until they try a Biotix pipette tip. To avoid confusion, xTIP Pipette Tips are ONLY available in Biotix' ultra-low retention X-Resin increasing sample recovery and precision.

See low retention in action at biotix.com/xresin

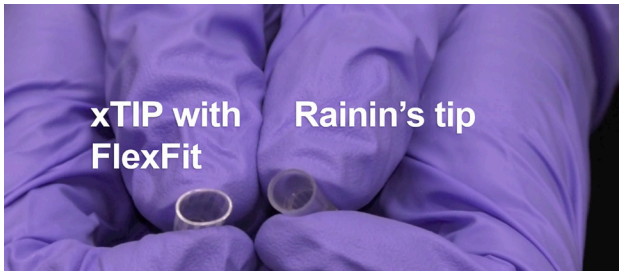
Reduced droplet formation with Blade technology



You may realize after dispensing your sample, you touch to the side of your vessel to ensure maximum sample recovery. With a standard pipette tip, surface tension at the distal end causes the formation of a droplet. These droplets contain valuable sample and loss of sample can lead to reduced accuracy. As illustrated on the right, Biotix has developed and engineered an optimal ratio of bore size to wall thickness. This optimal design minimizes the surface area, reducing the surface tension of your sample and the resulting droplet. In other words, no more tip touch-off!

Be sure you have a secure seal with FlexFit

Patented FlexFit technology incorporates alternating thick and thin regions along the circumference of the proximal end. When a pipette nozzle is pressed into a pipette tip, the shape of the proximal end is manipulated. With FlexFit, the thicker regions maintain structure while the thinner regions allow for flex, resulting in a secure seal with minimal insertion force. A more secure seal leads to a more accurate draw and less leakage. Less force can lead to more consistent results as well as better ergonomics for researchers. Learn more about FlexFit technology at biotix.com/flexfit



Biotix

How do Biotix innovations impact pipette tip performance?

To determine the accuracy and precision of the xTIP, **Troemner Corporation**, a leader in the areas of calibration and standardization, was commissioned. Three different Rainin LTS pipettes were used: 1000µL, 200µL, and 20µL along with the corresponding Rainin LTS pipette tips or the xTIP pipette tips from Biotix. Three common volumes were measured ten times each to evaluate accuracy and precision. This independent study demonstrates that xTIP preforms as good or better in reproducibility compared to the Rainin LTS pipette tips.

		xTip A 1000µL				Rainin A 1000µL			
Pipette	Volume (µL)	Mean (µL)	STDEV of 10	As Found E%	As Found CV	Mean (µL)	STDEV of 10	As Found E%	As Found CV
LTS 1000	1000	996.33	0.67	-0.37	0.07	996.03	1.44	-0.40	0.15
LTS 1000	500	498.56	0.34	-0.29	0.07	497.56	0.53	-0.49	0.11
LTS 1000	100	101.99	0.20	1.99	0.19	97.97	0.14	-2.03	0.14

		xTip B 200µL				Rainin B 200µL			
Pipette	Volume (µL)	Mean (µL)	STDEV of 10	As Found E%	As Found CV	Mean (µL)	STDEV of 10	As Found E%	As Found CV
LTS 200	200	199.39	0.12	-0.30	0.06	199.58	0.14	-0.21	0.07
LTS 200	100	99.37	0.09	-0.63	0.09	99.42	0.14	-0.58	0.14
LTS 200	20	19.99	0.05	-0.07	0.26	19.96	0.04	-0.20	0.22

		xTip C 20µL				Rainin C 20µL			
Pipette	Volume (µL)	Mean (µL)	STDEV of 10	As Found E%	As Found CV	Mean (µL)	STDEV of 10	As Found E%	As Found CV
LTS 20	20	19.88	0.04	-0.62	0.19	20.03	0.06	0.14	0.28
LTS 20	10	9.96	0.04	-0.38	0.44	10.03	0.04	0.28	0.43
LTS 20	2	2.05	0.03	2.51	1.58	2.00	0.03	-0.25	1.71

Conclusions

xTIP Pipette Tips by Biotix improve reproducibility leading to consistent results across experiments. X-Resin, Blade, and high quality filters all contribute to higher reproducibility. They may also lead to less cross contamination of samples. FlexFit forms a secure seal of the pipette tip onto the pipette resulting equivalent accuracy. FlexFit has the additional advantage of reducing the insertion force required placing less strain on shoulders, arms, and wrists.

Feel the difference for yourself.
Order a sample of xTIP at:
biotix.com/products/xtip

Tips for safer pipetting with xTIP

Taken from OSHA Fact Sheet: Laboratory Safety Ergonomics for the Prevention of Musculoskeletal Disorders[1]

1. Elevate chair rather than reaching up to the pipette.
2. Alternate hands or use both hands to pipette.
3. Use electronic pipettes or light touch pipettes whenever possible.
4. Select a light weight pipettor properly sized for your hand.
5. Use an ergonomically-engineered pipette tip such as Biotix Universal or xTIP for Rainin LTS.
6. Use minimal pressure to insert and eject the pipette tip.
7. Take a 1-2 minute break for every 20 minutes of pipetting.

[1]https://www.osha.gov/Publications/laboratory/OSHAfactsheet-laboratory-safety-ergonomics.pdf

DARE TO TEST YOUR ASSAY? TAKE THE TIP CHALLENGE!

Order your first sample and see the difference.
Visit www.biotix.com for fun videos and to learn more.