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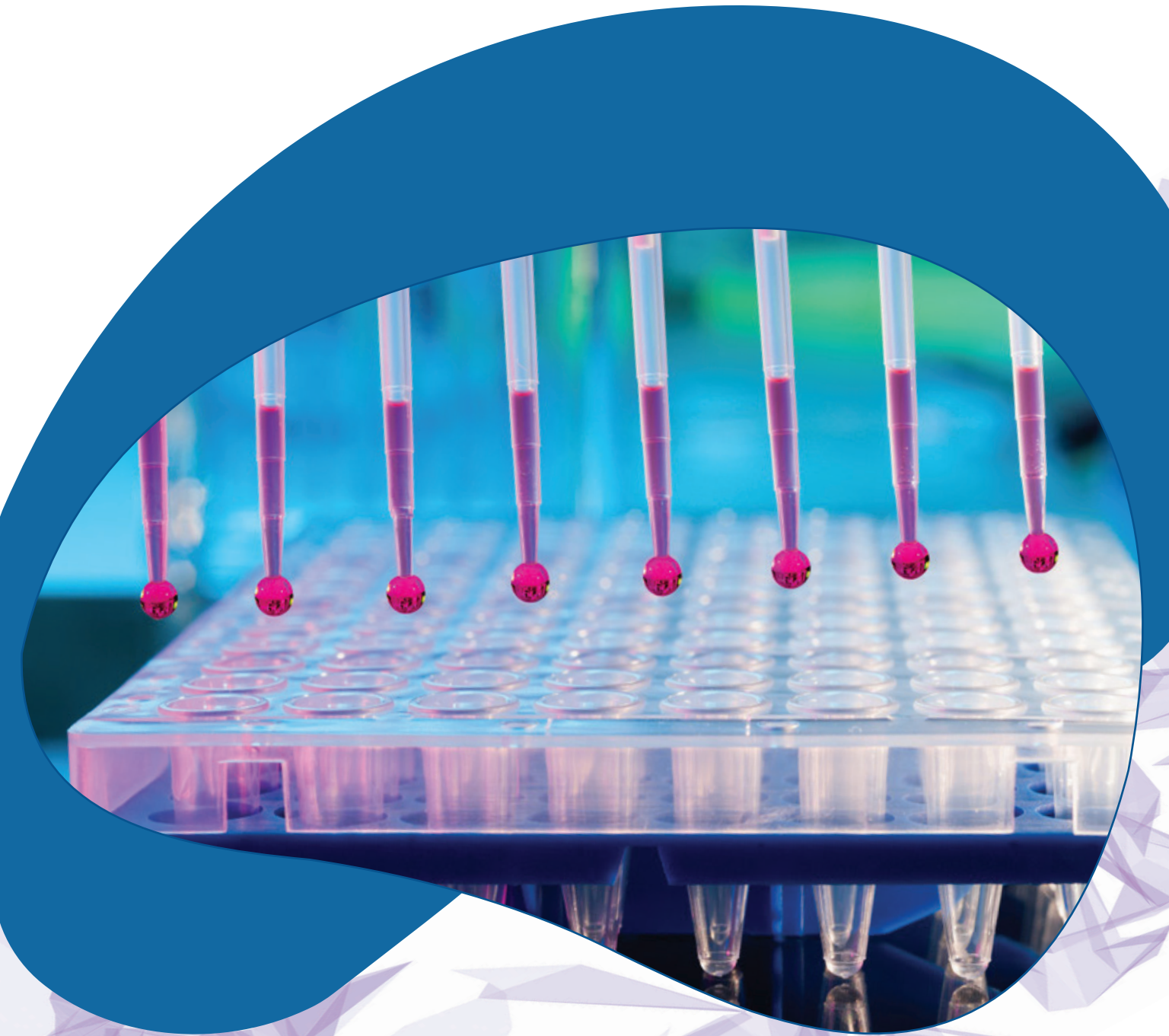
LOW RETENTION TIPS COMPARISON STUDY



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Introduction:

There are plenty of options when it comes to low retention tips but are they low retention where it matter? Laboratories often use low retention liquid with significant lower surface tension compared to water, this is due to presence of detergents that reduce contaminants and give improved yields in laboratory analysis and is specifically helpful in PCR. Tween 80 and Sodium laureth sulfate are among the most commonly used detergents in the laboratory and has a direct impact in the efficiency of low retention tips. Liquid retention in tips is a major contributing factor that influence the accuracy and precision while pipetting. Low retention tips are specifically designed to reduce liquid retention and thereby improving the overall analytical performance of your laboratory.

Regular tips

Low Retention Tips

Low Retention Tips:

High quality naturally hydrophobic polypropylene is enhanced through our unique configuration to bring “Low-Retention” Tips that are designed through intensive research to give you a con taminant free functional product.

Scope:

The test is designed to accurately determine the liquid retention in tips using calorimetric tech niques with reference to ISO 8655-7.

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Concept:

Tartrazine and Brilliant Blue FCF is an organic colour compound that has an absorbance peak around 630nm. An organic detergent like solution that imitates majority of aqueous laboratory solutions is prepared using Tartrazine. This solution is aspirated and then dispensed, using the same tip distilled water is aspirated and dispensed into a micro-well plate. Any amount of retained solution would increase the absorbance of distilled water proportionally to its concentration. Using a microplate reader that reads horizontally gives a 2-factor verification since the change in absorbance due to the left over solution as well as the height of liquid (which becomes less when retention is more) effects the readings. Tips from various brands are tested to compare retention levels.

LOW RETENTION WHEN IT MATTERS.

Materials Used:

Liquid Colour Solution 1:

- *Tartrazine*
- *Brilliant Blue FCF*
- *NaCl*
- *Tween 80 (1% concentration)*
- *Distilled Water*

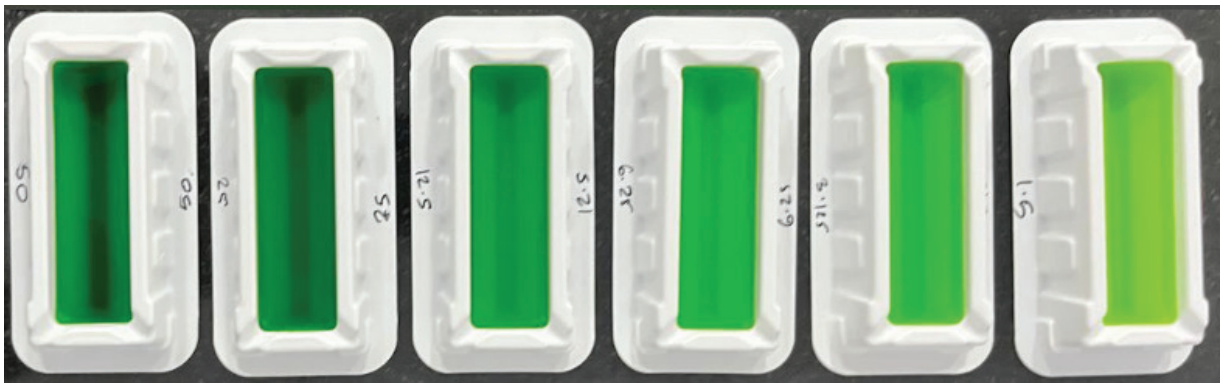
Liquid Colour Solution 2:

- *Tartrazine*
- *Brilliant Blue FCF*
- *NaCl*
- *Sodium laureth sulfate (1% concentration)*
- *Distilled Water*

Pipette *used: FAB Pipette (Serial number: SD933669)*

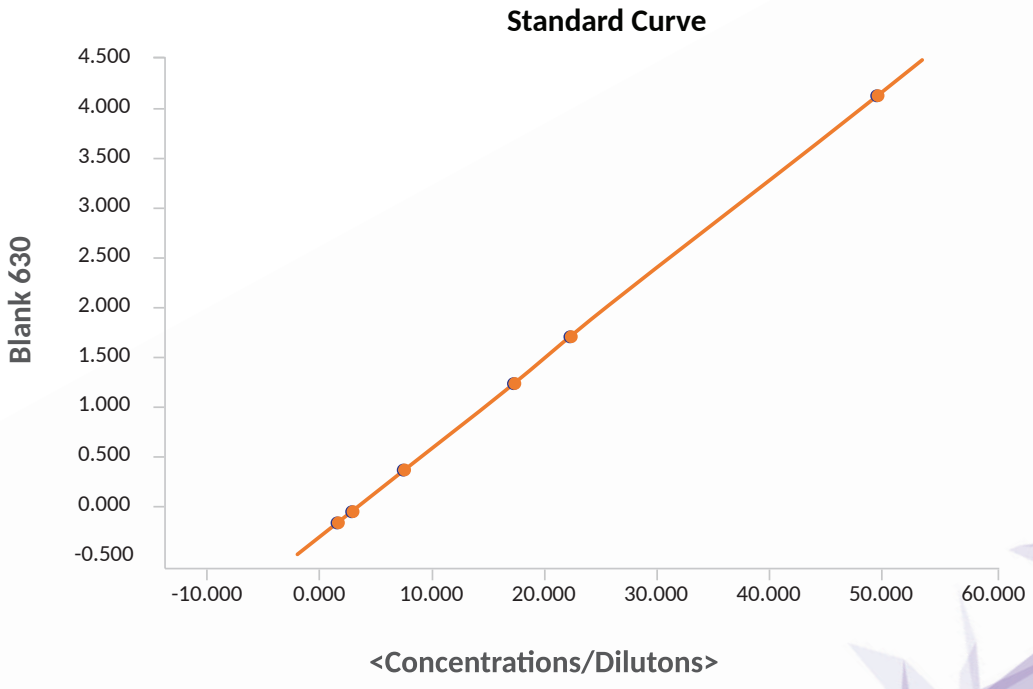
96 well Microplate

Multiskan SkyHigh Microplate Spectrophotometer A51119500C



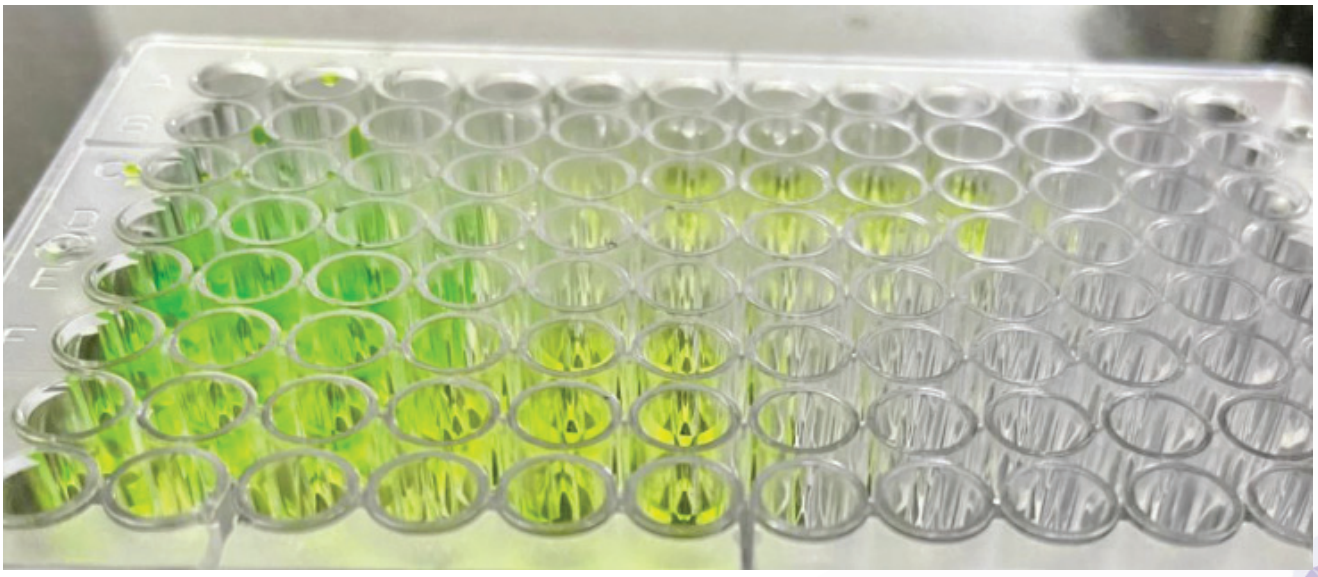
Test Procedure:

- A representative solution using the liquid colour was prepared in serially halved concentrations. Distilled water was used as solvent.
- These solutions were run through a spectral scan to determine the optimum absorbance (determined to be 630nm).
- The solutions were run as triplicates to ensure linearity, thus verifying the repeatability.
- R^2 achieved was 0.998 indicating good linearity in reading.



Graph1: Standard curve indicating an R2 of 0.96

- Establishing the linear relationship between absorbance and our solution, and validating the machine readings.
- Three tips from each rack are randomly picked; the solution is aspirated and dispensed back into the contained.
- Distilled water that is run as blank is then aspirated using the same tip and dispensed into a micro-well plate.
- Absorbance at 630nm is read.



Results:

Chart 1: Chart indicates liquid retention of Sodium laureth sulphate solution in tips.

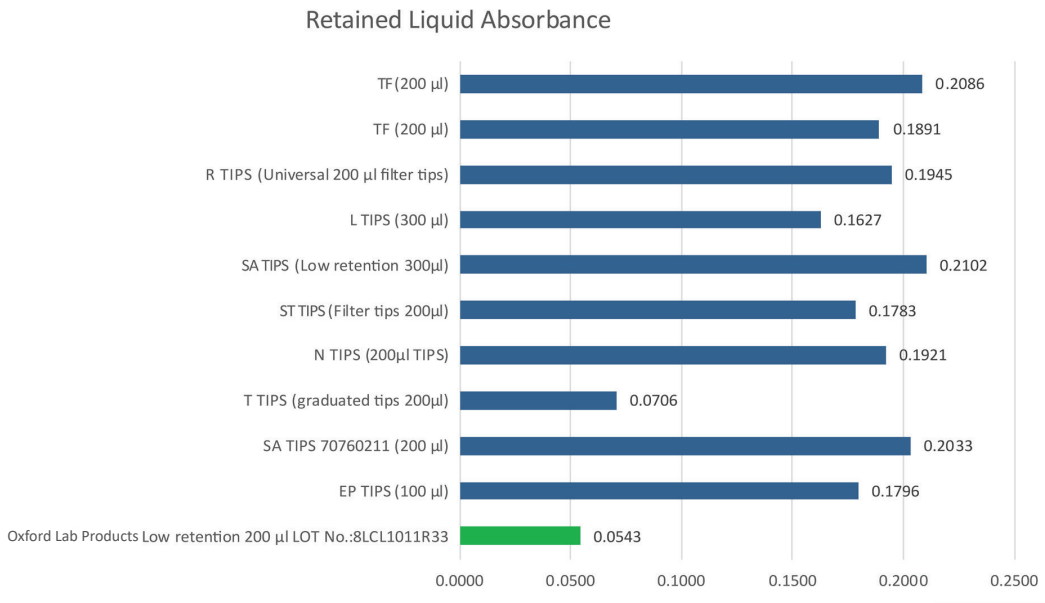
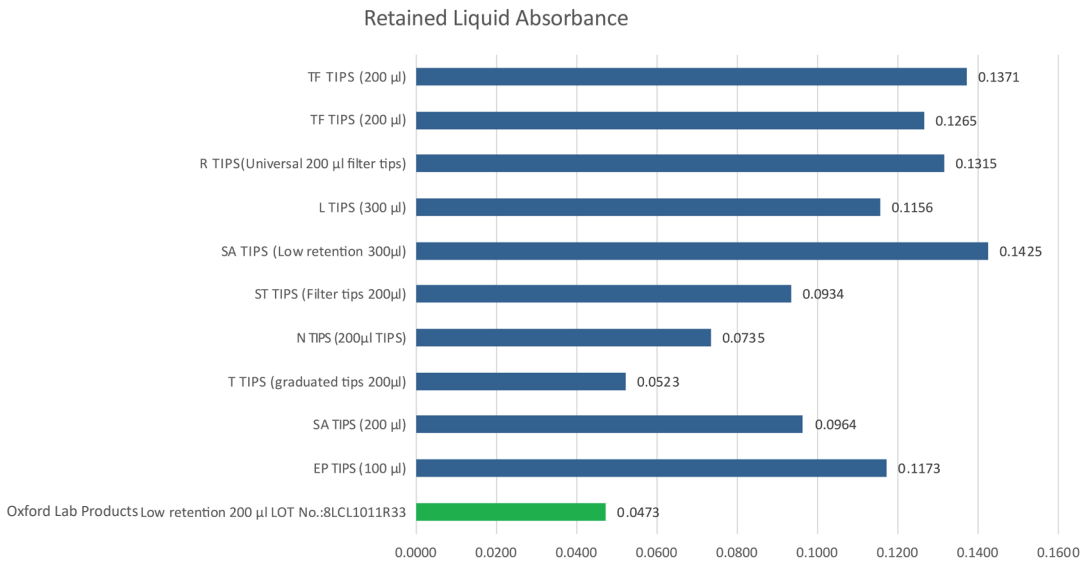


Chart 2: Chart indicates liquid retention of tween 80 solution in tips.



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Conclusion:

Low retention should have significant low retention properties with low surface tension liquids as they are commonly used in laboratories. In PCR application where every drop can make a difference, the in-use function of low retention property is critical; Oxford Lab Products tips are designed with real world application in mind with functionality across a wide range of liquids suitable for your application.