

Product Information

## Pipette Filter Plugs offer efficient protection

*Cross contaminations in microbiology applications can occur if contaminating bacteria inside or at the pipette surfaces are carried over to subsequent samples. These can be prevented by good pipetting practice and regular pipette inspection and cleaning. To exclude the contamination of pipettes in any case filtered tips or safe cone filters (filter plugs) can be used.*

*Inlabtec now offers universal Filter Plugs which fit into any 1 ml air displacement pipettes with a tip cone opening of 3 mm (-) 4.5 mm. Experiments confirm the high protection degree of the pipette and the samples by using Inlabtec Filter Plugs as an efficient way to increase process reliability.*

### Introduction

Contamination of air displacement pipette (pipette) during pipetting is a known risk for the safety of operators as well as for the reliability and lifetime of the pipette. Contaminated pipettes can also lead to carryover contaminations (cross contaminations). Cross contaminations in microbiology applications occur if contaminating bacteria inside or at the pipette surfaces are carried over to subsequent samples. A study (Kolari 1999) confirmed this with liquid cultures of *Micrococcus luteus* used to heavily contaminate pipettes. Main reasons for contaminated pipettes in praxis are splashes during aspiration of the samples due to partially blocked tips, lack of attention and ignorance over right pipetting as well as neglected pipette maintenance.

A contaminated pipette can be in most cases prevented by good pipetting practice and regular inspection and cleaning. To exclude the contamination of pipettes by aerosols and splashes in any case safe cone filters or filtered tips can be used. Beside security aspects filter tips are especially recommended for highly sensitive detection methods where already parts of non-living organisms (DNA, RNA, etc.) are giving positive results as for example in PCR applications. Alternatively, safe cone filters (filter plugs) offer a reliable protection of contaminating the pipette in standard applications like plate counts in microbiology. Safe cone filters are protective filters placed in the pipette tip cone acting as a final barrier to prevent any fluids and liquid vapours from reaching the internal components of the pipette and protect the pipette from contaminations as well as efficiently prevent cross contaminations comparable to filter tips (Kolari, 1999). Furthermore they prolong the pipette's lifetime, reduce maintenance intervals and are very cost-effective compared to filter tips (Mannonen, 2000). Known pipette brands offering safe cone filters are for example Sartorius/ Biohit, Capp and Hirschmann.

### Universal Inlabtec Filter Plugs

Inlabtec now offers universal Filter Plugs which fit into any 1 ml air displacement pipettes with a tip cone opening of 3 mm (-) 4.5 mm like: Eppendorf, Biohit/ Sortorius, Brand, Capp, Thermo Finn pipette, Accumax, etc. This allows using protective filters for pipette brands which do not already offer safe cone filters.

The calibration of pipettes with or without Filter Plugs inserted showed no measurable differences in the volumes dispensed as already known and expected from the use of safe cone filters from different pipette manufactures. Also with 20 µl of water applied on the inserted Filter Plugs there was no difference measurable of dispensed liquid compared to the same pipette without Filter Plug. The measurements confirmed the high absorbing capacity and high gas permeability of the open-cell pure melamine foam used to manufacture the universal Filter Plugs. The high protection level and absorption capacity was further confirmed by the following experiments:

Filter Plugs were inserted into 1 ml pipettes and artificially contaminated with 5 to 50 µl of *Staphylococcus aureus* suspension with a concentration of  $5.4 \times 10^7$  cfu/ml. After each contamination level of the filters three petri dishes were inoculated with sterile water for plate counting according to ISO 4833-1:2013 using the pipettes with artificially contaminated filters. After finishing the experiments one contaminated Filter Plug was used for the plate counting on the same day and from the second Filter Plug plate counts were determined after a 24 hours drying period in a clean bench. Despite plate counts obtained of the Filter Plugs of  $1.9 \times 10^6$  cfu/ filter, respectively  $1.1 \times 10^6$  cfu/ filter (dried) which confirms the survival rate of *Staphylococcus aureus* adsorbed on the Filter Plugs there was no contamination of the sterile water samples detectable by *Staphylococcus aureus*.

The experiments confirm the high protection degree of the pipette and the samples by using Inlabtec Filter Plugs.

## References

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**Mannonen, S. and Syrjä K. (2000)** Liquid Handling Application Notes: 8. Safety in pipetting. **International Labmate/ Lab Asia (by Biohit)**

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