Are there inherent problems with autosampler vials that have a filter built into the cap - FAQ

The idea of a filter membrane that fits directly onto the autosampler vial like a standard cap may seem like a streamlined, labored-saving design.

However, there are several practical issues associated with the physics of using such a cap:

1. The air that is required to "push" liquid through the filter goes into the vial; this can cause air lock and back pressure making it hard to use the device.
2. The aerodynamics of filtering with this device are such that as you filter into the vial, you have vent air out of the vial as fast as you filter into the vial. If you do not, you could get liquid spilling on the outside of the vials due to "air lock" in the vials: more air coming into the vial than coming out of the vial as the liquid has to displace the air.
3. The cap / filter assembly can be top heavy and you might need two hands for this or the vial with liquid streaming into it can topple over thus no advantage to such a device.
4. Normally, the surface area of the filters in caps is very small and the smaller the filtration area, the more psi is needed on the plunger to get the liquid through the filters. To overcome this, companies have used large pore sizes in their filters. This is a problem because the reason you filter is to remove particles as small as 0.45µm or even smaller. With the 25mm syringe filter, there is plenty of surface area and less pressure needed to filter through the membrane. To make a comparison, if you were to take a 13mm filter and a 25mm filter and filter them the same, you will notice a tremendous difference in the resistance to force the liquid through the smaller filter. In a cap, the membrane would around 5mm at best and would present a lot of back pressure if the pore size were a standard 0.45um.

For these reasons, we do not carry a cap product with a filter. Instead, we recommend our standard **syringe filters**, which can be found *HERE*.

Click HERE for Autosampler Vials, Caps, Inserts & Accessories Ordering Information

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