Differences in my Chromatography using Syringe Filters - HPLC Primer

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Why Chromatography Results Should Not Change After Using Syringe Filters

Overview

Laboratories frequently rely on syringe filtration to protect HPLC and CE instruments, yet some analysts worry that filters may alter results. When the correct membrane is used and proper filtration technique is followed, syringe filters do not affect chromatographic separation, electrophoretic mobility, or UV absorbance data.

Instead, they serve as particulate barriers that safeguard equipment without interacting chemically with the sample.

What Syringe Filters *Should* Do

Syringe filters are designed to:

- Remove undissolved particles and debris
- Prevent clogging of column frits and CE capillaries
- Maintain stable back pressure
- Protect injectors, seals, and valves

Their primary and only function is size-exclusion filtration—physically blocking particles above the filter's pore rating (e.g., 0.22 µm or 0.45 µm).

What Syringe Filters *Do Not* Do

A properly chosen and wetted syringe filter **does not**:

- Remove dissolved analytes
- Change peak shape, retention time, or area
- Participate in chemical separation or ion-exchange
- Function as a solid-phase extraction (SPE) device
- Alter UV absorbance properties

Dissolved components in the sample pass directly through the membrane once steady-state wetting is achieved. No chromatographic or spectroscopic changes should occur as a result.

Common Causes of Differences (When Issues *Do* Occur)

If differences are seen in chromatography or UV after filtration, they usually stem from factors unrelated to the filter's normal behavior, such as:

- Using an incompatible membrane with the sample's chemistry
- Not pre-wetting a hydrophobic membrane like PTFE when filtering aqueous samples
- Membrane adsorption during the first few drops (especially with sticky or low-abundance analytes)
- Sample instability unrelated to the filter
- Variability caused by reused filters, which should always be avoided

Choosing the correct filter type (Nylon, PES, PVDF, PTFE, etc.) and avoiding reuse minimizes these issues.

Bottom Line: Filters Don't Change Chromatography

With proper technique and membrane selection:

- Chromatography should look the same before and after filtration—just cleaner and more stable.

Filtration protects your system but does not influence separation mechanisms, peak behavior, or analyte quantitation.

AQ™ Advanced Quality brand Syringe Filter Resources

For membrane options, pore sizes, chemical compatibility charts, and product images:

- Click HERE for syringe filters ordering information and pictures.
- Attachment: MICROSOLV filters equivalency study pdf Download File

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