

Extractable Possibilities from Syringe Filters - HPLC Primer

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Overview

In liquid chromatography workflows, syringe filters are essential for protecting columns and improving sample clarity. However, these devices can introduce extractables—chemical compounds that leach from the filter materials into the sample during filtration.

Any compound found in a filtered sample that was *absent beforehand* qualifies as an extractable, regardless of the source.

What Are Extractables?

Extractables are typically generated when certain membrane or housing components interact with solvents, pH extremes, or aggressive sample formulations. These substances can include:

- Residual monomers or additives from membrane manufacturing
- Oligomers or plasticizers originating from polymer housings
- Process-related contaminants, such as mold-release agents or surfactants
- Particulate matter, including thread-like residues from membrane edges

Regardless of origin, extractables are undesirable because they can interfere with chromatographic results—producing ghost peaks, raised baselines, or altered quantitation.

Common Sources of Extractables in Syringe Filters

While the membrane is the most common contributor, it is not the only one. Factors influencing extractables include:

1. Membrane Composition

Different membranes exhibit varying compatibility with solvents and mobile phases. Some examples:

- Nylon may release monomers or oligomers when exposed to strong acids or some organic solvents.
- PTFE generally has low extractability but may release trace processing aids.
- PVDF can produce extractables when in contact with alcohols or specific organics.

2. Housing Material

Many syringe filters use a polypropylene (PP) housing. Although chemically resistant, PP can still contribute extractables when exposed to strong organic solvents, halogenated solvents, or extreme pH conditions.

3. Manufacturing Residues

Some extractables originate from the production environment:

- Bonding agents
- Lubricants
- Surfactants used for wetting membranes
- Thermal degradation byproducts from molding processes

Even trace levels can impact sensitive HPLC or LC-MS analyses.

Managing Extractables in HPLC Workflows

To minimize extractables:

- Choose a filter membrane appropriate for your solvent and sample chemistry.
 - Consider low-extractable or *HPLC-certified* syringe filters.
 - Pre-flush the filter when necessary, especially before LC-MS or trace-level analyses.
 - Refer to chemical compatibility tables when selecting membrane and housing materials.
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AQ™ Syringe Filter Resources

- Click [HERE](#) for AQ™ brand syringe filter ordering information and pictures.
- Attachment: MICROSOLV filters equivalency study pdf [Download File](#)

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