

# Simplify Sample Prep and Protect Analytical Equipment With Syringe Filters

- Cost-effective, reliable filtration.
- Protect analytical columns and instruments.
- Achieve more reproducible analyses.



The importance of clean sample extracts in maintaining analytical instrumentation cannot be overstated. Particulates commonly found in extracts can quickly damage instrument components, causing costly downtime and repair. Chromatographic columns, injectors, detectors, and small diameter tubing are easily plugged by particulates. Even if plugging does not occur, the slow accumulation of particles over time can affect flow rates and create interferences that reduce overall reproducibility. Clean extracts will greatly extend the life of costly chromatographic columns and replacement parts, particularly for LC systems.

Sample cleanup to remove particulates can be accomplished through the use of inexpensive and easy-to-use syringe filters. These membranes vary in properties and should be selected based on matrix and solvent characteristics (Table I). With a female luer lock inlet and male slip outlet, the syringe filter easily fits onto the end of the disposable syringe containing the sample, as shown in Figure 1. The extract is gently pushed through the filter into a sample vial for injection, removing damaging particulates from the final extract. This connection can be further strengthened by using a syringe with a luer lock tip, creating a more secure connection that can withstand higher filtration pressure.

**Figure 1:** Rugged, cost-effective syringe filters simplify sample prep and protect analytical columns and instruments.



With a variety of syringe filters available, understanding the role of diameter, pore size, and membrane will aid in proper selection. Sample volume will determine the choice of diameter, ensuring that the filter is not overloaded. Porosity is dependent on application and, in the case of LC, the particle size of the column packing. Tables II and III provide guidelines for selecting filter size and porosity. Use these guides to select the right filter for your application. Investing in inexpensive syringe filters is a cost-effective way to reduce variability and protect expensive equipment.

**Table I:** Membrane selection guide.

Membrane	Properties	Applications	Incompatible with
Cellulose Acetate	hydrophilic	aqueous solutions	organic solvents
Nylon	hydrophilic, low protein binding	bases, HPLC solvents, alcohols, aromatic hydrocarbons	acids, aggressive halogenated hydrocarbons, proteins
PES	hydrophilic, low protein binding, fast flow rates	filtration of buffers & culture media	—
PVDF	hydrophilic, low protein binding	alcohols, biomolecules	bases, esters, ethers, ketones
PTFE	hydrophobic	organic solvents, acids, alcohols, bases, aromatics	aqueous samples without pre-wetting (to avoid high backpressure)

Cellulose Acetate, Nylon, PES, PVDF—hydrophilic applications; PTFE—hydrophobic applications

**Table II:** Size selection guide.

Size	Sample volume
4 mm ID	<1 mL
13 mm ID	1–10 mL
25 mm ID	10–100 mL
30 mm ID	100–200 mL

**Table III:** Porosity selection guide.

Porosity	LC column compatibility
0.22 µm	Use with ≤3 µm packings or to remove microbial growth
0.45 µm	Use with >3 µm packings

# More Choices. Same Great Savings!

## Syringe Filters with Luer Lock Inlet

- Luer lock inlet offers leak-tight syringe connection.
- Variety of filter types, porosities, and diameters.
- Color coded for easy identification.
- Rugged polypropylene housing.
- Autoclavable to 121 °C for 15 minutes.
- Quantity break pricing for greater savings.



	Size	Porosity	Color	qty.	cat.#
<b>Cellulose Acetate</b>					
	4 mm	0.22 µm	green	100-pk.	23972
	4 mm	0.45 µm	blue	100-pk.	23973
	13 mm	0.22 µm	red	100-pk.	26156
	13 mm	0.45 µm	red	100-pk.	26155
	25 mm	0.22 µm	red	100-pk.	26158
	25 mm	0.45 µm	red	100-pk.	26157
	30 mm	0.22 µm	red	100-pk.	23982
	30 mm	0.45 µm	red	100-pk.	23983
<b>Nylon</b>					
	4 mm	0.22 µm	yellow	100-pk.	23970
	4 mm	0.45 µm	pink	100-pk.	23971
	13 mm	0.22 µm	pink	100-pk.	26146
	13 mm	0.45 µm	pink	100-pk.	26147
	25 mm	0.22 µm	pink	100-pk.	26148
	25 mm	0.45 µm	pink	100-pk.	26149
	30 mm	0.22 µm	pink	100-pk.	23980
	30 mm	0.45 µm	pink	100-pk.	23981
<b>PES (polyethersulfone)</b>					
	4 mm	0.22 µm	white	100-pk.	23978
	4 mm	0.45 µm	blue	100-pk.	23979
	13 mm	0.22 µm	green	100-pk.	23966
	13 mm	0.45 µm	green	100-pk.	23967
	25 mm	0.22 µm	green	100-pk.	23968
	25 mm	0.45 µm	green	100-pk.	23969
	30 mm	0.22 µm	green	100-pk.	23988
	30 mm	0.45 µm	green	100-pk.	23989
<b>PTFE (polytetrafluoroethylene)</b>					
	4 mm	0.22 µm	purple	100-pk.	23974
	4 mm	0.45 µm	orange	100-pk.	23975
	13 mm	0.22 µm	white	100-pk.	26142
	13 mm	0.45 µm	white	100-pk.	26143
	25 mm	0.22 µm	white	100-pk.	26144
	25 mm	0.45 µm	white	100-pk.	26145
	30 mm	0.22 µm	white	100-pk.	23984
	30 mm	0.45 µm	white	100-pk.	23985
<b>PVDF (polyvinylidene difluoride)</b>					
	4 mm	0.22 µm	brown	100-pk.	23976
	4 mm	0.45 µm	red	100-pk.	23977
	13 mm	0.22 µm	blue	100-pk.	26150
	13 mm	0.45 µm	blue	100-pk.	26151
	25 mm	0.22 µm	blue	100-pk.	26152
	25 mm	0.45 µm	blue	100-pk.	26153
	30 mm	0.22 µm	blue	100-pk.	23986
	30 mm	0.45 µm	blue	100-pk.	23987

Cellulose Acetate, Nylon, PES, PVDF—hydrophilic applications; PTFE—hydrophobic applications  
Syringe filters are for laboratory use only.

## Top 10 Reasons to Use Restek Syringe Filters

- 1 Protect any analytical system.
- 2 Extend LC column lifetime.
- 3 Achieve more reproducible analyses.
- 4 Variety of membranes, porosities, and diameters available.
- 5 Luer lock inlet provides strong, leak-tight syringe connection to withstand filtration pressure.
- 6 Rugged construction—autoclavable to 121 °C for 15 minutes (75 psi).
- 7 Color coded by membrane for easy identification.
- 8 Convenient dispenser box.
- 9 FREE sample pack available. Add "-248" to the part number.
- 10 LOW, LOW PRICES.

**NORM-JECT® Syringes**  
Highly inert and chemically resistant—perfect for chemically sensitive applications!