How to Select the Right Membrane Syringe Filter

Selecting Right Membrane Syringe Filter

1. Choose the size of filter based on the volume of sample that must be filtered.
2. Choose the porosity of the filter based on the size of potential particulates that may be present in your sample. Remember, the finer the porosity the more pressure it will take to pass sample through the filter. If you have a great deal of particulate matter, you may want to use a glass fiber filter, place a glass fiber pre-filter in front of your membrane filter to prevent rapid plugging or use a 2-in-1 filter that has a built-in pre-filter in a single housing.
3. Choose the membrane type based on the solvent that you want to filter.

Filter Types

All filter inlets are female Luer-compatible, have inert polypropylene or polycarbonate housings and come in four diameters.

30 mm filters

- designed for large sample volumes or solvent filtration;
- wide cross sectional area (5.1 cm^2) offers an increased filtration speed over the smaller diameter filters;
- holdup volume is less than 50µl.

25 mm filters

- Econofilters are designed for high throughput labs requiring economical filter packages in large quantities
- moderately wide cross sectional area (4.2 cm^2)
- holdup volume is less than 50µl.

13 mm filters

- ideal for most applications;
- sample volumes are typically in the 1-10 mL range;
- holdup volume is less than 10µl.

3 mm filters

- ideal for small samples (< 1 mL);

- membranes and housing are compatible with both aqueous and organic samples;
- pore sizes of 0.45µm and 0.2µm;
- holdup volue is 7µl.

Two porosites are available: 0.45 micron pores and 0.20 micron pores. Use the 0.45 micron version to remove particles that are detrimental to most columns; the 0.20 micron filters are used to remove the smallest particles.

Pre-filters have a 100% borosilicate glass fiber membrane that is chemically inert and resistant to most solvents. The high surface area of the rigid fiber structure provides outstanding particle retention capacity while maintaining low flow resistance. The GF53 will retain coarse particles down to approximately 3 µm in diameter and the GF92 down to approximately 2µm in diameter. They can be used standalone or in series with a membrane filter.

2-in-1 filters are a two-layered filter in a single housing with a built-in glass fiber pre-filter on the top layer and a membrane filter on the bottom layer. The coarse pre-filter removes the larger particulates that would plug the membrane filter. This type of filter is recommended for difficult-to-filter samples. Because the pre-filter retains coarse particles, it requires less force to push liquid sample through the filter, thereby providing higher throughput. The combination costs less than two individual filters and saves time, sample and money.

Membrane Types

Agilent Technologies provides the most popular type of membranes to cover a very wide range of applications. The main selection criteria are solvent-compatibility and porosity. To assist you in making sure that the former criterion is met, the Chemical Resistance Table lists the most popolar solvents used in HPLC along with the compatible membrane types.

- PTFE membranes are compatible with almost all solvents, acids and bases.
- Nylon 66 membranes are compatible with most solvents, organic and aqueous; but use with strong acids, methylene chloride and DMF is not recommended.
- Cellulose nitrate is primarily used for pre-filters and is compatible with many but not all aqueous or non-aqueous solvents.
- Cellulose acetate membranes are not compatible with organic solvents. They are well suited for aqueous solutions and are specially recommended for proteins and protein-related samples.