Filtration Introduction

Filter Membrane Chemical Compatibility

C	=	Compatible
L	=	Limited Compatibility
N	=	Not Compatible
–	=	No Data Available

Filter Membrane Chemical Compatibility Chart

Chemical	Nylon	PTFE	PVDF	Regenerated Cellulose
Acids				
Acetic, 25%	L	C	C	C
Acetic, Glacial	L	C	C	C
Formic, 25%	N	C	C	C
Hydrochloric, 25%	L	C	C	C
Hydrochloric, Concentrated	N	N	C	C
Sulfuric, 25%	N	C	C	C
Sulfuric, Concentrated	N	C	L	L
Nitric, 25%	N	C	L	C
Nitric, Concentrated	N	C	L	N
Phosphoric, 25%	N	C	C	C
Trichloroacetic, 10%	L	C	C	C
Bases				
Ammonium Hydroxide, 25%	C	C	L	—
Sodium Hydroxide, 3 Normal	C	C	C	—
Alcohols				
Amyl Alcohol	C	C	C	C
Benzyl Alcohol	C	C	C	C
Butyl Alcohol	C	C	C	C
Ethanol, 70%	C	C	C	C
Ethanol, 98%	C	C	C	C
Ethylene Glycol	C	C	C	C
Glycerine (Glycerol)	C	C	C	C
Isopropanol	C	C	C	C
Methanol, 98%	C	C	C	C
n-Propanol	C	C	C	C
Propylene Glycol	C	C	C	C
Hydrocarbons				
Benzene	C	C	C	C
Hexane, Xylene	C	C	C	C
Kerosene, Gasoline	C	C	C	C
Tetralin, Decalin	C	C	C	—
Toluene	C	C	C	C
Halogenated Hydrocarbons				
Carbon Tetrachloride	C	C	C	C
Chlorobenzene (Mono)	C	C	C	C
Chloroform	L	C	C	C
Freon	C	C	C	C
Methylene Chloride	L	C	C	C
Trichloroethane	C	C	C	C
Trichloroethylene	C	C	C	C

Filter Membrane Chemical Compatibility Chart

Chemical	Nylon	PTFE	PVDF	Regenerated Cellulose
Ketones				
Acetone	C	C	N	C
Cyclohexanone	C	C	N	C
Isopropylacetone	C	C	N	—
Methyl Ethyl Ketone	C	C	L	C
Methyl Isobutyl Ketone (MIBK)	C	C	N	C
Esters				
2-Ethoxyethyl Acetate	L	L	L	C
Amyl Acetate	C	C	C	C
Benzyl Benzoate	C	C	—	C
Butyl Acetate	C	C	C	C
Ethyl Acetate	C	C	C	C
Isopropyl Myristate	C	C	—	C
Methyl Acetate	L	C	L	C
Propyl Acetate	L	N	C	C
Propylene Glycol Acetate	L	C	—	C
Methyl Cellosolve Acetate	C	C	C	C
Tricresyl Phosphate	—	C	—	C
Oxides — Ethers				
Acetonitrile (Methyl Cyanide)	C	C	C	C
Aniline	L	C	C	C
Diethyl Acetamide	C	C	C	C
Dimethyl Formamide	C	C	N	L
Dimethyl Sulfoxide (DMSO)	L	C	C	L
Dioxane	C	C	L	L
Ethyl Ether	C	C	C	C
Isopropyl Ether	C	C	N	—
Pyridine	C	C	L	C
Solvents with Nitrogen				
Tetrahydrofuran	C	C	L	L
Triethanolamine	C	C	C	C
Miscellaneous				
Formaldehyde Solution, 30%	C	C	C	L
Hydrogen Peroxide, 30%	N	C	C	C
Phenol, Aqueous, 10%	N	C	L	C
Silicone Oil and Mineral Oil	C	C	C	C

more info

This is only a guide. Users should verify compatibility under actual use conditions.

Filtration Introduction

Filter Device Selection

Consider the number of samples, the sample volume, and the filtering mechanism you prefer to use.

Syringe Filters

Filtration is achieved by pushing the sample through the membrane with a syringe or other luer-connection device. Syringe filters allow you to control the rate of flow, which can be critical with delicate samples. Syringe filters also allow you to filter into nearly any tube, vial, or column that represents the next step in your analysis.

Centrifuge Filter Tubes

Filtration is achieved by pulling the sample through the membrane with centrifugal force. This allows you to simultaneously filter as many samples as your centrifuge can hold, and captures your filtrate in a clean microtube.

Pre-Cut Membranes

Multiple diameters offer a wide range of sample capacities, up to multiple liters. You need a filtration apparatus, such as a filter funnel or other vacuum-driven filtration device.

6277

Device Capacities

Description	Sample Volume
Syringe Filter Capacities	
4mm Syringe Filter	≤1mL
13mm Syringe Filter	≤5mL
17mm Syringe Filter	≤50mL
25mm Syringe Filter	≤50mL
30mm Syringe Filter	≤100mL
Centrifuge Filter Tube Capacities	
2mL Tubes	20µL to 500µL
50mL Tubes	1mL to 25mL
Pre-Cut Membrane Capacities	
13mm Pre-Cut Membranes	up to 20mL
25mm Pre-Cut Membranes	up to 100mL
47mm Pre-Cut Membranes	multi-liter

Membrane Selection

Choose a filter membrane based on the size and amount of particulate in the sample, the membrane's chemical compatibility with the sample matrix, and potential interactions (binding) between the membrane and the sample components. This table offers general guidelines on membrane characteristics and applications.

Membrane Selection Guide

Membrane Type	Features	Common Uses	Hydrophilic	Solvent Resistance	Protein Binding
Nylon	Good chemical compatibility and very low extractables	General filtration sterilization, HPLC sample prep	Yes	Good	Medium
Polytetrafluoroethylene (PTFE)	Compatible with strong acids and aggressive solvents	Gas, air, and solvent filtration	No	High*	High
Polyvinylidene Fluoride (PVDF)	Good flow rate characteristics. Ideal for chromatography applications.	HPLC sample preparation and general filtration	Yes	High	Low
Regenerated Cellulose	Universal membrane with excellent chemical resistance and low extractables. Use for aqueous and organic samples.	HPLC sample prep general filtration	Yes	High	Very Low**

*Highest solvent resistance.
**Lowest protein binding.

related products

Looking for mobile inlet phase filters?
See pages 123–124.

5564 6265

Syringe Filters

Nylon and PVDF Syringe Filters

Nylon and PVDF syringe filters are available in a variety of diameters to address different sample sizes.

Syringe Filter Specifications

Diameter	Max. Temp.	Max. Pressure	Hold-Up Volume	Typical Sample Volume
4mm	100°C	75psig	Less than 15µL	Up to 1mL
13mm	60°C	100psig	Less than 10µL	Up to 5mL
17mm	100°C	115psig	Less than 25µL	Up to 50mL
25mm	60°C	100psig	Less than 50µL	Up to 50mL
30mm	100°C	90psig	Less than 115µL	Up to 100mL

6735

Choose Nylon Membranes for General Filtration Needs

Nylon is hydrophilic and has generally good solvent resistance.

Nylon Syringe Filters

Diameter	Pore Size	Qty.	Part No.
4mm	0.2µm	100	**2091**
4mm	0.45µm	100	**2092**
13mm	0.2µm	100	**2166**
13mm	0.45µm	100	**2167**
17mm	0.2µm	100	**62163**
17mm	0.45µm	100	**62177**
25mm	0.2µm	100	**2045**
25mm	0.45µm	100	**2047**
30mm	0.2µm	100	**62145**
30mm	0.45µm	100	**62147**

Choose PVDF Membranes for HPLC Sample Preparation

PVDF is hydrophilic, highly solvent resistant, and low protein binding.

PVDF Syringe Filters

Diameter	Pore Size	Qty.	Part No.
4mm	0.2µm	100	**2227**
4mm	0.45µm	100	**2228**
13mm	0.2µm	100	**2647**
13mm	0.45µm	100	**2648**
17mm	0.2µm	100	**62130**
17mm	0.45µm	100	**62209**
25mm	0.2µm	100	**2223**
25mm	0.45µm	100	**2224**
30mm	0.2µm	100	**62193**
30mm	0.45µm	100	**62195**

related products

Looking for HPLC column prefilters?

See page 111.

related products

Need vials?

We offer a full selection of vials, caps, and septa for all chromotography needs.

See pages 348–378.

related products

Need syringes?

See pages 336–347 for our offering of high-quality Hamilton®, VICI®, and SGE® syringes.

Syringe Filters

PTFE and Regenerated Cellulose Syringe Filters

PTFE and Regenerated Cellulose syringe filters are available in a variety of diameters to address different sample sizes.

Syringe Filter Specifications

Diameter	Max. Temp.	Max. Pressure	Hold-Up Volume	Typical Sample Volume
4mm	100°C	75psig	Less than 15µL	Up to 1mL
13mm	60°C	100psig	Less than 10µL	Up to 5mL
17mm	100°C	115psig	Less than 25µL	Up to 50mL
25mm	60°C	100psig	Less than 50µL	Up to 50mL
30mm	100°C	90psig	Less than 115µL	Up to 100mL

Choose PTFE Membranes for Aggressive Filtration Needs Such as Gas and Solvent Filtration

PTFE is hydrophobic with exceptional solvent resistance.

PTFE Syringe Filters

Diameter	Pore Size	Qty.	Part No.
4mm	0.2µm	100	**2394**
4mm	0.45µm	100	**2395**
13mm	0.2µm	100	**2164**
13mm	0.45µm	100	**2165**
17mm	0.2µm	100	**62118**
17mm	0.45µm	100	**62136**
25mm	0.2µm	100	**2089**
25mm	0.45µm	100	**2090**
30mm	0.2µm	100	**62189**
30mm	0.45µm	100	**62191**

Choose Regenerated Cellulose Membranes for HPLC Sample Preparation and General Filtration Needs

Regenerated Cellulose is hydrophilic with exceptional solvent resistance and very low protein binding.

Regenerated Cellulose Syringe Filters

Diameter	Pore Size	Qty.	Part No.
4mm	0.2µm	100	**656100**
4mm	0.45µm	100	**656102**
17mm	0.2µm	100	**62119**
17mm	0.45µm	100	**62125**
30mm	0.2µm	100	**62199**
30mm	0.45µm	100	**62167**

related products

Need syringes?
See pages 336–347 for our offering of high-quality Hamilton®, VICI®, and SGE® syringes.

related products

Accessories for your system. Grace has an assortment of Accessories Quick Reference guides available for many popular instruments.

- Waters® Alliance® System Accessories – Request M202
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- Waters® Acquity® System Accessories – Request M204

2mL Centrifuge Filter Tubes

- For up to 850µL sample volume
- Economical alternative to brand name filter tubes
- Includes a glass support membrane

Quickly and easily remove particulates and clarify small sample volumes. Less than 5µL hold-up volume provides near quantitative volumetric recovery. Maximum G-Force: 10,000xG.

4817

Alltech® 2mL Filter Tubes

Membrane Type, Pore Size	Qty.	Part No.
Cellulose Acetate		
0.20µm	100	**24126**
0.45µm	100	**24133**
Nylon		
0.20µm	100	**24137**
0.45µm	100	**24139**
PVDF (Hydrophobic)		
0.20µm	100	**24142**
0.45µm	100	**24144**
Regenerated Cellulose		
0.20µm	100	**24148**
0.45µm	100	**24150**

50mL Centrifuge Filter Tubes

- For up to 25mL sample volume
- Use with fixed-angle rotor centrifuge
- All tubes include a glass support membrane

Alltech® 50mL Centrifuge Filter Tubes remove particulates from larger sample sizes with any centrifuge that holds 50mL conical tubes. They should only be used with a fixed-angle rotor centrifuge to prevent premature clogging of the membrane. Maximum operating temperature: 50°C. Maximum G-force: 2500xG.

4784

Alltech® 50mL Filter Tubes

Membrane Type, Pore Size	Qty.	Part No.
Cellulose Acetate		
0.20µm	50	**24152**
0.45µm	50	**24154**
Nylon		
0.20µm	50	**24156**
0.45µm	50	**24158**
PVDF (Hydrophobic)		
0.20µm	50	**24160**
0.45µm	50	**24162**

Forensic Spin Tubes

- 600µL capacity
- Extract biological fluids from cloth samples

The 1.4mm mesh filter basket acts as a sieve to retain cloth samples and pass fluids to the receiver tube. The spin tube includes a 600µL filter basket and a 2mL microcentrifuge receiver tube with attached cap.

4818

Forensic Spin Tubes

Description	Qty.	Part No.
Forensic Spin	100	**2566**
Forensic Spin	250	**2567**

Pre-Cut Filter Membranes

- Variety of pore sizes and membrane types
- Non-sterile

4777

Cellulose Acetate Pre-Cut Membranes

Diameter	Pore Size	Qty.	Part No.
13mm	0.20µm	100	**2125**
13mm	0.45µm	100	**2126**
25mm	0.20µm	100	**2128**
25mm	0.45µm	100	**2129**
47mm	0.20µm	100	**2133**
47mm	0.45µm	100	**2135**

Nylon Pre-Cut Membranes

Diameter	Pore Size	Qty.	Part No.
13mm	0.20µm	100	**2046**
13mm	0.45µm	100	**2044**
25mm	0.20µm	100	**2050**
25mm	0.45µm	100	**2048**
47mm	0.20µm	100	**2034**
47mm	0.45µm	100	**2024**

PTFE Pre-Cut Membranes

Diameter	Pore Size	Qty.	Part No.
13mm	0.20µm	100	**2013**
13mm	0.45µm	100	**2015**
25mm	0.20µm	100	**2023**
25mm	0.45µm	100	**2029**
25mm	1.00µm	100	**2056**
47mm	0.20µm	100	**2057**
47mm	0.45µm	100	**2058**
47mm	1.00µm	100	**2059**

Cellulose Acetate Membranes

Cellulose Acetate Membranes are hydrophilic and exhibit very low protein retention. Use for general biological filtration, sterilization, and filtration of aqueous solutions.

Nylon Membranes

Nylon Membranes are hydrophilic and resistant to many solvents. Use for filtration and clarification of aqueous or organic solutions.

PTFE Membranes

PTFE Membranes are hydrophobic and highly solvent resistant. Use for filtration of air, gases, and non-aqueous solutions. Pre-treat with methanol before using with aqueous solutions.

4777

more info

Need help selecting the correct membrane?

See pages 317–318 for membrane specifications and suggested use/applications.

6266

related product

Looking for solvent filtration apparatus?

See page 127.