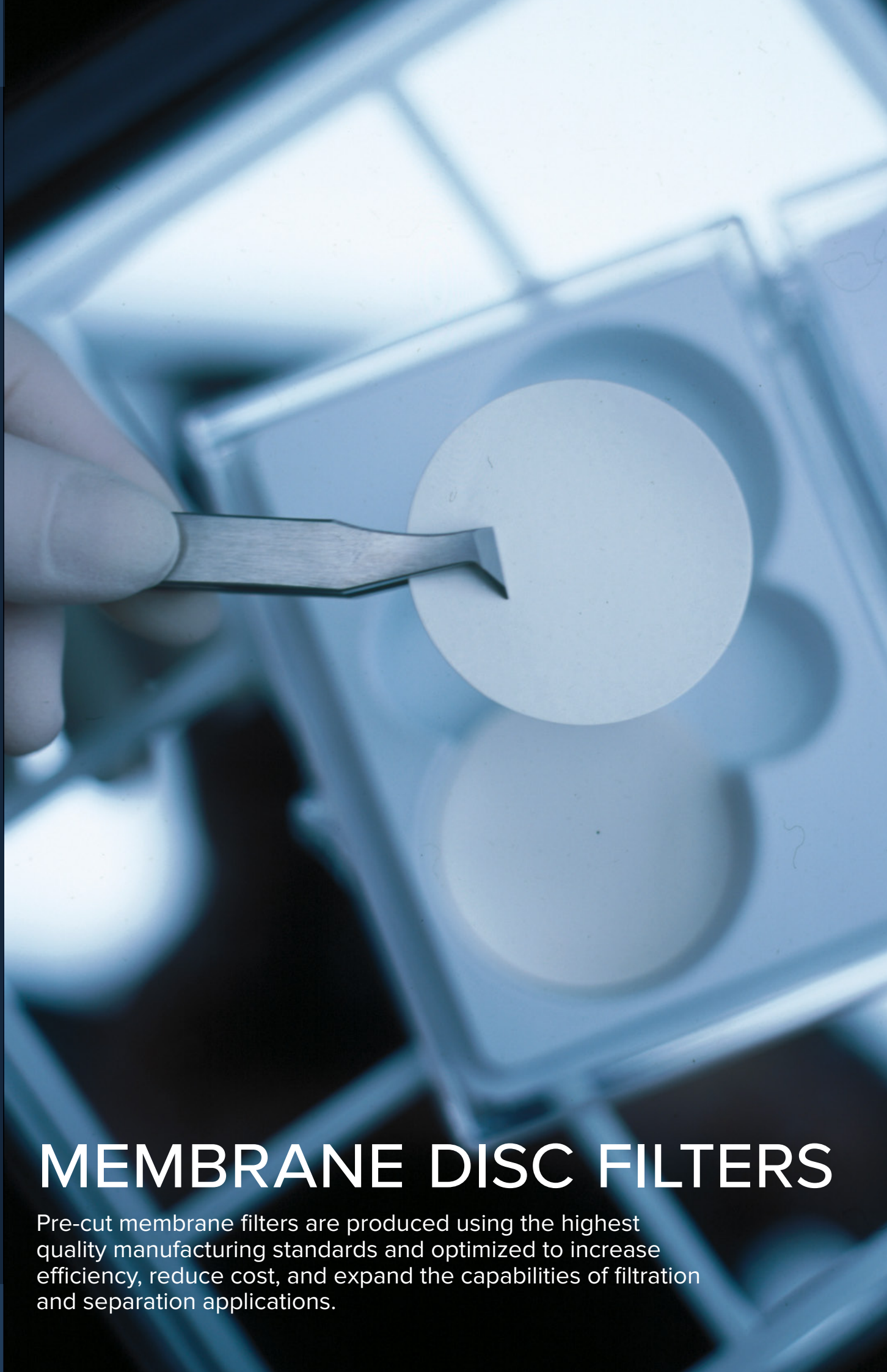


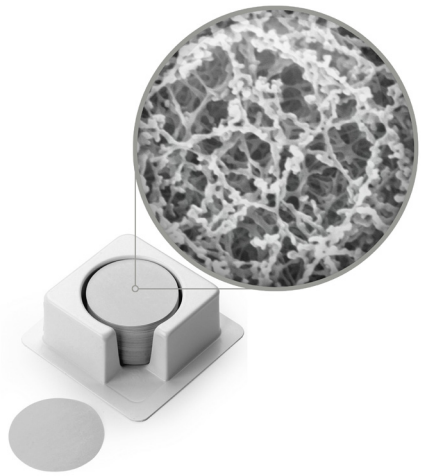
MEMBRANE DISC FILTERS

Pre-cut membrane filters are produced using the highest quality manufacturing standards and optimized to increase efficiency, reduce cost, and expand the capabilities of filtration and separation applications.

CELLULOSE ACETATE MEMBRANE FILTERS

Cellulose acetate (CA) membrane filters are hydrophilic, durable, and extremely low protein binding; ideal for applications requiring maximum protein recovery and minimal extractables.

Pure cellulose acetate filters are internally supported by an inert polyester web for exceptional dimensional strength. Along with naturally low binding characteristics, this design facilitates high throughputs and reduces the need for filter changes, effectively decreasing both cost and process time. Rigorous quality standards met during production ensure that pore sizes and material properties are consistent from lot to lot, providing predictable flow rates, analytical precision, and repeatable results across a wide range of samples and applications, including proteinaceous solutions, rigorous or automated processes, and thermal/pressure intensive conditions.



SPECIFICATIONS

GENERAL	
Sterilization	Gamma Irradiation, EtO, Autoclave
USP Class VI Testing	Passed
Nominal Thickness	65-110 µm (135 µm for Pore Size: 3.0 µm)
BSA Protein Binding	3.8 µg/cm² (26.8 µg/cm² for Pore Size: 3.0 µm)
Max Operating Temp.	274°F (135°C)

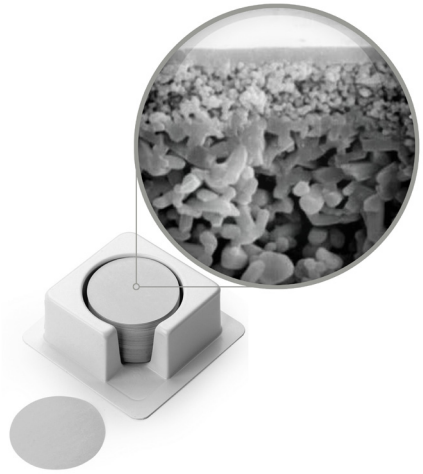
PERFORMANCE BY PORE SIZE		
	H_2O Flow Rate[1]	**Bubble Point (psi)**
0.22 µm	16.1	50
0.45 µm	54.7	30
0.65 µm	70.9	18
0.80 µm	81.3	14
1.20 µm	180	11
3.00 µm	500	5
5.00 µm	375	6

1. Measured as mL/min/cm² at 10 psi (0.7 kg/ cm²)

APPLICATIONS

- Protein/enzyme filtration and sterilization
- Biological fluid filtration and sterilization
- Tissue culture media sterilization
- Diagnostic cytology
- Receptor binding studies
- Enhanced recovery of fastidious gram-positive organisms

CERAMIC MEMBRANE FILTERS



Inorganic, hydrophilic ceramic membrane filters are ideally suited for use with extreme operating processes that require longevity and resistance to aggressive solvents and temperatures.

Ceramic filters provide maximum durability across a range of laboratory-scale microfiltration, ultrafiltration, dead-end, and crossflow applications. These filters are adapted for each filtration category and feature customized active layers based on respective molecular weight cutoff (MWCO) levels. These ceramic filters feature titania (TiO_2) support layers, are inert to most chemicals and solvents, have a wide pH tolerance range, and exhibit remarkable performance under demanding thermal conditions. Ceramic membranes can withstand many repeated autoclave and/or chemical (EtO) sterilization cycles and are built for maximum operational longevity; often retaining functionality for many years beyond their organic, polymeric counterparts. Additionally, these filters provide resistance against high backwash velocity, high levels of flux, and reduce fouling tendency.

Ceramic membrane disc holders are made of stainless steel and designed for dead-end filtration with the use of a pressure vessel. These filter holders support both 47 and 90 mm ceramic discs, are compatible with Viton, EPDM, and silicone O-rings, and include inlet and outlet connections for serrated tubes.

APPLICATIONS:

- Sterile concentrations
- Purification of cells, yeast, proteins, bacteria, serums, broth, and enzymes
- General separations
- Fine UF, UF, and MF processes

CERAMIC DISC HOLDERS	
Body	Stainless Steel
Membrane Dia.	47 or 90 mm
Filtration Area	***47 mm:*** 13 cm^2 (2 in^2) ***90 mm:*** 56 cm^2 (8.7 in^2)
O-Rings	Viton, EPDM, Silicone
Connections	6 mm Hose Barb, 1/8 in (3.2 mm) NPTF
Pressure Inlet	58 psi (4 bar)
Max. Temp.	266°F (130°C)

GENERAL SPECIFICATIONS	
Sterilization	EtO, Autoclave
Nominal Thickness	2.5 mm
Max. Pressure	58 psi (4 bar)
Max. Operating Temp.	662°F (350°C)

PERFORMANCE BY PORE SIZE			
	Designation	**pH Range**	**Active Layer**
1 kDa	Fine UF[1]	2-14	TiO_2
3 kDa	Fine UF	2-14	TiO_2
5 kDa	Fine UF	2-14	TiO_2
8 kDa	Fine UF	2-14	TiO_2
15 kDa	UF	0-14	ZrO_2
50 kDa	UF	0-14	ZrO_2
150 kDa	UF	0-14	ZrO_2
300 kDa	UF	0-14	ZrO_2
0.14 µm	MF	0-14	ZrO_2-TiO_2
0.22 µm	MF	0-14	ZrO_2-TiO_2
0.45 µm	MF	0-14	ZrO_2-TiO_2
0.80 µm	MF	0-14	ZrO_2-TiO_2
1.40 µm	MF	0-14	ZrO_2-TiO_2

[1] Fine UF membranes are shipped dry, but must be stored wet after first use. To prevent microbial growth, it is recommended to use a solution of 1% sodium metabilsulfite in ultrapure water and store the wetted membranes in a zip-closure bag.

MIXED CELLULOSE ESTER (MCE) MEMBRANE FILTERS

Hydrophilic MCE membranes utilize a mixture of cellulose nitrate/acetate fibers to deliver superior flow rates and high protein binding; ideal for particle monitoring, diagnostic kit manufacturing, and microbiology applications.

Mixed cellulose ester (MCE) membrane filters are optimized for use with a variety of sample media and volumes because they have a uniform pore structure, consistent thickness, and a smoother surface than their pure nitrocellulose counterparts. These membranes are designed for quick and easy identification of surface-retained particles, which decreases eye fatigue. These filters are available with a variety of custom features, including white discs to observe changes in color; black discs that contrast microorganisms, yeast, and mold, while facilitating manual counting without a counter-stain; and gridded options for both colors to accurately quantify microbial growth/colonies. Sterile membranes are also available for use with critical samples.

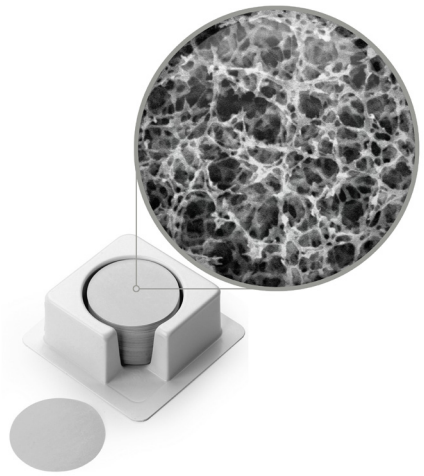
GENERAL SPECIFICATIONS[1]

Sterilization	Gamma Irradiation, EtO, Autoclave
USP Class VI Testing	Passed
BSA Protein Binding	108 µg/cm² (160 µg/cm² for 8.0 µm)
Extractables	<4%
Max. Operating Temp.	356°F (180°C)
Sealing Compatibility	Ultrasonic, Heat, Radio Frequency, Insert Molding

PERFORMANCE BY PORE SIZE

	Air Flow Rate[2]	H_2O Flow Rate[3]	Bubble Point (psi)
0.10 µm	0.67	2.7	35.3
0.22 µm	2.4	17.5	54.5
0.45 µm	5.0	45.0	35.0
0.65 µm	11.2	120.0	21.3
0.80 µm	15.0	165.0	16.4
1.00 µm	20.4	220.0	13.9
3.00 µm	28.3	300.0	10.2
5.00 µm	40.9	400.0	8.5
8.00 µm	Not Tested	2316.0	4.0

[1] Measurements for gridded membranes will differ
[2] Measured as L/min/cm²
[3] Measured as mL/min/cm²



APPLICATIONS

MCE Non-Sterile Membrane Filter

General Filtration
- Sterilizing biological fluids
- Contamination analysis (sterile preferred)

Medical Assays
- hCG
- Chlamydia
- Strep A
- HIV
- Drugs of abuse
- Environmental contaminants
- Pathogenic microorganisms

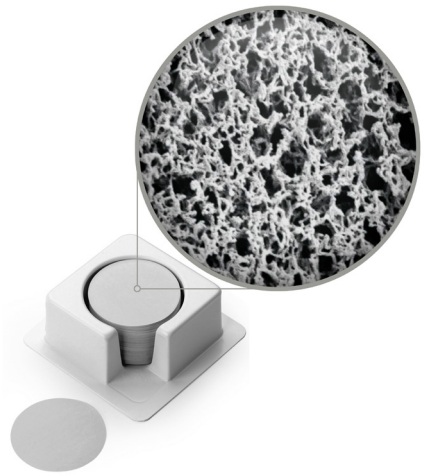
Detection Methods
- Immunochromatographic Assays
- Lateral flow Immunoassays w/ Latex Beads
- Capillary Immunoassays w/ Colloidal Gold
- Latex Agglutination Assays

Immobilizations
- Dot/Slot Blotting
- Direct Spotting
- Direct-line Applications with a Sprayer
- Immersion and Drying

MCE Sterile Membrane Filter

Water and Wastewater Industry:
Capturing/culturing microorganisms using the MF Technique
- Test Method 9222 B: Total Coliforms (0.45 µm)
- Test Method 9222 D: Fecal Coliforms (0.45 µm)
- Test Method 9230 C: Fecal Coliforms (0.45 µm)
- Test Method 9215 D: Total Bacteria (0.22 µm/0.45 µm)
- Test Method 9260 B: Salmonella (0.45 µm)
- Test Method 9213: Pseudomonas sp (0.22 µm)
- Test Method 9213 E: Psedomonas aeruginosa (0.80 µm)

NYLON MEMBRANE FILTERS



Hydrophilic nylon membrane filters provide high protein binding, solvent resistance, and dimensional stability for HPLC sample preparation, biological/buffer sterilization, medical assays, and high temperature applications.

Nylon membrane filters are specifically designed to wet-out evenly and retain membrane integrity without cracking, tearing, curling, or breaking. Internally supported by an inert web of polyester, these membranes can withstand aggressive handling and use with automated equipment. In addition to their compatibility with most aqueous and alcoholic solvents and solutions, these filters can also be used for vacuum degassing. The properties of nylon eliminate the need to use wetting agents that interfere with biological processes and provide a large surface area for the effective immobilization of antigens, antibodies, DNA, RNA, and many other proteins. Nylon membranes are also designed to support high diffusion and low-flow resistance with an impressive 70-85% void volume.

APPLICATIONS

- General filtration
- Medical assays
- HPLC sample preparation
- Sterilization and clarification of aqueous and organic solvent solutions

0.80 µm Only:

- Recommended for use in **ASTM D6217:** Standard Test Method for Particulate Contamination in Middle Distillate Fuels by Laboratory Filtration.
- Recommended for use in **ASTM D5304:** Standard Test Method for Assessing Middle Distillate Fuel Storage Stability by Oxygen Overpressure

SPECIFICATIONS

GENERAL	
Sterilization	Gamma Irradiation, EtO, Autoclave
USP Class VI Testing	Passed
BSA Protein Binding	~120 µg/cm^2
Max. Operating Temp.	356°F (180°C)
Sealing Compatibility	Ultrasonic, Heat, Radio Frequency, Insert Molding

PERFORMANCE BY PORE SIZE		
	H_2O Flow Rate[1]	**Bubble Point (psi)[2]**
0.10 µm	4.0	70.0
0.22 µm	9.9	50.0
0.45 µm	26.9	35.0
0.65 µm	59.3	18.0
0.80 µm	80.5	13.0
1.20 µm	180.0	11.0
5.00 µm	331.0	6.0

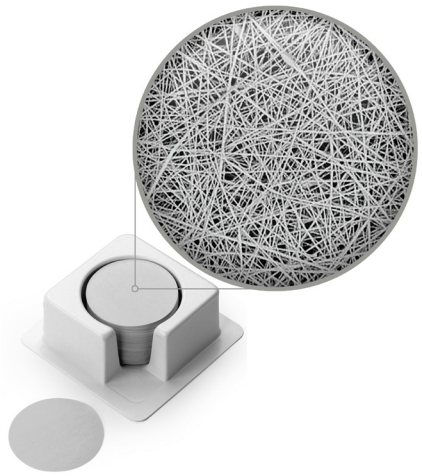
[1] Measured as mL/min/cm^2 at 10 psi (520 mmHg)/20°C (68°F)

[2] Pressure at which air is first forced through the pores of a methanol-wet membrane

POLYACRYLONITRILE (PAN) MEMBRANE FILTERS

Polyacrylonitrile (PAN) membranes combine excellent selectivity, high flow rates and low pressure requirements which helps laboratories simplify their filtration setups while maintaining quality and efficient workflow.

PAN's unique nanofiber mesh construction combines extremely fine pores with ample open space to allow easy liquid flow while trapping particulates up to 0.2 µm in width. These membranes are created by extruding fine PAN nanofibers onto a polyester support substrate. The nanofibers' tight mesh filters out particles, colloids, and bacteria larger than 0.2 µm. The mesh's structure allows both water and aqueous solutions to quickly pass through with little applied pressure.



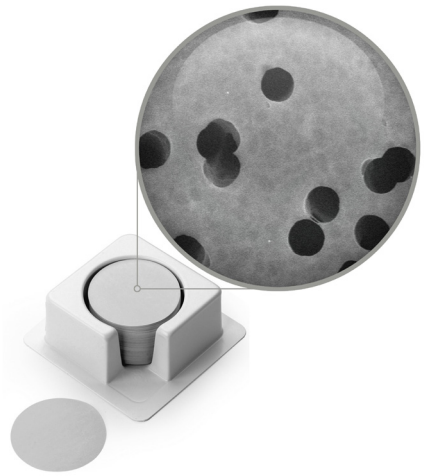
SPECIFICATIONS

GENERAL	
Pore Size	0.2 µm equivalent
Membrane Material	PAN Nanofibers on PET Support Substrate
Avg. Bubble Point	>60 psi (>4.1 bar)
Max. Operating Temp.	212°F (100°C)
Avg. Thickness	180-200 µm
Retention (log reduction)	6 (*E.Coli, R.Terrigena, B.Diminuta)*

APPLICATIONS

- Water, biopharmaceutical, and process fluid purification
- Food and beverage filtration: wine, bottled water, beer, dairy
- Drinking water: gravity-fed purifiers, RO post-filters, under-sink systems, refrigerator filters, bottled water coolers

POLYCARBONATE TRACK ETCH (PCTE) MEMBRANE FILTERS



With controlled pores, low extractable and binding levels, and a smooth surface, these durable polycarbonate track etch (PCTE) membrane filters allow for rapid cell migration, microbial growth, and reduced incubation times.

PCTE membranes are available with a variety of configurations: **Hydrophilic PCTE** membranes are coated with PVP to enhance the filter's ability to process aqueous and alcoholic samples. **Hydrophobic PCTE** filters are PVP-free and ideal for chemotaxis, cell studies, and venting applications.

AOX PCTE membranes are ideally suited for the detection of man-made pollution in groundwater and wastewater (organic halide adsorption determination) due to exceptionally low protein-binding/extractable levels and precisely defined pores. These filters are also suited for a wide range of microbiology, petroleum, and chemical applications.

APPLICATIONS

- Chemotaxis (PVP-Free)
- Epifluorescence
- Cytology
- Cell biology (PVP-Free)
- Venting (PVP-Free)
- Microscopy
- Erythrocyte deformability
- Organic halide adsorption determination (AOX)

SPECIFICATIONS

GENERAL	
Sterilization	Gamma Irradiation, EtO, Autoclave
USP Class VI Test	Passed
Nominal Thickness	3- 24 µm
BSA Protein Binding	<5 µg/cm^2
Max. Operating Temp.	284°F (140°C)
Burst Strength	10 psi (0.7 bar)
pH Range	4-8
Sealing Compatibility	Ultrasonic, Heat, Radio Frequency, Insert Molding

PERFORMANCE BY PORE SIZE			
	Air Flow Rate[1]	**H_2O Flow Rate[2]**	**Bubble Point (psi)[3]**
0.01 µm	0.0075	0.1	NA
0.03 µm	0.075	0.2	NA
0.05 µm	0.37	0.4	50.0
0.08 µm	0.75	0.6	38.0
0.10 µm	1.50	2.5	30.0
0.22 µm	3.00	10	20.0
0.40 µm	8.50	45 (33 AOX)	32.0
0.60 µm	7.50	60	9.0
0.80 µm	18.00	90	7.0
1.00 µm	20.00	130	6.0
2.00 µm	16.50	300	3.0
3.00 µm	37.50	440	2.0
5.00 µm	30.00	700	1.2
8.00 µm	30.00	1,000	0.7
10.00 µm	34.50	1,150	0.5
12.00 µm	63.50	1,250	0.4
14.00 µm	63.50	1,400	0.2
20.00 µm	11.00	1,000	<1.0
25.00 µm	33.00	<1,000	Not Tested
30.00 µm	50.00	<1,200	Not Tested

[1] Measured as L/min/cm^2 ; ≤ 2 µm at 10 psi (0.7 kg/cm^2), ≥ 3 µm at 5 psi (0.35 kg/cm^2)

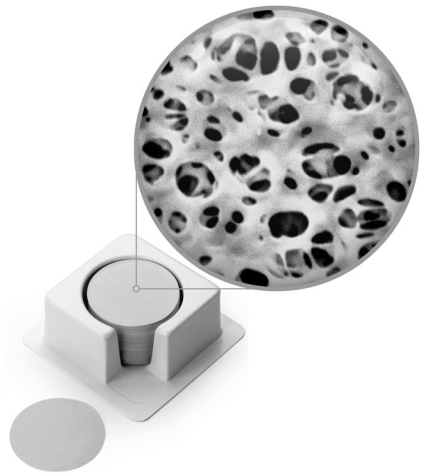
[2] Measured as mL/min/cm^2 at 10 psi (0.7 kg/cm^2)

[3] Measured with isopropanol (IPA)

POLYETHERSULFONE (PES) MEMBRANE FILTERS

Hydrophilic, low binding, polyethersulfone (PES) membrane filters are ideal for general filtration, tissue culture media sterilization, and life science/bio-fluid applications.

During general filtration, inherent, asymmetric pores allow PES membranes to efficiently remove particulates from solutions. The high burst strength and durability offered by these filters allow for their use with aggressive handling and automated equipment. Low extractable levels eliminate the need for wetting agents, thereby reducing interference with analyses and providing fluid purification.



APPLICATIONS

- Blood glucose testing
- Lateral flow assays
- Particulate removal
- Serum cholesterol testing
- Prefiltration
- Sterile solution preparation (0.22 µm)

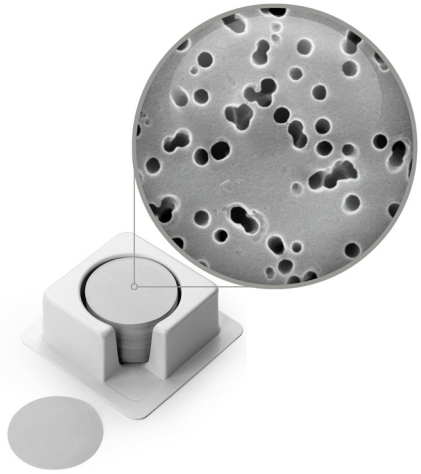
SPECIFICATIONS

GENERAL	
Sterilization	Gamma Irradiation, EtO, Autoclave
USP Class VI Testing	Passed
Nominal Thickness	110-150 µm
BSA Protein Binding	<20 µg/cm^2
Extractables	<2%
Max. Operating Temp.	266°F (130°C)
Sealing Compatibility	Ultrasonic, Heat, Radio Frequency, Insert Molding

PERFORMANCE BY PORE SIZE		
	H_2O Flow Rate[1]	**Bubble Point (psi)**
0.03 µm	5.5	90
0.10 µm	11.7	70
0.22 µm	33.2	50
0.45 µm	58.2	35
0.65 µm	95.5	21
0.80 µm	117.0	13
1.20 µm	143.0	11
5.00 µm	186.0	6

[1]Measured as mL/min/cm^2 at 10 psi (0.7 kg/cm^2)

POLYESTER MEMBRANE FILTERS



Hydrophilic polyester track etch (PETE) membranes are made from a thin, translucent, microporous, polyester film and are ideal for use in blood assays, microscopic analysis, and general filtration.

The surface of **PETE membranes** is smooth and flat (excellent for particle visibility and quicker analysis) with pores capable of capturing all particles larger than their precise diameters. In comparison to their PCTE counterparts, PETE membranes have similar material characteristics and applications, but feature greater resistance to solvents.

Polyester filters are also available with nominal pore sizes. **Polyester drain discs** are typically used as a spacer between stacked membranes; they are ideal for increasing flow rates in PCTE and PETE membranes. The polyester spun-bound “drain” type disc prevents “pore blinding”, or blockage of the capillary pores, in screen membranes, which results in higher flow rates and increased throughput. These discs also increase flow by lifting off of screen supports and exposing all the pores, ensuring efficient performance when placed between two filters in a serial filtration stack.

APPLICATIONS

- Precise general filtration and prefiltration
- Removal of red blood cells from plasma
- Flow control of reagents through assay

SPECIFICATIONS

GENERAL	
Sterilization	Gamma Irradiation, EtO, Autoclave
USP Class VI Testing	Passed
Nominal Thickness	6-11 µm
BSA Protein Binding	<5 µg/cm^2
Max. Operating Temp.	284°F (140°C)
Burst Strength	10 psi (0.7 bar)
Sealing Compatibility	Ultrasonic, Heat, Radio Frequency, Insert Molding

PERFORMANCE BY PORE SIZE			
	Bubble Point (psi)[1]	**H_2O Flow Rate[2]**	**Air Flow Rate[3]**
0.10 µm	30.0	2.5	1.5
0.22 µm	20.0	10.0	3.0
0.40 µm	12.0	33.0	7.5
0.80 µm	7.0	90.0	18.0
1.00 µm	6.0	130.0	20.0
2.00 µm	3.0	300.0	16.5
3.00 µm	2.0	440.0	37.5
5.00 µm	1.2	700.0	30.0
8.00 µm	0.7	1000.0	30.0
10.00 µm	0.5	1150.0	34.5

[1] Measured as L/min/cm^2; 3-10 µm at 10 psi, 0.1-2.0 µm at 5 psi

[2] Measured as mL/min/cm^2 at 10 psi (520 mmHg)

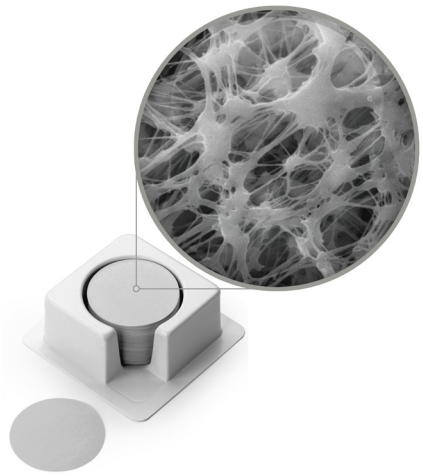
[3] Measured with isopropanol (IPA)

POLYPROPYLENE MEMBRANE FILTERS

Hydrophobic, low extractable, low binding, polypropylene membrane filters are the preferred medium for HPLC applications with low detection levels and help prolong column life in ion chromatography.

Pure **polypropylene filters** are durable, flexible, and resistant to distortion, tearing, and breaking, making them suitable for rough handling or forceps use. Their absolute pore sizes provide fast flow rates and consistent, accurate results, while their high thermal stability allows for autoclave sterilization and significantly higher post-sterilization throughputs than cellulose acetate membranes. With their broad chemical and pH tolerance, these membranes are designed for use with aggressive, non-aqueous samples. Due to extremely low extractable levels and high-purity analytical results, these membranes are used in many biological applications, such as cell growth, tissue culture media sterilization, and pharmaceuticals.

Also available are biologically/chemically inert, retentive, **polypropylene prefilters**, suited for the prefiltrition of most solvent, acid, and aqueous solutions. These nominal filters are designed to extend the life of a final membrane filter in a series or to serve as final filters for noncritical samples, reducing costs and increasing process efficiency.



APPLICATIONS

- Organic solvent filtration
- HPLC sample preparation requiring low detection levels
- Ion chromatography
- Total digest for heavy metals

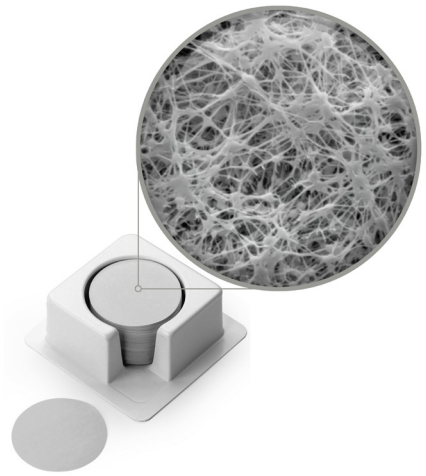
SPECIFICATIONS

GENERAL	
Sterilization	Gamma Irradiation, EtO, Autoclave
USP Class VI Testing	Passed
pH Range	1-14
Max. Operating Temp.	131°F (55°C)

PERFORMANCE BY PORE SIZE		
	Nominal Thickness	**Bubble Point (psi)**
0.10 µm	51 µm	28.5
0.22 µm	110 µm	15.4
0.45 µm	110 µm	11.5
10.0 µm[1]	152 µm	0.5

[1] Nominally-rated pore size

PTFE MEMBRANE FILTERS



PTFE membranes are available in hydrophilic, hydrophobic, supported, and unsupported options for a wide range of applications involving strong/aggressive acids, bases, and solvents incompatible with most other filtration media.

APPLICATIONS

Laminated Hydrophobic

- Clarification and sterilization of aggressive chemicals
- Gas sterilization
- Venting gas from aqueous solutions (when pre-wetted w/methanol)
- Aerosol sampling
- Phase separations

Unlaminated Hydrophobic

- Filtration of high temperature acids and solvents
- Strong acid and aggressive solution filtration

Advantec Hydrophilic

- HPLC separations
- Organic and aqueous mixtures

Aspire Laminated Hydrophobic

- Medical and life science venting
- Surgical suction and smoke filtration
- Protection of renal dialysis transducers
- Phase separations
- Aerosol sampling
- Strong acid and aggressive solution filtration

PERFORMANCE BY PORE SIZE

		Air Flow Rate[1]	H_2O Flow Rate[2]	Bubble Point (psi)[3]
0.10 µm	**Laminated Hydrophobic**	2.5	39.1 (acetone)	>25.0
	Advantec Hydrophilic	1.6	14.0	≥ 55.1
	Aspire Laminated ePTFE	NA	NA	> 25.0
0.22 µm	**Laminated Hydrophobic**	2.5	61.4 (acetone)	>20.0
	Unlaminated Hydrophobic	3.4	19.4	19.0-26.0
	Advantec Hydrophilic	2.1	21.0	≥ 34.8
	Aspire Laminated ePTFE	NA	NA	>17.0-20.0
0.45 µm	**Laminated Hydrophobic**	4.8	110 (acetone)	>10.0
	Advantec Hydrophilic	2.9	39.0	≥ 20.3
	Aspire Laminated ePTFE	NA	NA	>11.0
1.00 µm	**Laminated Hydrophobic**	9.0	445 (acetone)	>8.0
	Unlaminated Hydrophobic	NA	300.0	IPA: 4.1 EtOH: 1.2
	Advantec Hydrophilic	5.7	73.0	≥ 12.0
	Aspire Laminated ePTFE	NA	NA	> 2.0
3.00 µm	**Aspire Laminated ePTFE**	NA	NA	> 1.0
5.00 µm	**Unlaminated Hydrophobic**	NA	120.0-300.0	1.0 ± 0.2
	Aspire Laminated ePTFE	NA	NA	> 0.5
20.0 µm	**Unlaminated Hydrophobic**	NA	420.0-620.0	0.25-0.40

[1] Measured as L/min/cm² ; ≤ 2 µm at 10 psi (0.7 kg/cm²), ≥ 3 µm at 5 psi (0.35 kg/cm²)

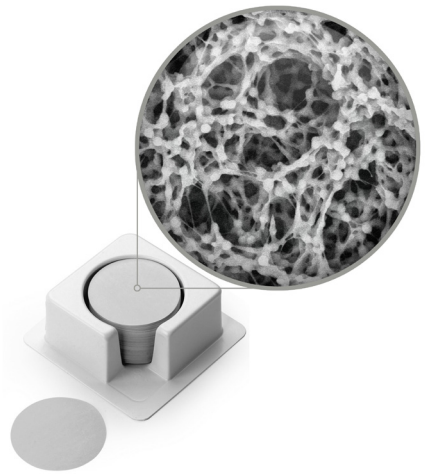
[2] Measured as mL/min/cm² at 10 psi (0.7 kg/cm²)

[3] Measured with isopropanol (IPA)

PVDF MEMBRANE FILTERS

Hydrophilic, extremely low extractable/protein binding, polyvinylidene difluoride (PVDF) membrane filters provide high flow rates and throughputs for aggressive, solvent-based mobile phase applications, biological sterilization/clarification, and HPLC/analytical sample preparation.

PVDF membranes do not require the use of wetting agents, transmitting negligible extractables and increasing sample purity during sterilization or clarification procedures. Broad chemical compatibility allows these filters to accommodate a wide range of applications (especially those requiring high flow rates/throughput), including aggressive/non-aggressive acids, alcohols, and solvents in mobile phase.



APPLICATIONS

- Biological and aggressive solvent sterilization and clarification
- HPLC sample preparation
- Removal of uHPLC contaminants to prevent column plugging
- Gas chromatography sample preparation and clean-up
- Mobile-phase solvents

SPECIFICATIONS

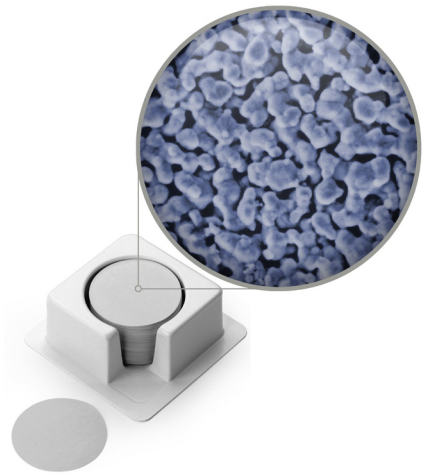
GENERAL	
Sterilization	Gamma Irradiation, EtO, Autoclave
USP Class VI Testing	Passed
Nominal Thickness	110-125 µm
BSA Protein Binding	4 µg/cm^2
Max. Operating Temp.	185°F (85°C)

PERFORMANCE BY PORE SIZE			
	H_2O Flow Rate[1]	**Air Flow Rate[2]**	**Bubble Point (psi)**
0.22 µm	7.0	2.0	56.0
0.45 µm	29.0	4.0	25.0

[1] Measured as mL/min/cm^2 at 10 psi

[2] Measured as L/min/cm^2 at 10 psi

SILVER MEMBRANE FILTERS



Silver metal membrane filters are used in a variety of filtration applications. Their ability to withstand extreme chemical and thermal stress makes them ideal laboratory filtration equipment for applications involving aggressive fluids and/or high temperatures.

Silver metal filters are constructed with pure metallic silver (99.97%) and are specified in a National Institute for Occupational Safety and Health (NIOSH) standard for the analysis of crystalline and amorphous silica, lead sulfide, boron carbide, and chrysotile asbestos. Silver metal membranes can be used as the collection media and subsequent x-ray diffraction substrate for quantifying unknown minerals and compounds.

APPLICATIONS

- X-ray diffraction
- Scanning electron microscopy (SEM)
- Removal of air-borne contaminants according to NIOSH industrial hygiene standards
- Respirable combustible dust (RCD) sampling and analysis
- High-temperature venting
- HPLC sample preparation
- Clarification, polishing, and sterilization of liquid samples
- USGS organic carbon, inorganic, and suspended sediment water analysis
- Soil and clay analysis
- Chlorine monitoring
- ERDA fly ash sampling
- Bacteria sampling

SPECIFICATIONS

GENERAL	
Sterilization	Air, Steam, Autoclave
Nominal Thickness	50 µm
BSA Protein Binding	Not Tested
Coefficient of Thermal Expansion	18.8 x 106 per °C
Resistivity	1.59 x 10-8 Ωm at 68°F (20°C)
Specific Heat	0.448 cal/g at 68°F (20°C)

PERFORMANCE BY PORE SIZE				
Pore Size[a]	**H_2O Flow Rate**[b]	**Air Flow Rate**[c]	**Bubble Point**[d]	**Max. Operating Temp.**[e]
0.22 µm	17	350	13	400°F (204°C)
0.45 µm	40	670	9	400°F (204°C)
0.80 µm	340	1400	7	400°F (204°C)
1.20 µm	460	2000	5	400°F (204°C)
3.00 µm	690	2900	3	800°F (427°C)
5.00 µm	870	5200	2	800°F (427°C)

[a] *Particle retention verified by bubble point pressure*

[b] *Using pre-filtered H_2O at ΔP of 10 psid (0.7 bar); pre-wetted w/methanol*

[c] *Initial flow rates w/pre-filtered air at 10 psi (0.7 kg/cm²)*

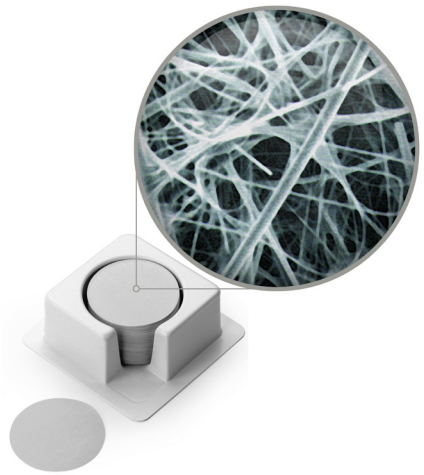
[d] *Measured using methanol*

[e] *Silver membranes provide excellent filtration performance at temperatures up to 427°C (800°F)*

GLASS FIBER FILTERS

Glass fiber filters are made of pure borosilicate fibers and are available in a wide range of flow rates and nominal pore sizes. The glass filter membranes below are available with or without binder resins and each membrane disc filter can be sterilized by EtO, gamma, or autoclave.

Qualitative and quantitative **cellulose filter papers** (see p. 20) are offered in a variety of grades for different separation applications. Quantitative papers are most often used to perform gravimetric analysis while the qualitative filter papers are used to determine particulates in liquid and gas samples.



GLASS FIBER FILTER SPECIFICATIONS

Grade	Pore Size	Thickness	Weight (g/m^2)	H_2O Flow[a]	Gas Collection Efficiency	Pressure Drop[b]	Max. Operating Temp.	Binder	Applications/Features
Sterlitech Filters									
A	1.5 µm	0.30 mm	55	12 s	-	-	550°C	NONE	Precipitate proteins, cell filtration
B	1.0 µm	0.65 mm	140	30 s	-	-	550°C	NONE	Collection of biochemical polymers, prefiltration
A-E	1.0 µm	0.33 mm	60	15 s	-	-	550°C	NONE	Suspended solids, air monitoring
934-AH®	1.5 µm	0.43 mm	64	47 s	-	-	550°C	NONE	Suspended solids standard and related measures (SM 2540D, EPA Methods 160.2)
C	1.1 µm	0.28 mm	50	25 s	-	-	550°C	NONE	RIA procedures, harvesting lymphocytes
D	2.6 µm	0.50 mm	120	5 s	-	-	500°C	NONE	High-volume and repetitive lab filtration
E	1.3 µm	0.35 mm	70	12 s	-	-	550°C	NONE	Suspended particle analysis in H_2O, cell harvesting, prefiltration, air monitoring
F	0.7 µm	0.40 mm	80	80 s	-	-	550°C	NONE	Diluted aq. solutions (strong oxidizing/acidic/alkaline), laser spectroscopy
TSS	1.5 µm	0.25 mm	55	-	-	-	500°C	NONE	Total suspended solids; SM 2540D, EPA Method 160.2
VSS	1.5 µm	0.25 mm	55	-	-	-	550°C	NONE	Volatile suspended solids; SM2450E/C/D, EPA Method 1602
Advantec Filters									
DP-70	0.6 µm	0.52 mm	170	20 s	-	53	120°C	ORGANIC	High wet-strength, high loading capacity
GA-55	0.6 µm	0.21 mm	55	23 s	99.9%	34	500°C	NONE	General purpose paper
GA-100	1.0 µm	0.44 mm	110	11 s	96%	20	500°C	NONE	General purpose paper
GA-200	0.8 µm	0.75 mm	175	15 s	99.99%	36	500°C	NONE	Thick filter
GB-100R	0.6 µm	0.40 mm	95	15 s	99.99%	30	500°C	NONE	Low trace metal content of As, Pb, and Cd
GB-140	0.4 µm	0.56 mm	140	58 s	99.99%	113	500°C	NONE	***vs. GB-100R:*** Thicker, greater wet-strength, slower filtration speed
GC-50	0.5 µm	0.19 mm	48	28 s	99.99%	53	500°C	NONE	Prefilter
GC-90	0.5 µm	0.30 mm	100	20 s	99.99%	42	120°C	ORGANIC	High wet-strength
GD-120	0.9 µm	0.51 mm	123	14 s	97%	17	500°C	NONE	High wet-strength, high loading capacity
GF-75	0.3 µm	0.35 mm	75	84 s	99.999%	170	500°C	NONE	Most retentive grade
GS-25	0.6 µm	0.22 mm	70	15 s	99.9%	32	120°C	ORGANIC	Limited dirt-holding capacity, high wet-strength
TCLP	-	-	-	-	-	-	-	-	Binder-free, meets US EPA requirements for TCLP
Weighing Paper	-	-	-	-	-	-	-	-	Powdered samples, nitrogen-free, folds easily
QR-100	-	1.0 mm	85	-	99.99%	46	1,000°C	NONE	Quartz fiber filter
QR-200	-	0.38 mm	200	-	99.99%	35	1,000°C	INORGANIC	Quartz fiber filter

[a] *The time in seconds (s) to filter 100 mL of distilled H_2O at 20°C under pressure supplied by a 10 cm water column through a 10 cm^2 section of filter*
[b] *Measured as mm H_2O/5 cm/s*
® *934-AH is a trademark of Whatman, Inc.*