

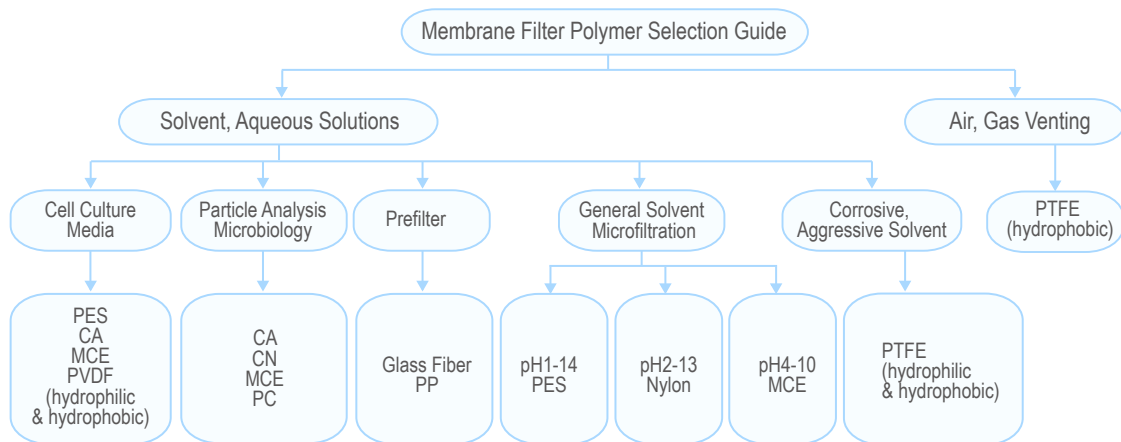
Introduction

Micro-filtration is a size exclusion process where a contaminated fluid is passed through a microporous membrane or fibrous media to separate micro-organisms and / or suspended particles from liquids or gases. The typical pore size used for micro-filtration ranges from about 0.1 to 10 μm .

Membrane Solutions offers a full offering of membrane materials and media for all types of liquids, solvents or gases, including PES, MCE, Nylon, PVDF, PTFE, PP, GF, CA, MCE, CN and PC Available disc diameters range from 13 mm to 293 mm (other custom shapes also available), which are manufactured in a ISO 9001 certified facility. Most membranes can be sterilized and individually packaged if required.

Guide to Select Membrane

- What liquid or gas will be filtered?
- Check with the Chemical Resistance
- Check the maximum pore size required to achieve the results
- Check the membrane specifications for any unusual process conditions (temperature, pressure)



Part Number Matrix

	Membrane Material	Filter Diameter*(mm)	Pore Size (μm)		Pre-Sterilized	Wettability
MF	PTFE	047	022		S	L/B
	NY(0.2~10 μm)	013=13	010=0.1	100=1.0	(blank)=No	(blank)=Hydrophilic
	PES(0.1~3 μm)	025=25	022=0.22	300=3	S=Yes	B=Hydrophobic
	CA(0.2~8 μm)	047=47	045=0.45	500=5		L=Hydrophilic**
	MCE(0.2~8 μm)	050=50	065=0.65	800=8		**PVDF and PTFE only
	PVDF(0.2~5 μm)	090=90	080=0.8	1000=10		
	PTFE(0.1~5 μm)	100=100				
	GF(0.2~10 μm)	142=142				
	PP microfiber(0.2~10 μm)	293=293*				

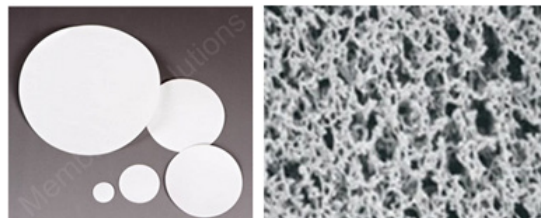
MFPTFE047022SB=Hydrophobic PTFE membrane filter, 47mm,0.22 μm , sterile

* Customized diameter and size available

Nylon Membrane Filter

Introduction

Membrane Solutions Nylon membrane is naturally hydrophilic making it suitable for aqueous solutions without the need of wetting agents. And, it has excellent compatibility with most organic solvents (alcohols/hydrocarbons/ethers/esters/ketones/benzene). Safe to use with DMSO.



Features and Benefits

- Naturally hydrophilic
- Good chemical compatibility
- Low chemical extractable level
- High strength (PET supported)
- pH compatibility: 2-13
- Absolute filtration
- Autoclavable at 121 °C for 30 min (0.1 MPa, 14.5 PSI)

Applications

- HPLC sample preparation
- Aqueous and organic solvents filtration
- Sterile filtration or clarification of media and buffers

PES Membrane Filter

Introduction

Membrane Solutions PES membrane is inherently hydrophilic. It's asymmetric pore structure and high porosity provide superior flow rates and throughputs over other membranes. PES provides very low protein binding. It's suitable for many applications from sample preparation to sterile filtration.



Features and Benefits

- High porosity: high flow rate and high throughput
- Very low extractable level
- Low protein and drug binding (Recovery>98.5%)
- pH compatibility: 1-14
- Absolute filtration

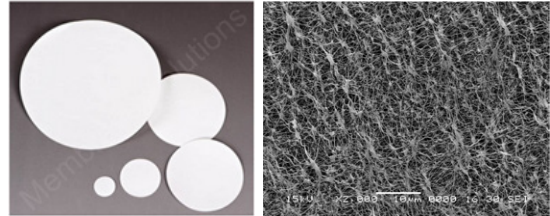
Applications

- HPLC sample preparation
- Aqueous and solvents filtration
- Sterile filtration or clarification of media and buffers

PTFE Membrane Filter

Introduction

Membrane Solutions PTFE membranes are laminated to PP or PE support. They offer absolute filtration along with superior flow rates compared to other membranes. The naturally hydrophobic version is suitable for aggressive, low surface tension, solvents; and gas and venting applications. The hydrophilic version is ideal for high purity aqueous solutions.



Features and Benefits

Hydrophobic PTFE	Hydrophilic PTFE
<ul style="list-style-type: none"> • Superior hydrophobicity • High porosity. • Superior flow rates • Broad chemical compatibility. • High thermal resistance • Non-fiber releasing • Low extractable level • Suitable for sterile filtration 	<ul style="list-style-type: none"> • High porosity • Broad chemical compatibility • High thermal resistance • Non-fiber releasing • Low extractable level • Hydrophilic – no pre-wetting required • Resistant to strong acids and bases • Suitable for sterile filtration

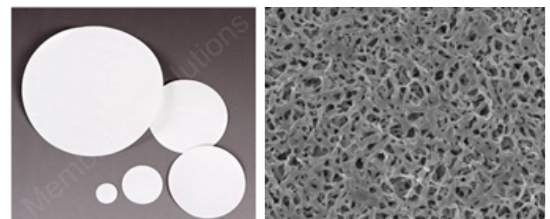
Applications

Hydrophobic PTFE	Hydrophilic PTFE
<ul style="list-style-type: none"> • Semiconductor and microelectronics • Ultrapure chemicals • Vent filters • Air and gas filtration • Dust collection • Bioreactors • Membrane distillation 	<ul style="list-style-type: none"> • High purity electronic grade chemicals • Clarifying acids, bases, and cryogenic fluids • Ultrapure and deionized water • Wet etching and cleaning chemicals

PVDF Membrane Filter

Introduction

Membrane Solutions hydrophobic PVDF membrane can be used to filter solvent solutions, air/gas filtration, sample preparation of HPLC and GC, having wide applications and excellent heat and oxidation resistance. Membrane Solutions PVDF hydrophilic membrane is used with aqueous solution and high purity applications.



Features and Benefits

Hydrophobic PVDF	Hydrophilic PVDF
<ul style="list-style-type: none"> • Broad chemical compatibility • Low extractable level • High thermal resistance • Non-fiber releasing • High tensile strength • Suitable for sterile filtration 	<ul style="list-style-type: none"> • Broad chemical compatibility. • High thermal resistance • Non-fiber releasing • Low extractable level • Hydrophilic-no pre-wetting required. • Resistant to strong acids and bases • Suitable for sterile filtration • High tensile strength • Low protein binding

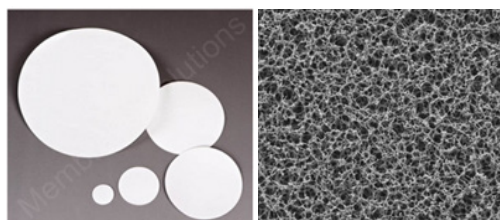
Applications

Hydrophobic PVDF	Hydrophilic PVDF
<ul style="list-style-type: none"> • Solvent filtration • Air/Gas purification and venting • HPLC sample preparation 	<ul style="list-style-type: none"> • High purity aqueous grade chemicals • Clarifying acids, bases, and cryogenic fluids • Ultrapure and deionized water • Wet etching and cleaning chemicals

MCE Membrane Filter

Introduction

Membrane Solutions® mixed cellulose ester (MCE) membrane filters are composed of cellulose acetate and cellulose nitrate. Because MCE membrane is biologically inert, it's widely used in analytical and research applications, one of the most widely used membranes in analytical and research applications. MCE membrane filter is characterized by smoother and more uniform surface than pure nitrocellulose filter. Also, the color contrast provided by the filter surface facilitates particle detection and minimizes eye fatigue. MS also supplies sterile gridded Membrane Filters with or without adsorbent pads.



Features and Benefits

- High porosity
- High protein binding can be blocked by pre-treatment or utilized in application
- High purity: Triton-free
- Sterile options available for critical applications
- Biologically inert with good thermal stability
- High degree of internal surface area for greater adsorption of product

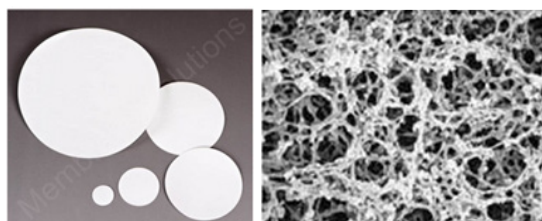
Applications

- HPLC sample preparation
- Aqueous and solvent filtration
- Sterile filtration or clarification of media and buffers
- Bioassays
- Clarification of aqueous solutions, particle removal and analysis, microbiology analysis
- QC of fluid holding tanks, fluid monitoring, air monitoring, particle collection and analysis.

CA Membrane Filter

Introduction

Membrane Solutions® CA Membrane Filters are composed of pure cellulose acetate modified to offer researchers the lowest binding filters available. Due to the extremely low binding characteristics, these filters provide higher throughputs than competitive offerings and reduce filter changes when filtering proteinaceous solutions. CA membranes have pore size from 0.2µm to 3.0µm.



Features and Benefits

- Lowest binding material available
- Hydrophilic
- High throughput
- Strength and dimensional stability
- Uniform pore structure

Applications

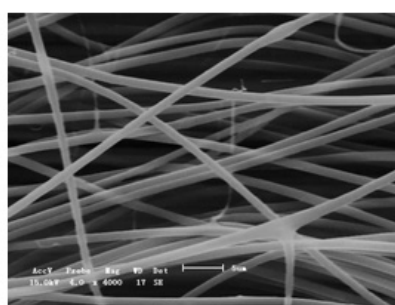
- Protein and enzyme filtration, sterilization
- Biological fluid filtration sterilization
- Tissue culture media sterilization
- Diagnostic cytology
- Receptor binding studies

PP Depth Filter

Introduction

Membrane Solutions polypropylene (PP) microfiber filters are composed of pure polypropylene with 0.22 μm & 0.45 μm pore size ratings. These filters offer broad chemical compatibility allowing its use with aqueous and organic solvent samples.

Polypropylene (PP) microfiber filters are the preferred filter media for pre-filtering HPLC samples where the detection levels are below 230 nm. The filters also exhibit negligible protein binding, which is essential for maximum sample recovery of critical, small volume protein samples.



Features and Benefits

- Hydrophobic
- Highly porous membrane
- Wide chemical compatibility
- Low extractable levels
- Custom cuts available

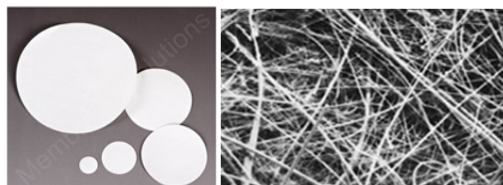
Applications

- Aqueous and organic solvent filtration
- Gas filtration

Glass Fiber Filter

Introduction

Membrane Solutions Glass Fiber Filters are manufactured from 100% borosilicate glass that is binder free. These depth filters combine fast flow rate with high dirt loading capacity and retention of fine particulates. The small fibers diameters of glass media provide superior efficiency and dirt holding as compared to cellulose and other synthetic media.



Features and Benefits

- 100% pure borosilicate glass
- Chemical and thermal resistance (up to 500 C)
- High dirt loading capacity
- Superior flow rates
- Fine particle retention 0.7 um-2.7 um
- Custom cuts available

Applications

- Qualitative analysis
- Laboratory analysis
- Clarification and filtration of reagents
- Pre-filter before Membrane Filter

Parameters

Grade	Pore Size (µm)	Weight (g/m ²)	Thickness (µm)	Nominal Rating (µm)	Max. Temperature (C)	Binder
GF A	1.6	56	290	1.6	500	None
GF B	1.0	140	1000	1	500	None
GF C	1.2	54	280	1.2	500	None
GF D	2.7	120	530	2.7	500	None
GF F	0.7	75	400	0.7	500	None
GF 10	10	75	400	10	250	Yes

Part Number Matrix

MSGF	GF Type	Diameter (mm)	Particle Retention in Liquid (µm)	Pre-Sterilized
	A	021	160	N
	10=GF10*	021=21	070=0.7	N=No
	A=GFA	024=24	100=1.0	S=Yes
	B=GFB	025=25	120=1.2	
	C=GFC	037=37	160=1.6	
	D=GFD	047=47	270=2.7	
	F=GFF	050=50		
	*with binder	070=70		
		090=90		
		110=110		
		150=150		
		293=293		

MSGFA021160N=GF/A glass fiber disc, 21mm, 1.6micro, non-sterile