





**Membrane Solutions**

Membrane Solutions  
**LAB CATALOG**

# MEMBRANE SOLUTIONS LLC

Membrane Solutions is a manufacturer and modifier of microporous membranes (e.g., PES, Nylon, PTFE, PVDF, hollow fiber, RO, UF, etc.), and a manufacturer of microfiltration devices (e.g., syringe filters, membrane discs, vacuum filters, cartridges, etc). Membrane Solutions develops and produces products for Laboratory, Process and Municipal Applications. Membrane Solutions' products are used in R&D, scale-up, academia, and across many industries (Microelectronics, Food & Beverage, Chemical, Biopharm, Water Treatment, Environmental, Power Generation, Ultrapure Water, Medical, etc.). We offer innovative off-the-shelf products, as well as custom, Private Label or OEM products.

## Membrane Solutions Filtration Product Range

MEDIA VOLUME					
1 mL	10 mL	50 mL	100-200 mL	5L	2-20 L
					
4 mm filter	13/17 mm filter	25 mm filter	30/33 mm filter	50 mm filter	cartridge filter

## Ordering Information

### Order by Phone, Fax or E-mail

Please write to [info@membrane-solutions.com](mailto:info@membrane-solutions.com) or contact your local representative or distributor

### Order Online

Place your order online at our website: <https://www.membrane-solutions.com>

### Technical Support

For technical assistance, please write to [info@membrane-solutions.com](mailto:info@membrane-solutions.com) or contact your local representative or distributor

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# PART A

## SAMPLE PREPARATION

1 Syringe Filters

2 MicroDisc™ Membrane Filter Discs

3 Sample Vials

4 Chrompure™ Solid-phase Extraction (SPE) Columns

### Introduction

To ensure the highest and most consistent quality, Membrane Solutions (MS) syringe filters are manufactured under ISO9001, and in a certified clean room environment using the latest manufacturing technologies. MS syringe filters offer reliable and competitive performance. They are available with Nylon, PES, PTFE, PVDF, MCE, CA, PP and GF membrane and filter media, in numerous pore sizes, and as hydrophilic or hydropho-

bic. Our syringe filters are offered in either transparent or, for easy membrane type identification, color coded housings. Typical applications are clarification, sterile filtration, sample preparation, sterile venting and medical applications. All wetted surfaces of are made from medical grade polypropylene. And, all are HPLC certified.

### Why Membrane Solutions Syringe Filter?

Membrane Solutions offers numerous types of syringe filters to cover most application requirements. Filtration is a routine procedure to prevent clogging and increase the service life of chromatography columns.

Membrane Solutions® Syringe Filter have the following features:

- Superior flow rate
- High total throughput
- Broad range of membrane types
- Various diameters
- With or without a built-in prefilter
- Low extractables
- Consistent particle retention
- Also available in OEM, custom or Private Label configurations

### Choosing the Right Diameter

Typical Process Volume	Suitable Syringe Filter Diameter (mm)
< 1 mL	4
1 – 10 mL	13, 17
10 – 100 mL	25, 30
>100mL	30,33
>1L	50

### Filtration at a Guidance

Filtration Media	Main Features	Applications
Nylon	<ul style="list-style-type: none"> <li>• Hydrophilic</li> <li>• Robust</li> <li>• pH range: 3-12</li> <li>• Broad Chemical compatibility</li> </ul>	<ul style="list-style-type: none"> <li>• Chemicals filtration</li> <li>• Beverage filtration</li> <li>• HPLC sample preparation</li> </ul>
PES	<ul style="list-style-type: none"> <li>• Hydrophilic</li> <li>• High flow rate</li> <li>• Low extractables</li> <li>• Low protein binding</li> <li>• pH range: 1-14</li> </ul>	<ul style="list-style-type: none"> <li>• Protein filtration</li> <li>• Tissue culture media filtration</li> <li>• Buffer prep</li> <li>• HPLC sample preparation</li> </ul>
PTFE	<ul style="list-style-type: none"> <li>• Broad chemical compatibility</li> <li>• Hydrophobic and hydrophilic available</li> <li>• pH range: 1-14</li> <li>• Available supported or unsupported</li> </ul>	<ul style="list-style-type: none"> <li>• Organic solvents</li> <li>• Strong acid and alkaline resistance</li> <li>• Gas filtration</li> <li>• Air sampling</li> </ul>
PVDF	<ul style="list-style-type: none"> <li>• High thermal resistance</li> <li>• Broad chemical compatibility</li> <li>• Hydrophobic and hydrophilic available</li> <li>• Low protein binding</li> </ul>	<ul style="list-style-type: none"> <li>• Gas filtration</li> <li>• Food industry</li> <li>• Pharmaceutical filtration</li> </ul>
MCE	<ul style="list-style-type: none"> <li>• Hydrophilic</li> <li>• High flow rate</li> <li>• Low protein binding</li> <li>• pH range: 4-8</li> </ul>	<ul style="list-style-type: none"> <li>• Cell culture media</li> <li>• Microorganism enumeration and identification</li> <li>• Acid digestion</li> <li>• Heavy metals testing</li> </ul>
CA	<ul style="list-style-type: none"> <li>• Hydrophilic</li> <li>• Low protein binding</li> <li>• pH range: 4-8</li> </ul>	<ul style="list-style-type: none"> <li>• Protein, enzyme and biological solutions</li> <li>• Tissue culture media</li> </ul>
Glass Fiber	<ul style="list-style-type: none"> <li>• Broad chemical compatibility</li> <li>• High dirt holding capacity</li> <li>• pH range: 4-14</li> <li>• High thermal resistance (up to 500 °C)</li> <li>• With or without binders</li> </ul>	<ul style="list-style-type: none"> <li>• Clarification and prefiltration</li> <li>• Tissue Culture media</li> <li>• DNA/RNA adsorption and purification</li> <li>• Qualification and quantification</li> </ul>
PP microfiber	<ul style="list-style-type: none"> <li>• Broad chemical compatibility</li> <li>• pH range: 1-14</li> </ul>	<ul style="list-style-type: none"> <li>• Pre-filtration</li> <li>• Clarification</li> </ul>

### Chrompure™ Syringe Filters

#### Features and Benefits

- **Color coded and labeled:** Allows easy identification of membrane and filter media type. Each unit is clearly marked with an identifying code to denote pore size and membrane material
- **EZ-Twist™ Ring:** Ridged outer ring allows for better grip  
Bonded outer ring on housing: Provides durability under higher working pressures (>87 psi or 6 bar)
- **Specifically designed to maximize sample recovery:** Minimal sample hold-up volume
- **Pre-sterilization available and individually packaged:** Ensures sterility during sample preparation
- **Broad compatibility:** Making them suitable for many types of applications and solvents

#### Applications

- HPLC sample preparation
- Routine QC analysis
- Removal of protein precipitates
- Dissolution testing
- Food analysis
- Biofuel analysis
- Environmental samples
- DMSO compatible: Nylon, PTFE, PP and GF filtration media



#### Specification

	13mm	25mm
Filtration Area(cm <sup>2</sup> ):	0.92	2.98
Housing Material:	PP	
Holdup-Volume(µl):	<10	<100
Volume Throughput(ml):	<10	<50
Connections (Inlet/Outlet):	Female Luer Lock inlet and Male Luer slip outlet	
Max Operating Pressure(psi):	87	
Max Operating Temperature(°C):	100	
Layers:	1	

#### Part Number Matrix

	Filter Media	Diameter (mm)	Pore Size (µm)	Pre-Sterilized	Wettability	Optional Pre-filter layer	Series
SF	PTFE*	013	022	N	B	G	CU
	NY(0.2~10µm)	013=13	010=0.1	N=No	(blank)=Standard	(blank)=None	CU=
	PES(0.1~3µm)	025=25	022=0.2	S=Yes	B=Hydrophobic*	P=PP microfiber	Chrompure
	CA(0.2~8µm)		045=0.45		L=Hydrophilic*	G=Glass fiber	
	MCE(0.2~8µm)		080=0.8		*PVDF and		
	PVDF(0.2~5µm)		100=1.0		PTFE only		
	PTFE(0.1~5µm)		300=3				
	RC (0.2/0.45µm)		500=5				
	GF(0.2~10µm)						
	PP microfiber(0.2~10µm)						

\* SFPTFE013022NBGCU=Chrompure™ Hydrophobic PTFE syringe filter, 13mm, 0.22µm, glass fiber prefilter, non-sterile.

### Simplepure™ Syringe Filters

#### Features and Benefits

- **Transparent PP housing:** Allows users to observe contaminants in filtrate and filtration process
- **Ultrasonically welded:** Maximizes effective filtration area (EFA)
- **Built-in prefilter:** PP prefilter  
High working pressure (>87 psi or 6 bar)
- **Specifically designed to maximize sample recovery:** Minimal sample hold-up volume
- **Available pre-sterilized and individually packaged:** Ensures sterility during sample preparation
- **Broad compatibility:** Making them suitable for many types of applications and solvents
- **Pre-filter:** SimplePure comes standard with polypropylene microfiber pre-filter layer. Glass fiber pre-filter is available as an option.

#### Applications

- HPLC sample preparation
- Routine QC analysis
- Removal of protein precipitates
- Dissolution testing
- Food analysis
- Biofuel analysis
- Environmental samples



#### Specification

	4mm	13mm	25mm
Filtration Area(cm <sup>2</sup> ):	0.125	1.09	4.08
Housing Material:	PP		
Holdup-Volume(μl):	<1	<10	<100
Volume Throughput(ml):	5	20	100
Connections (Inlet/Outlet):	Female Luer Lock inlet and Male Luer slip outlet		
Max Operating Pressure(psi):	87		
Max Operating Temperature(°C):	100		
Layers:	2		

#### Part Number Matrix

	Filter Media	Diameter (mm)	Pore Size (μm)	Pre-Sterilized	Wettability	Optional Pre-filter layer
SF	PVDF	025	045	S	L	G
	NY(0.2~10μm)	004=4	010=0.1	N=No	(blank)=Standard	(blank)=
	PES(0.1~3μm)	013=13	022=0.2	S=Yes	B=Hydrophobic*	PP microfiber
	CA(0.2~8μm)	025=25	045=0.45		L=Hydrophilic*	G=Glass fiber
	MCE(0.2~8μm)		080=0.8		*PVDF and	
	PVDF(0.2~5μm)		100=1.0		PTFE only	
	PTFE(0.1~5μm)		300=3			
	RC (0.2/0.45μm)		500=5			
	GF(0.2~10μm)					
	PP microfiber(0.2~10μm)					

\* SFPVDF025045NLG=Simplepure™ hydrophilic PVDF syringe filter,25mm,0.45um, glass fiber prefilter, non-sterile.



### Ipure™ Syringe Filters

#### Features and Benefits

- **Color coded and labeled:** Allows easy identification of membrane and filter media type. Each unit is clearly marked with an identifying code to denote pore size and membrane material
- **Bonded outer ring on housing:** Provides durability under higher working pressures (>87 psi or 6 bar)
- **Built-in prefilter:** PP prefilter
- **Specifically designed to maximize sample recovery:** Minimal sample hold-up volume
- **Pre-sterilization available and individually packaged:** Ensures sterility during sample preparation
- **Broad compatibility:** Making them suitable for many types of applications and solvents

#### Applications

- HPLC sample preparation
- Routine QC analysis
- Removal of protein precipitates
- Dissolution testing
- Food analysis
- Biofuel analysis
- Environmental samples
- DMSO compatible: Nylon, PTFE, PP and GF filtration media



#### Specification

	13mm	25mm	30mm
Filtration Area(cm <sup>2</sup> ):	0.92	2.98	4.9
Housing Material:	PP		
Holdup-Volume(μl):	<10	<100	120
Volume Throughput(ml):	10	50	100
Connections (Inlet/Outlet):	Female Luer Lock inlet and Male Luer slip outlet		
Max Operating Pressure(psi):	87		
Max Operating Temperature( °C ):	100		
Layers:	1		

#### Part Number Matrix

	Filter Media	Diameter (mm)	Pore Size (μm)	Pre-Sterilized	Wettability	Optional Pre-filter layer	Series
SF	NY	013	022	N	B	G	I
	NY(0.2~10μm)	013=13	010=0.1	N=No	(blank)=Standard	(blank)=	I=Ipure
	PES(0.1~3μm)	025=25	022=0.2	S=Yes	B=Hydrophobic*	PP microfiber	
	CA(0.2~8μm)	030=30	045=0.45		L=Hydrophilic*	G=Glass fiber	
	MCE(0.2~8μm)		080=0.8		*PVDF and		
	PVDF(0.2~5μm)		100=1.0		PTFE only		
	PTFE(0.1~5μm)		300=3				
	RC (0.2/0.45μm)		500=5				
	GF(0.2~10μm)						
	PP microfiber (0.2~10μm)						

\* SFNY013022NGI=Ipure™ nylon syringe filter, 13mm, 0.45μm, glass fiber, non-sterile.

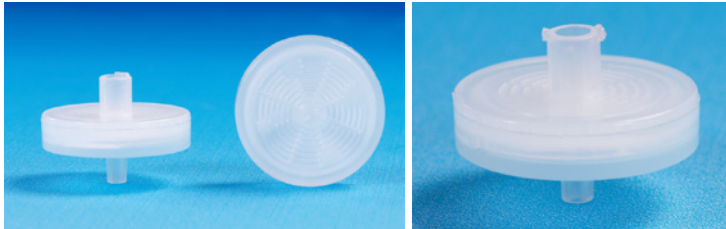
### G-MP™ Syringe Filters

#### Introduction

Membrane Solutions (MS) G-MP™ syringe filters are designed specifically to purify highly contaminated solutions. Built-in 4 layers ensures higher throughput without requiring higher syringe pressures.

#### Features and Benefits

- **Multiple 4 pre-filter layers:** Graded 10µm~0.7µm glass fiber prefilter above the membrane filter
- **Maximized throughput:** reduces syringe force required and hand fatigue. Also offers cost savings because less syringe filters are required.



#### Applications

- Difficult-to-filter samples
- Routine QC analysis
- Removal of protein precipitates
- HPLC sample preparation
- Dissolution testing
- Food analysis
- Environmental samples
- Sterile filtration and clarification of biological fluids

#### Specification

25mm	
Filtration Area(cm²):	4.08
Housing Material:	PP
Holdup-Volume(µl):	<400
Volume Throughput(ml):	200
Connections (Inlet/Outlet):	Female Luer Lock inlet and Male Luer slip outlet
Max Operating Pressure(psi):	87
Max Operating Temperature(°C):	100
Layers:	4

#### Part Number Matrix

SF	Filter Media	Diameter (mm)	Pore Size (µm)	Pre-Sterilized	Wettability	Series
	NY	025	045	N		M
	NY(0.2~10µm)	025=25	010=0.1	N=No	(blank)=Standard	G-MP
	PES(0.1~3µm)		022=0.2	S=Yes	B=Hydrophobic*	
	CA(0.2~8µm)		045=0.45		L=Hydrophilic*	
	MCE(0.2~8µm)		080=0.8		*PVDF and	
	PVDF(0.2~5µm)		100=1.0		PTFE only	
	PTFE(0.1~5µm)		300=3			
	RC (0.2/0.45µm)		500=5			

\* SFNY025045NM=GMP™ nylon syringe filter,25mm,0.45µm, non-sterile.

### ICPure™ Syringe Filters

#### Introduction

Membrane Solutions (MS) ICPure™ PES syringe filters are certified for use in Ion Chromatograph. The ICPure syringe filter series are factory flushed with ultra-pure water and dried to minimize extractables.

#### Applications

- Low drug and protein binding
- Specifically designed for ion chromatograph (IC) sample preparation
- Ion analyses



#### Features

- Low ion chromatograph (IC) extractables
- High flow rates
- Low protein and drug binding characteristics
- Compatible with an extensive range of solvents
- Individually packaged to minimize the risk of contamination
- Convenient sizes for small sample volumes

#### Ion Chromatography Certification

IC levels	<p>Cl<sup>-</sup> &lt; 50 ppb          NO<sub>3</sub><sup>-</sup> &lt; 50 ppb          SO<sub>4</sub><sup>2-</sup> &lt; 50 ppb          PO<sub>4</sub><sup>3-</sup> &lt; 50 ppb</p> <p>This is based on 2 mL of ultra-pure water filtrate being concentrated on-line and injected into an ion chromatograph with conductivity detection.</p>
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#### Part Number Matrix

SF	Membrane Material	Filter Diameter (mm)	Pore Size (µm)	Pre-Sterilized	Wettability	Series
	PES	025	022	N		IC
	PES PTFE	013=13 025=25	022=0.22µm 045=0.45µm	N=No S=Yes	(blank)= Hydrophilic B=Hydrophobic L=Hydrophilic	IC= ICpure

\* SFPES025022NIC= ICPure™ PES syringe filter, 25mm, 0.22µm non-sterile

### Universal MSP™ Syringe Filters

#### Introduction

Membrane Solutions (MS) MSP™ syringe filters is made with a specifically modified hydrophilic PTFE membrane that offers significant performance advantages over hydrophilic polypropylene filters when comparing flow rate, particle retention, extractables, protein/drug binding and chemical compatibility.

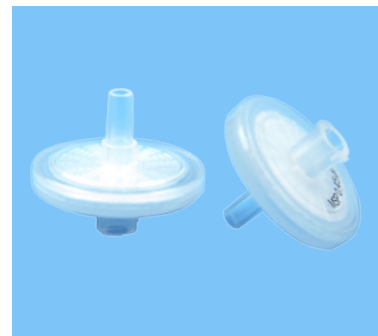
All the syringe filters are certified by HPLC Extractable Test.

#### Features

- Broader chemical compatibility than regenerate cellulose or polypropylene membranes
- Safe to use with DMSO
- Lower API binding and extractables
- Superior flow rate
- Higher throughput compared to hydrophilic polypropylene
- Higher sample recovery prevents loss of precious samples and ensures accurate results

#### Applications

- Extremely Low drug and protein binding
- Routine QC analysis
- HPLC sample preparation
- Dissolution testing
- Food analysis
- Environmental samples
- Sterile filtration and clarification of biological fluids



#### Part Number Matrix

	Membrane Material	Filter Diameter (mm)	Pore Size (µm)	Pre-Sterilized	Wettability	Optional Pre-filter layer
SF	MSP	013	022	N	L	P
	MSP (Hydrophilic PTFE)	004=4 013=13 025=25	022=0.2 045=0.45 080=0.8 100=1.0 300=3 500=5	N=No S=Yes	L=Hydrophilic	(blank)=None P=PP microfiber G=Glass fiber

\* SFMSP013022NLP= MSP™ hydrophilic PTFE syringe filter, 13mm, 0.22µm non-sterile, PP prefilter

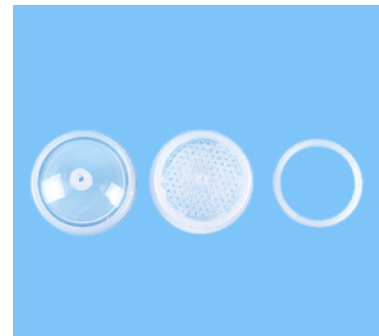
## RSFH™-Reusable Syringe Filter Holder

### Introduction

Membrane Solutions (MS) MS® RSFH™ Reusable Syringe Filter Holder are designed to be reused with interchangeable filter discs (sold separately). Ideal for filtering small volumes using a syringe filter or peristaltic pump. Can be used with multiple filter disc layers, as pre-filters, to filter high particle laden solutions. Made with virgin polypropylene, they offer broad chemical compatibility and low extractables. Well suited for custom filtration needs and cost-savings. Its construction and sealing ring avoid wrinkling of filter media when tightening and ensures a leak proof design.

### Features

- Leak proof
- Autoclavable
- Easy to use and reusable
- Syringe compatible
- Low hold-up volume
- Broad chemical compatibility



### Part Number Matrix

SF	Housing Material	Filter Diameter (mm)
	RPP	13
	Polypropylene housing	13=13 25=25 50=50

\* Notice: 10 pcs/pk

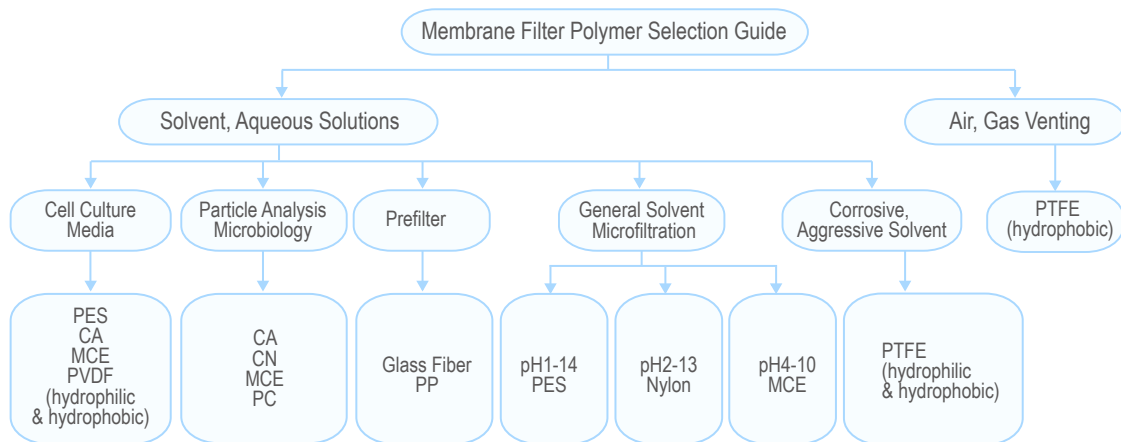
### Introduction

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  $\mu\text{m}$ .

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

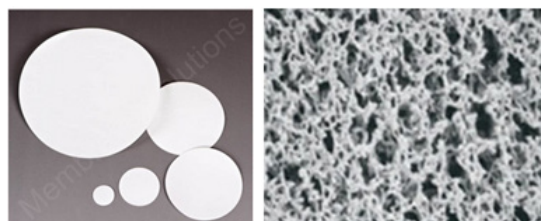
MFPTFE047022SB=Hydrophobic PTFE membrane filter, 47mm,0.22 $\mu\text{m}$ , sterile

\* 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

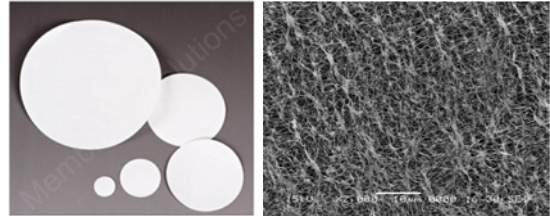
### Applications

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

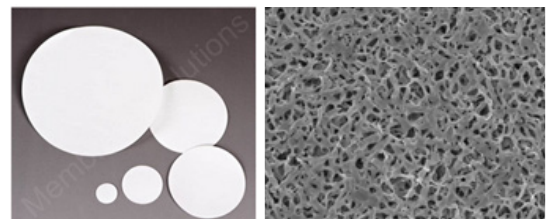
### Applications

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

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

### Applications

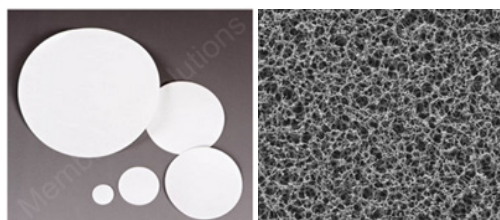
Hydrophobic PVDF	Hydrophilic PVDF
<ul style="list-style-type: none"> <li>• Solvent filtration</li> <li>• Air/Gas purification and venting</li> <li>• HPLC sample preparation</li> </ul>	<ul style="list-style-type: none"> <li>• High purity aqueous grade chemicals</li> <li>• Clarifying acids, bases, and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



## 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

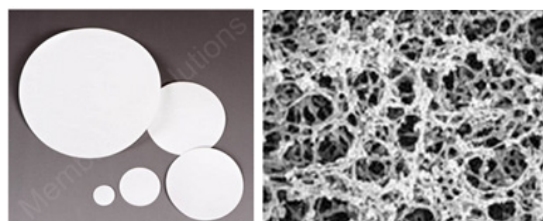
### Applications

- 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

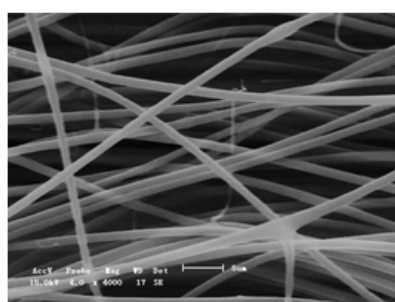
- Protein and enzyme filtration, sterilization
- Biological fluid filtration sterilization
- Tissue culture media sterilization
- Diagnostic cytology
- Receptor binding studies

## PP Depth Filter

### Introduction

Membrane Solutions polypropylene (PP) microfiber filters are composed of pure polypropylene with 0.22  $\mu\text{m}$  & 0.45  $\mu\text{m}$  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

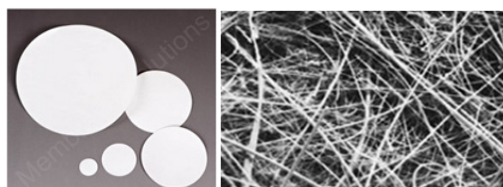
### Applications

- 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 <sup>2</sup> )	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

## SAMPLE VIALS

### Introduction

Membrane Solutions® HPLC GC Sample Vials are made to Type 1 purity standards using either 33-Expansion Borosilicate Glass (clear) or 51-Expansion Glass (clear and amber). To ensure consistency and reliability, these vials undergo a state-of-the-art quality control regimen throughout the entire manufacturing process by utilizing a computerized camera system to precisely measure all critical dimensions.

Membrane Solutions offers a wide variety of caps, septa and sample vials to meet most laboratory needs and purity requirements.



### Features and Benefits

- Compatible with a wide range of HPLC, LC/MS and GC Instruments
- Pre-packed combo including 100 vials and caps for ease and convenience in ordering
- Vials and caps and septa also available separately

### Vial Closures Guidance

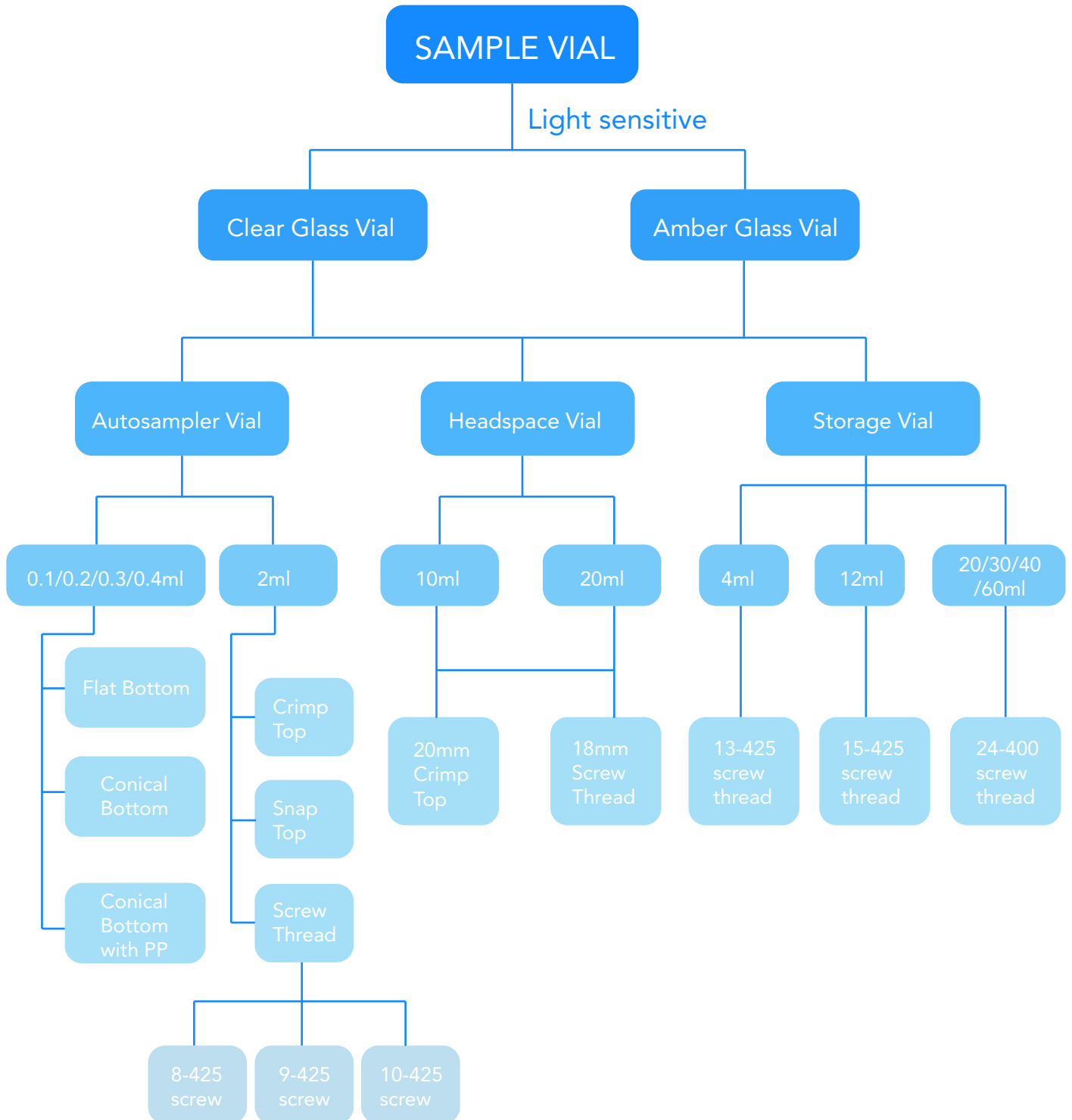
Cap Type	Seal	Comments	Temperature range
Crimp (Aluminum Cap)	Excellent seal	Require a tool	-60°C to 300°C
Snap (PP cap)	Moderate seal	Fast, no tools, some cap racking	-20°C to 100°C
Screw (PP cap)	Excellent seal	Universal	-20°C to 100°C

### Septa Selection Guidance

Septa Type	Use for multiple injections	Temperature range	Recommended for storage	Best for
PTFE	No	260°C	No	High temperature headspace application
PTFE/Silicon	Yes	-40°C to 200°C	Yes	Most HPLC/GC application, not suitable for chlorosilanes
PTFE/Silicon/PTFE	Yes	-40°C to 200°C	Yes	Wide chemical compatibility
PTFE/Rubber	No	-40°C to 90°C	No	Moderate resealability. Not recommended for holding samples for further analysis

Instrument Chart

Brand	Instrument/Model #	8-425 Screw-Top	9-425 Screw-Top	10-425 Screw-Top	11mm Crimp-Top	13-425 Screw-Top	Headspace
Agilent	Headspace (HS: 6, 10, 20 mL, Flat)						●
Agilent	1042, 1050, 1080,1082, 1084, 1090, 1100, 5890, 6850,6890, 7670A, 671A, 7672, 7673A/B, 7683, 7890, 8042		●		●		
Beckman	501, 502, 507	●		●			
Bruker	LC51					●	
Bruker /Varian	8100/8200	●	●	●	●		
	Genesis (HS: 10, 20 mL Rounded)						●
	Marathon		●		●		
	8035, 8000 Series, 8055, 8085, 3800 GC	●					
	9100/9090/9095	●			●		
Bruker/ Varian /Rainin	Dynamax AI-IA, AI-200, Dynamax AI-3				●		
	Dynamax AI-3AI-IA, AI-2W	●					
Shimadzu	AOC14/1400	●	●			●	
	AOC20i			●	●		
	AOC-14/1400, AOC-17	●					
	AOC-20		●		●	●	
	AOC 88/9	●	●				
	AOC-5000	●	●				
	HSS-2B/4B						●
	LC 2010	●	●				
PerkinElmer	Autosystem GC/XL/AS-2000	●	●		●	●	
	AI-1		●		●		
	Clarus 500/600		●		●		
	HS16/40						●
	Integral 4000	●	●		●		
	ISS-100/200	●	●		●		
	LC 600 42 vial tray		●				
	LC Plus	●	●			●	
	Autosystem GC (HS: 10, 20 mL, Rounded)	●			●		●
	F40, F45, HS 6, HS 40 (HS: 10, 20 mL, Rounded)				●		●
Integral 4000 (HS: 10, 20 mL, Rounded)				●		●	
TurboMatrix 40/110						●	
Waters	717 Plus				●		
	Acquity	●	●		●		
	Alliance 2690	●	●	●	●		
	CapLC	●	●				
	48-pos. M700					●	
	WISP				●		



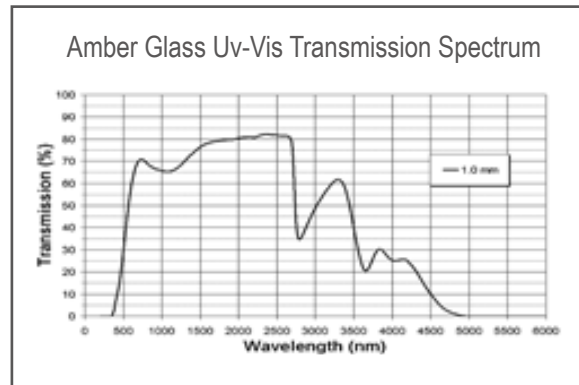
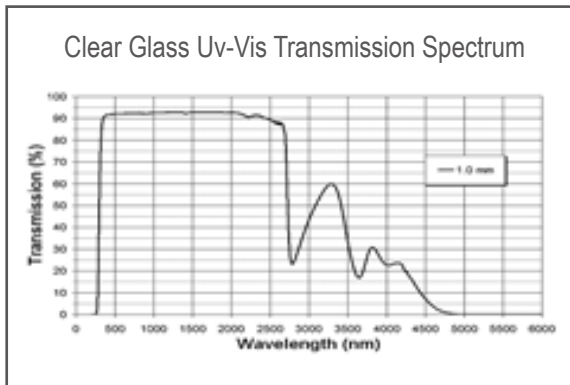
### Typical Glass Composition

Different glass types contain different proportions of oxides to give characteristics such as color and different expansion coefficients.

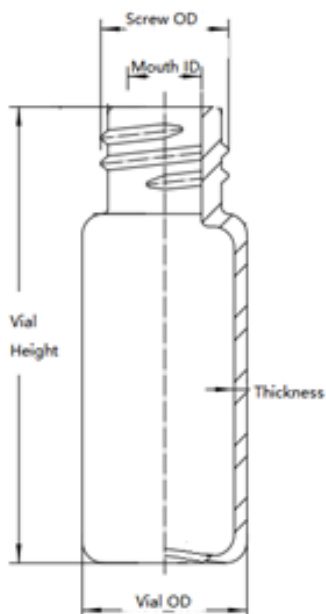
Chemical		SiO <sub>2</sub>	B <sub>2</sub> O <sub>3</sub>	Al <sub>2</sub> O <sub>3</sub>	Fe <sub>2</sub> O <sub>3</sub>	TiO <sub>2</sub>	Na <sub>2</sub> O	K <sub>2</sub> O	BaO	CaO
Composition (main components in approx. weight %)	Amber Tube	70	7	6	1	5	7	1	2	<1
	Clear Tube	75	10.5	5	-	-	7	-	-	1.5

### Light Transmission

The choice of clear or amber glass may also be made in order to deal with the exposure of sample to incident UV-Vis light.



### Optical Test



Dimension	9-425 Screw Vial Standards
Volume	2ml
Vial OD	11.6±0.2mm
Mouth ID	6.0±0.20mm
Vial Height	32.0±0.50mm
Screw OD	9.4±0.25mm

## 2ml Auto-sample Vial, Cap & Septa

### Introduction

Membrane Solutions 2mL Auto-sampler Vials, Cap and Septa are compatible with most common HPLC/GC instruments, e.g. Thermo, Agilent, Shimadzu, Varian, Gilson, Jasco, Waters, CTC, Dani, etc.

Membrane Solutions cap septa are specially formulated and constructed to provide optimum system performance with minimal coring and superior chemical inertness. The softness or hardness is matched to the instrument and designed to work well with syringes and samples.



Design the Neck	Volume	Type of Glass	Dimension
8-425	2mL	Type I , 33 expansion glass(Clear) Type I , 51 expansion glass(Amber)	32 * 11.6 mm
9-425			
Crimp top			
Snap top			



Type of Caps	Material	Type of Septa
8-425	Polyethylene	1.Pre-slit Blue PTFE/White Silicone Septa 2.Red PTFE/White Silicone Septa 3.White PTFE/Red Silicone Septa
9-425		
Crimp top	Aluminum	
Snap top	Polyethylene	



## Auto-Sample Vial Ordering Information

Part No.	Description	Qty / Pk
<b>Combo Packing</b>		
SV032C012CRS	2ml Clear vial 8-425 screw top graduated with write-on spot + White PTFE/Red silicone septa + Black screw cap with hole	100pcs
SV032A012CRS	2ml Amber vial 8-425 screw top graduated with write-on spot + White PTFE/Red silicone septa + Black screw cap with hole	100pcs
SV022C002CRS	2ml Clear vial 9-425 screw top graduated with write-on spot + White PTFE/Red silicone septa + Blue screw cap with hole	100pcs
SV022A002CRS	2ml Amber vial 9-425 screw top graduated with write-on spot + White PTFE/Red silicone septa + Blue screw cap with hole	100pcs
<b>2mL Screw Top Vial</b>		
LBSV012C	2ml Clear vial, 8-425 screw top	100pcs
LBSV002C	2ml Clear vial, 9-425 screw top	100pcs
LBSV082C	2ml Clear vial, 10-425 screw top	100pcs
LBSV012A	2ml Amber vial, 8-425 screw top	100pcs
LBSV002A	2ml Amber vial, 9-425 screw top	100pcs
LBSV082A	2ml Amber vial, 10-425 screw top	100pcs
LBSV032C	2ml Clear vial, 8-425 screw top, graduated with write-on spot	100pcs
LBSV022C	2ml Clear vial, 9-425 screw top, graduated with write-on spot	100pcs
LBSV092C	2ml Clear vial, 10-425 screw top, graduated with write-on spot	100pcs
LBSV032A	2ml Amber vial, 8-425 screw top, graduated with write-on spot	100pcs
LBSV022A	2ml Amber vial, 9-425 screw top, graduated with write-on spot	100pcs
LBSV092A	2ml Amber vial, 10-425 screw top, graduated with write-on spot	100pcs
<b>2mL Crimp Top Vial</b>		
LBSV042C	2ml Clear vial, 11mm crimp top	100pcs
LBSV042A	2ml Amber vial, 11mm crimp top	100pcs
LBSV062C	2ml Clear vial, 11mm crimp top, graduated with write-on spot	100pcs
LBSV062A	2ml Amber vial, 11mm crimp top, graduated with write-on spot	100pcs
<b>2mL Snap Top Vial</b>		
LBSV052C	2ml Clear vial, snap top	100pcs
LBSV052A	2ml Amber vial, snap top	100pcs
LBSV072C	2ml Clear vial, snap top, graduated with write-on spot	100pcs
LBSV072A	2ml Amber vial, snap top, graduated with write-on spot	100pcs

## Caps & Septa Ordering Information

Part No.	Description	Qty / Pk
LBSV221CSS	Pre-slit Blue PTFE/White silicone septa+ Black screw cap with hole, for 2ml 8-425 screw top vial	100pcs
LBSV232CSS	Pre-slit Red PTFE/White silicone septa+ Black screw cap with hole, for 2ml 8-425 screw top vial	100pcs
LBSV222CSB	Pre-slit Blue screw cap with hole with bonded Blue PTFE/White silicone septa, for 2ml 9-425 screw vial	100pcs
LBSV222CSS	Pre-slit Blue PTFE/White silicone septa+ Blue screw cap with hole, for 2ml 9-425 screw vial	100pcs
LBSV224CSB	Cross-slit Blue screw cap with hole with bonded Blue PTFE/White silicone septa, for 2ml 9-425 screw vial	100pcs
LBSV224CSS	Cross-slit Blue PTFE/White silicone septa+ Blue screw cap with hole, for 2ml 9-425 screw vial	100pcs
LBSV083CSS	Pre-slit Blue PTFE/White silicone septa + Black screw cap with hole, for 2ml 10-425 screw top vial	100pcs
LBSV084CSS	Pre-slit Red PTFE/White silicone septa + Black screw cap with hole, for 2ml 10-425 screw top vial	100pcs
LBSV112CRS	White PTFE/Red silicone septa + Aluminum cap with hole, for 2ml crimp top vial	100pcs
LBSV122CRS	Red PTFE/White silicone septa + Aluminum cap with hole, for 2ml crimp top vial	100pcs
LBSV212CRS	Pre-slit White PTFE/red silicone septa+ Aluminum cap, for 2ml crimp top vial	100pcs
LBSV222CRS	Pre-slit Red PTFE/white silicone septa + Aluminum cap, for 2ml crimp top vial	100pcs
LBSV202CSS	White PTFE/Red silicone septa + snap cap with hole, for 2ml snap top vial	100pcs
LBSV302CSS	Red PTFE/White silicone septa + snap cap with hole, for 2ml snap top vial	100pcs
LBSV212CSS	Pre-slit White PTFE/Red silicone septa + snap cap with hole, for 2ml snap top vial	100pcs
LBSV242CSS	Pre-slit Red PTFE/white silicone septa + snap cap with hole, for 2ml snap top vial	100pcs

## Headspace Vial, Cap & Septa

### Introduction

Membrane Solutions Headspace vials are available in clear or amber glass with a round or flat base, a crimp seal with a beveled or square edge finish, or with a screw-thread finish.

The vial in flat Bottoms is generally common with Agilent, DANI, Fisons, Perkin Elmer and Shimadzu GC instrument, and Rounded Bottoms for Perkin Elmer, Tekmar, CTC PAL, and Varian.



### Headspace Vial Ordering Information

Part No.	Description	Qty / Pk
LBSV210C	10ml Clear vial, 22.5×46mm, crimp top, flat bottom	100pcs
LBSV220C	20ml Clear vial, 22.5×75mm, crimp top, flat bottom	100pcs
LBSV320C	20ml Clear vial, 22.5×75mm, crimp top, round bottom	100pcs
LBSV010C	10ml Clear vial, 18mm screw top, round bottom	100pcs
LBSV120C	20ml Clear vial, 18mm screw top, round bottom	100pcs
<b>Caps &amp; Septa for Headspace Vials</b>		
LBSV220CSS	White PTFE/White Silicone + Aluminum cap with hole, for 10ml/20ml crimp top vial	100pcs
LBSV322CRS	Red PTFE/White Silicone + Aluminum cap with hole, for 10ml/20ml crimp top vial	100pcs
LBSV120CSS	Blue PTFE/ White silicone septa + Silver screw cap with hole, for 18mm screw top vial	100pcs

## Storage Vial

### Introduction

Membrane Solutions Sample Storage Screw are available in clear or amber borosilicate glass in a screw-thread finish, the volume ranges 12ml, 20ml, 40ml and 60ml.



### Part Number Matrix

Part No.	Description	Qty / Pk
<b>4ml, 15-425 Sample Vials</b>		
LBSV110C	12ml Clear vial, 15×45mm, screw top	100pcs
LBSV110A	12ml Amber vial, 15×45mm, screw top	100pcs
<b>Caps &amp; Septa for 15-425 Sample Vials</b>		
LBSV010CRS	Nature PTFE/Nature silicone septa + Black screw cap with hole, for 5ml/8ml/12ml 15-425 screw top vial	100pcs
LBSV010CSS	Nature PTFE/Nature silicone septa + Black screw cap without hole, for 8ml/12ml 15-425 screw top vial	100pcs
<b>24-400 Vials</b>		
LBSV020C	20ml Clear vial, 24-400 screw top	100pcs
LBSV020A	20ml Amber vial, 24-400 screw top	100pcs
LBSV040C	40ml Clear vial, 24-400 screw top	100pcs
LBSV040A	40ml Amber vial, 24-400 screw top	100pcs
LBSV060C	60ml Clear vial, 24-400 screw top	100pcs
LBSV060A	60ml Amber vial, 2-400 screw top	100pcs
<b>Caps &amp; Septa for 24-400 Vials</b>		
LBSV040CSS	Nature PTFE/Nature silicone septa + Black screw cap without hole, for 24-400 screw top vial	100pcs
LBSV140CSS	Nature PTFE/Nature silicone septa + Black screw cap with hole, for 24-400 screw top vial	100pcs

## Insert Vial

### Introduction

Membrane Solutions Insert Vial are available in a variety of designs to accommodate all size vials and all types of autosamplers, flat, conical, or mandrel point bottoms and may come with or without a plastic spring. Inserts work in conjunction with any auto-sampler and fit either standard or wide openings vials.



### Part Number Matrix

Part No.	Description	Qty / Pk
LBSV100IC	Micro-Insert 29*4.8mm, 100ul, clear, bevelled bottom with assembled plastic spring, for 8-425 screw top glass vial	100pcs
LBSV200IC	Micro-Insert 31*5mm,200ul, clear, bevelled bottom, for 8-425 screw top glass vial	100pcs
LBSV300IF	Micro-Insert 31*5mm, 300ul, clear, flat bottom, for 8-425 screw top glass vial	100pcs
LBSV250IC	Micro-Insert 29*5.7mm, clear, Beveled bottom with assembled plastic spring, for 9-425 screw top	100pcs
LBSV300IC	Micro-Insert 31*6mm, clear, Beveled bottom, for 9-425 screw top	100pcs
LBSV400IF	Micro-Insert 31*6mm, clear class, Flat bottom, for 9-425 screw top	100pcs

# SAMPLE PREPARATION

## Chrompure™ Solid-phase Extraction (SPE) Columns

### Chrompure™ Solid-phase Extraction (SPE) Columns

#### Introduction

Solid-phase extraction (SPE) is a separation process by which compounds that are dissolved or suspended in a liquid mixture are separated from other compounds in the mixture according to their physical and chemical properties. Analytical laboratories use solid phase extraction to concentrate and purify samples for analysis. Solid phase extraction can be used to isolate analytes of interest from a wide variety of matrices, including urine, blood, water, beverages, soil, and animal tissue. SPE can be classified in four types: reversed phase SPE, normal phase SPE, ion exchange SPE, absorption SPE.

Membrane Solutions (MS) Chrompure™ SPE Columns are packed with a uniform distribution and density of high purity resins and sorbents, which ensures the reproducibility and consistency, so a reliable and efficient sample preparation process is guaranteed.



#### Guide to Select Membrane

- High retention rate and recovery results in cost savings by maximizing each device.
- High quality materials and manufacturing provides confidence in batch-to-batch reproducibility
- Optimized kinetics and flow characteristics for rapid sample preparations.
- With various packing, ensure better selectivity

#### Applications

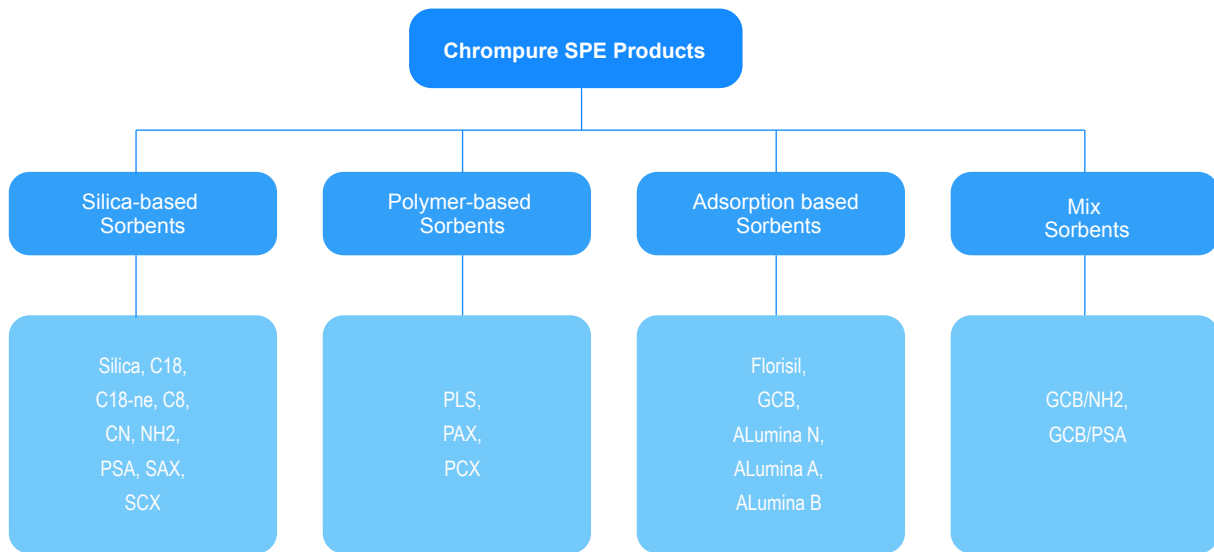
- Biological samples and natural compounds
- Pharmaceuticals and drugs
- Pesticides and antibiotics in food and agricultural matrices
- Environmental Samples, organic compounds and pollutants.

#### MS® Chrompure SPE Columns Series

Membrane Solutions offers Chrompure™ silica-based, organic copolymer or inorganic chemical based SPE columns. The column chemistries include C18, NH2, C8, Alumina, GCB, CN, Florisil, Si, SAX, SCX, PSA, PCX, PAX, etc. Column volumes are available in 1, 3, 6 and 12 ml. Our design and manufacturing process minimize variability and improves recovery and cleanup procedures.

# SAMPLE PREPARATION

## Chrompure™ Solid-phase Extraction (SPE) Columns



### Cross Reference of Comparable Phases by Manufacturers

MS	Waters	Suoelco	Aglient(SampliQ)	Aglient(Bond Elut)	Agela	Dikma
<b>C18</b>	Sep-pak C18	ENVI-18	-	Bond Elut C18	Cleanert C18	ProElut™ C18
<b>C18-ne</b>	-	-	SampliQ C18	Bond Elut C18-OH	Cleanert C18-N	ProElut™ C18-U
<b>C8</b>	Sep-pak C8	ENVI-8	SampliQ C8	Bond Elut C8	Cleanert C8	ProElut™ C8
<b>CN</b>	Sep-pak CN	LC-CN	SampliQ CN	Bond Elut CN	Cleanert CN	ProElut™ CN
<b>NH<sub>2</sub></b>	Sep-pak NH <sub>2</sub>	LC-NH <sub>2</sub>	SampliQ NH <sub>2</sub>	Bond Elut NH <sub>2</sub>	Cleanert NH <sub>2</sub>	ProElut™ NH <sub>2</sub>
<b>PSA</b>	-	-	-	Bond Elut PSA	Cleanert PSA	ProElut™ PSA
<b>SAX</b>	-	LC-SAX	SampliQ Si-SAX	Bond Elut SAX	Cleanert SAX	ProElut™ SAX
<b>SCX</b>	-	LC-SCX	SampliQ Si-SCX	Bond Elut SCX	Cleanert SCX	ProElut™ SCX
<b>Silica</b>	Sep-pak Silica	LC-Silica	SampliQ Silica	Bond Elut Silica	Cleanert Silica	ProElut™ Silica
<b>PLS</b>	Oasis PLS	-	-	-	Cleanert PEP	ProElut™ PLS
<b>PAX</b>	Oasis PAX	-	SampliQ SAX	Bond Elut Plexa	Cleanert PAX	ProElut™ PAX
<b>PCX</b>	Oasis PCX	-	SampliQ SCX	-	Cleanert PCX	ProElut™ PCX
<b>Florisil</b>	Sep-pak Florisil	LC Florisil	SampliQ Florisil	-	Cleanert Florisil	ProElut™ Florisil
<b>GCB</b>	-	ENVI Carb	-	Bond Elut FL	Cleanert PestiCarb	ProElut™ CARBI
<b>AL-N</b>	Sep-pak ALumina N	LC-Alumina N	SampliQ Alumina N	-	Cleanert Alumina N	ProElut™ AL-N
<b>AL-A</b>	Sep-pak ALumina A	LC-Alumina A	SampliQ Alumina A	Bond Elut Alumina N	Cleanert Alumina A	ProElut™ AL-A
<b>AL-B</b>	Sep-pak ALumina B	LC-Alumina B	SampliQ Alumina S	Bond Elut Alumina B	Cleanert Alumina B	ProElut™ AL-B

### Part Number Matrix

LBSC	Sorbents		Sorbents Weight(mg)	Volume (ml)
	ALA		1000	6
	AL-A	HLB	060=60	1=1
	AL-B	MAX	100=100	3=3
	AL-N	MCX	150=150	6=6
	C18	NH <sub>2</sub>	200=200	12=12
	C18-Ne	PAX/PCX	250=250	
	C8	PLS	500=500	
	CN	Silica	1000=1000	
	Florisil	SAX/SCX	2000=2000	
	GCB/ GCB/NH <sub>2</sub>	WAX/WCX...		

\* LBSCALA10006=ALA SPE column, 6ml, 1000mg

# PART B

## BIOLOGICAL AND MOLECULAR

Membrane Solutions' biological and molecular portfolio offers products and features to support researchers in academia and biotechnology and provide solutions for QC testing and environmental analysis.

- 1 Syringe Filter
- 2 Sterile Filter Device
- 3 Super50™ Venting Filter
- 4 SteriDisc™ Disc Membrane Filter
- 5 Blot-Mem™ Blotting Membrane
- 6 Mesh Filter
- 7 Centrifuge Tubes
- 8 Spin Column
- 9 Serological Pipettes



## SYRINGE FILTERS

### Introduction

The Membrane Solutions Bepure™, Biopure™ and SteriPure™ Syringe Filters are available in a variety of sizes and membranes for both sterile and non-sterile requirements.

Membrane Solutions gives you choices to meet your needs for general laboratory filtration, prefiltration, sample preparation and gas venting.



## Bepure™ Syringe Filter

### Introduction

Membrane Solutions (MS) Bepure™ filters are 33mm in diameter with Acrylonitrile Butadiene Styrene (ABS) housing. Bepure filters can be used for a variety of applications in the research laboratory, including additives, buffers, or aqueous solutions.



### Features and Benefits

- **Color coded and labeled:** Each unit is clearly marked with an identifying code to denote pore size and membrane material.
- **Larger effective surface area (EFA):** 33mm, 5 cm<sup>2</sup> effective filtration area (EFA) provides High total throughput
- **ABS bonded outer ring on housing:** Provides durability under working pressures >150 psig (>10 bar)
- **Reliable Bacterial filtration efficiency:** LRV>7 for 0.2 um filters (correlate to the, *Brevundimonas diminuta* ATCC 19146, ASTM bacterial challenge test)
- **Low Bacterial Endotoxin:** <0.25 EU/mL using Limulus Amoebocyte Lysate (LAL) test
- **Integrity testable** to ensure sterile filtration.
- **Highly asymmetric PES membrane:** High flow rate and throughput and extremely low protein binding
- **Pre-sterilization available and individually packaged:** Ensures sterility during sample preparation

### Applications

- Routine QC analysis
- HPLC sample preparation
- Dissolution testing
- Food analysis
- Environmental samples
- Sterile filtration and clarification of biological fluids

### Part Number Matrix

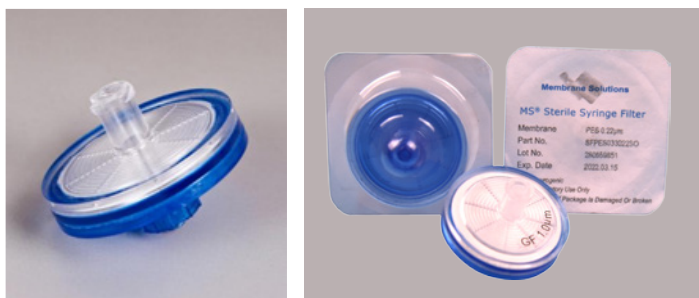
	Membrane Material	Filter Diameter(mm)	Pore Size(μm)	Pre-Sterilized	Wettability
SF	PVDF	033	022	N/S	L
	NY(0.2~10μm)	033=33	010=0.1	N=No S=Yes	(blank)=Standard B=Hydrophobic* L=Hydrophilic* *PVDF and PTFE only
	PES(0.1~3μm)		022=0.22		
	CA(0.2~8μm)		045=0.45		
	MCE(0.2~8μm)		080=0.8		
	PVDF(0.2~5μm)		100=1.0		
	PTFE(0.1~5μm)		300=3		
	RC(0.2/0.45μm)		500=5		
	GF(0.2~10μm)				
	PP microfiber(0.2~10μm)				

\* SFPVDF033022SL=Bepure™ Sterile hydrophilic PVDF syringe filter, 33mm,0.22μm

## Biopure™ Syringe Filter

### Introduction

Membrane Solutions (MS) Biopure™ syringe filters have a polycarbonate (PC) housing with double luer-lock connections to allow for multiple filter stacking or for the use with needles or tips.



### Features and Benefits

- **Polycarbonate (PC) housing material:** best biocompatibility
- **Female Luer Lock/ Male luer lock connections:** for stacking and locking into place adapters or needles.
- **Larger EFA:** 33 mm, 5 cm<sup>2</sup> effective filtration area (EFA) provides High total throughput  
Faster flow rate (33 mm in diameter and have 20% more filter surface area than our 25 mm filters)
- **Higher flow rates:** (20% more filter surface area than 25 mm filters)
- **Reliable Bacterial filtration efficiency:** LRV>7 for 0.2 um filters (correlate to *Brevundimonas diminuta* ATCC 19146, ASTM bacterial challenge test)
- **Low Bacterial Endotoxin:** < 0.25 EU/mL using Limulus Amoebocyte Lysate (LAL) test
- Integrity testable to ensure sterile filtration.
- **Highly asymmetric PES membrane:** high flow rate and throughput and low protein binding
- **Pre-sterilization available and individually packaged:** Ensures sterility during sample preparation

### Applications

- Routine QC analysis
- HPLC sample preparation
- Dissolution testing
- Food analysis
- Environmental samples
- Air/Gas Filtration and Venting (Hydrophobic PTFE)
- Sterile filtration and clarification of biological fluids

### Part Number Matrix

	Membrane Material	Filter Diameter(mm)	Pore Size(µm)	Pre-Sterilized	Wettability	Series
SF	PES	033	022	N/S		O
	NY(0.2~10µm) PES(0.1~3µm) CA(0.2~8µm) MCE(0.2~8µm) PVDF(0.2~5µm) PTFE(0.1~5µm) GF(0.2~10µm) PP microfiber (0.2~10µm)	033=33	010=0.1 022=0.22 045=0.45 080=0.8 100=1.0 300=3 500=5	N=No S=Yes	(blank)=Standard L=Hydrophilic* * Hydrophilic PVDF and PTFE only	O=Biopure

\* SFPE033022SO=Biopure™ Sterile PES syringe filter, 33mm,0.22µm

## SteriPure™ Sterile Syringe filter

### Introduction

Membrane Solutions SteriPure™ sterile syringe filters are made with a polypropylene housing (PP) and available with a wide variety of membranes and pore sizes. The SteriPure is also available with an optional integral glass fiber (GF) or PP microfiber pre-filter layer for particulate-laden fluids that are difficult to filter with single layer syringe filters. SteriPure's PP housing and membrane options make it suitable for low protein binding needs (e.g., PES) or broad chemical compatibility (e.g., PTFE).



### Features and Benefits

- **Various available diameters (13, 25, 30mm):** right size for the right volume or particulate load.
- **Reliable Bacterial filtration efficiency:** LRV>7 for 0.2 um filters (correlate to *Brevundimonas diminuta* ATCC 19146, ASTM bacterial challenge test)
- **Available with PES membrane:** provides >98.5% percent protein recovery.
- **Pre-sterilized:** ready to use for sterile filtration and clarification of biological fluids.

### Applications

- Tissue culture media preparation
- Sterile filtration and clarification of biological fluids
- Protein and enzyme filtrations
- Hybridization buffers
- Other aqueous solutions

### Specification

	Steripure			Bepure	Biopure
	13mm	25mm	30mm	33mm	33mm
Filtration Area(cm <sup>2</sup> ):	0.92	2.98	4.9	5	5
Housing Material:	PP			ABS	PC
Holdup-Volume(μl):	<10	<100	<100	<100	<150
Volume Throughput(ml):	<10	<50	<120	<120	<120
Connections (Inlet/Outlet):	Female Luer Lock inlet and Male Luer slip outlet				Double luer lock
Max Operating ressure(psi):	87				145
Max Operating emperature( C ):	100				
Prefilter	PP			GF	GF
Layers:	2				

### Part Number Matrix

	Membrane Material	Filter Diameter(mm)	Pore Size(μm)	Pre-Sterilized	Optiona l Pre-filter layer	Wettability	Series
SF	PES	013	022	S	G	(blank)	I
	NY(0.2~10μm)	013=13	010=0.1	S=Yes	(blank)=None	(blank)=Hydrophilic	I=Steripure
	PES(0.1~3μm)	025=25	022=0.22		P=PP microfiber	B=Hydrophobic	
	CA(0.2~8μm)	030=30	045=0.45		G=Glass fiber	L=Hydrophili	
	MCE(0.2~8μm)						
	PVDF(0.2~5μm)						
	PTFE(0.1~5μm)						
	GF(0.2~10μm)						
	PP microfiber (0.2~10μm)						

\* SFPVDF033022SL=Bepure™ Sterile hydrophilic PVDF syringe filter, 33mm,0.22μm

## STERILE FILTER DEVICE

### Vacufl

#### Introduction

Membrane Solutions (MS) Vacufl Disposable Vacuum Filtration units are a standalone filtration unit that combines a graduated funnel-top, filter assembly and graduated reservoir. They are ideal for when a self-contained, pre-sterilized, disposable filtration unit is required. Available with PES, cellulose acetate and PVDF membranes in various pore sizes for the sterile filtration of biological and aqueous fluids, tissue culture media and buffers. Comes in two funnel sizes (250 and 500ml) and 3 reservoir bottle volumes (250, 500 and 1000ml).

Glass fiber pre-filter is available.



#### Features and Benefits

- Disposable and pre-sterilized by gamma irradiation for rapid and convenient use.
- Wide base provides stability during use.
- Sterile graded 0.2µm membrane: LRV > 7 for *Brevundimonas diminuta*, ATCC19146.
- Non-pyrogenic, low extractables and surfactant-free ensures purity of filtrate.
- Engineered support structure maximizes flow rate and throughput.
- Available with 250 and 500mL filter funnels, and 250, 500 and 1000mL receiver bottles to meet various filtered volume requirements.
- Reservoir has textured areas for improved grip when handling and opening and sealing the bottle.
- GL45 threads accepts commonly used bottle style.

#### Glass Fiber prefilter

	Glass fiber type	Diameter (mm)	Pore Size (µm)	Receiver Volume (mL)
SP	GFB	090	100	S
	GFB	050=50mm 090=90mm	100=1.0	S=Sterile, individual wrap packed

\* SPGFB090100S= Sterilized glass fiber disc, 90mm, 1µm, individual packing

#### Part Number Matrix

	Membrane Material	Funnel Volume (mL)	Pore Size(µm)	Receiver Volume (mL)	
VF	PES	1	22	250	F
	PES (0.1-0.45µm) CA (0.2/0.45µm) PVDF (0.2/0.45µm) NYLON (0.2/0.45µm) PTFE (0.2/0.45µm)	1=250 mL 2=500 mL	10=0.1 22=0.22 45=0.45	250=250 mL 500=500 mL 1000=1000 mL	(blank)=whole set; F=Funnel only

\* VFPPES122250= Vacufl bottle top filter units, PES, 0.22µm, 250ml

\* 250ml version comes with 50mm assembly.

\* 500ml version comes with 90mm assembly.

## SteriBell50™ Filtration Device

### Introduction

Membrane Solutions (MS) SteriBell 50™ PES devices offer a convenient and efficient way to sterile filter large volumes using a peristaltic pump or other pressurized source. SteriBell 50 is ideal for biological products when low protein binding is required and also for broad range (pH 1 – 14) of acid and base solutions. SteriBell 50 is also available with GF (glass fiber) or PP microfiber prefilter for samples with high particulates.



### Features and Benefits

- Superior flow rates compared to most competitive products - offers reduced filtration times.
- Optional glass fiber prefilter layer offers superior throughput for difficult to filter solutions, buffers, media and serums - fewer changeouts and fewer devices required.
- Sterile Filtration - eliminates the need for post-filtration sterilization.
- Integrity testable - to ensure sterility.
- Can be used as an inline or POU filter - offers convenient use.
- Available with detachable filling bell - helps prevent splashing and contamination.
- Tapered hose barb accepts different tubing sizes - offers connection flexibility.
- Pre-sterilized by gamma irradiation - eliminates cytotoxicity associated with ETO.
- Sterile packaged - eliminates for pre-sterilization.
- Disposable - offers convenience versus replacing discs in discs holders.
- pH range: 1-14

### Specification

	SteriBell 50™ PES	SteriBell 50™ PES Plus
Housing	Polypropylene	
Filling bell	Polycarbonate bell with polypropylene cap	
Membrane	PES	Glass fiber prefilter+PES
Housing OD	64 mm	
Pore size	0.2 µm	
Filtration area	20 cm²	
Pre-sterilized by	Gamma irradiation	
Typical Sample Volume	Up to 5L	
Water Flow Rate	400 mL/min with water at 14.5 psi (1 bar)	
Typical Hold-Up Volume (with 10 psi air purge)	≤ 1.0 mL	≤ 1.5 mL
Recommended inlet pressure	≤43.5 psi (3.0 bar)	
Burst pressure	73 psi (5.0 bar)	
Bubble point	≥46.4 psi (3.2 bar)	
Connections	1/4-1/2" (7-13mm) stepped HB. Inlet will accept male luer slip tip. O outlet comes with detachable filling bell and cap.	
Endotoxin Level	< 0.25 EU/mL	
Protein adsorption(Filtration of BSA)	No detectable loss of protein	<80 µg/cm²
Bacterial Retention	>10 <sup>7</sup> CFU/cm² of B. diminuta	
Biosafety	USP Class VI Plastics Test	

### Part Number Matrix

	Membrane Material	Filter Diameter(mm)	Pore Size(µm)	Pre-Sterilized	Optional Pre-filter layer	Series
SF	PES	050	022	N/S	G	B
	PES (0.1-1.0µm) CA (0.2-5.0µm) MCE (0.2-5.0µm) Nylon (0.2-5.0µm) PTFE (0.2-5.0µm)	050=50	022=0.2 045=0.45 100=1.0	N=No S=Yes	(blank)=None P=PP microfiber G=Glass fiber	(blank)=without bell B=with bell

\* SUPES050022SB= SteriBell 50™ sterile PES filter will filling bell, 1/4-1/2" (7-13mm) stepped HB inlet and outlet, 50mm,0.22µm

## SUPER50™ VENTING FILTER

### Introduction

Thermally bonded Super50™ venting filter incorporates a hydrophobic PTFE membrane in a polypropylene housing. It is designed for sterile venting, gas, and non-aqueous liquid filtration. Its material of construction and design provide excellent thermal and chemical compatibility. Super50™ is available in 0.2 µm and 0.45 µm pore sizes.



### Features and Benefits

- Integrity testable
- Robust design and construction allow for multiple autoclave cycles >20
- Designed to be reusable but also offers the convenience of being disposable
- Available in pre-sterilized or non-sterilized packaging
- PTFE membrane and polypropylene housing offers broad chemical compatibility
- Optimized PTFE membrane provides superior flow rates in a compact device
- Provides ULPA filtration (>99.999% @ 0.1µm)
- Lightweight design prevents tube pinching in carboy venting applications.

### Applications

- Sterile Venting of bioreactors, fermentation tanks, media flasks, and carboys
- Sterile gas purge of cell culture vessels or filling vessels
- In-line sterilization of and particulate removal from air and gases

### Specifications (PTFE membrane type as example)

Housing material	PoPolypropylene	
Filter material	PTFE membrane with polypropylene support	
Sealing Technology	Thermally bonded	
Housing diameter	64 mm	
Filtration area	20 cm <sup>2</sup>	
Inlet/Outlet Connections	1/4-1/2" (7-13mm) stepped HB Or Inlet: 1/8 in.MNPT ; Outlet: Stepped HB	
Pore size (liquid rating)	0.2 µm	0.45 µm
Bubble point with isopropanol (60%)	0.2 µm, > 15.9psi (1.1 bar)	0.45 µm, > 13.1psi (0.9 bar)
Maximum operating pressure	43.5 psi (3.0 bar)	
Housing burst pressure	72.5 psi (5.0 bar)	
Max. autoclaving temperature	134 °C (273.2 °F)	
Autoclave cycles	≥20	
Hold-up volume	Before bubble point approx. 1.0 mL After bubble point approx. 0.5 mL	
Pre-Sterilization	ETO	
Flow rate for air at Δp =1.45 psi ( 0.1 bar)	0.2µm: 5 lpm;	0.45 µm: 8 lpm
Bacterial Retention	LRV>7 per HIMA standards in liquid	
Endotoxin Level	< 0.25 EU/mL	
Biosafety	USP Plastics Class VI @ 121 °C	
Non-Fiber Releasing	Non-fiber releasing as per CFR 21	

### Part Number Matrix

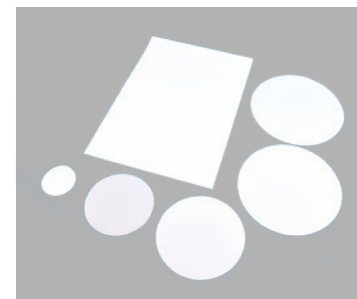
	Membrane Material	Filter Diameter(mm)	Pore Size(µm)	Pre-Sterilized	Wettability	Series
SF	PTFE	050	022	N/S	B	V
	PTFE	050=50	022=0.2 045=0.45 100=1.0 300=3.0	N=No S=Yes	B=Hydrophobic	(blank)= Inlet: 1/8 in.MNPT ; Outlet: Stepped HB; V=lightweight, Inlet: Stepped HB; Outlet: Stepped HB; H=outer ring, Inlet: Stepped HB; Outlet: Stepped HB

\* SFPTFE050022SBV=Super50 hydrophobic PTFE venting filter, 50mm,0.22µm, Inlet: Stepped Hose Barb; Outlet: Stepped Hose Barb

## STERIDISC™ DISC MEMBRANE FILTER

### Introduction

Membrane Solutions offers full membrane filters for aqueous, solvents and gas filtration including PES, MCE, Nylon, PVDF, PTFE, PP and CA membranes with disc diameters from 13 mm to 293 mm. All membranes are manufactured in ISO 9001 certified facility. Most membranes can be sterilized if needed.



### Features and Benefits

- Good chemical compatibility
- Low chemical extractable level
- Fast flow rate
- Absolute filtration

### Applications

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

### Part Number Matrix

	Membrane Material	Filter Diameter*(mm)	Pore Size(μm)	Pre-sterilized	Wettability
MF	PTFE	047	022	S	L/B
	NY(0.2~10μm)	013=13	010=0.1	S=Sterile	(blank)=Standard B=Hydrophobic* L=Hydrophilic* *PVDF and PTFE only
	PES(0.1~3μm)	025=25	022=0.22		
	CA(0.2~8μm)	047=47	045=0.45		
	MCE(0.2~8μm)	050=50	065=0.65		
	PVDF(0.2~5μm)	090=90	080=0.8		
	PTFE(0.1~5μm)	100=100	100=1.0		
	GF(0.2~10μm)	142=142	300=3		
	PPmicrofiber(0.2~10μm)	293=293	500=5		
			800=8		
			1000=10		

\* Other custom diameters and sizes available

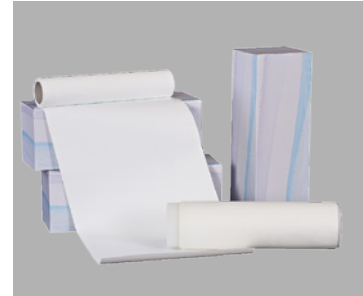


## BLOT-MEM™ BLOTTING MEMBRANE

### Introduction

Membrane Solutions (MS) Blot-Mem™ Blotting Membranes are used widely in biotechnology such as protein transfers, Western transfers, protein dot or slot blots, traditional DNA and RNA transfers, nucleic acid detection, northern and southern blotting.

Membrane Solutions affords numerous blotting membranes, including: PVDF transfer membrane, nitrocellulose membrane and nylon membrane. We can custom cut and package our blotting membranes into various shapes, sizes and contents, to meet your specific requirements.



### Features and Benefits

- High sensitivity and low background
- High strength
- Reproducible

### Applications

- Protein transfers
- Protein dot or slot blots
- Nucleic acid detection
- Northern and Southern Blotting

### Specifications

Membrane Material	Blot-Mem™ (PVDF)	Blot-Mem™ (Nitrocellulose)
Size(mm)	300*3000 / 300*4000 / 100*100	300*3000 / 300*4000 / 100*100
Pore Size(um)	0.22/0.45	0.22/0.45
Wettability	Hydrophobic	Hydrophilic
Protein binding (ug/cm <sup>2</sup> BSA)	125-150	100-125
Thickness (um)	140-160	110-140

### Part Number Matrix

Membrane Material		Pore Size(um)	Size(mm)
MS	PVDF	020	30301
	CN= Nitrocellulose	020=0.22	30301=300×3000
	PVDF	045=0.45	30401=300×4000
			10011=100*100
			20020=200*200

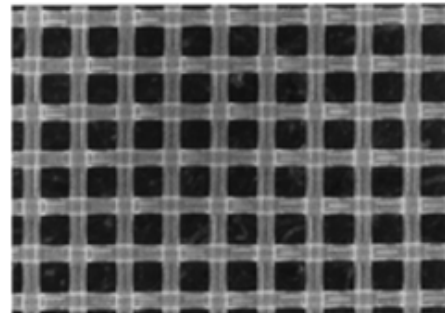
\* MSPVDF02030301= PVDF Transfer Membrane, Pore: 0.22um, Filter Size: 300\*3000mm

## MESH FILTER

### Nylon Mesh Filter

#### Introduction

Membrane Solutions Nylon Mesh Filters are made by woven monofilament type PA6 (1:1 Weaving Methods), characterized precise mesh opening, percent open area and mesh thickness, with a broad range of solvent. Nylon Mesh Filter with mesh openings ranging from 10 to 180  $\mu\text{m}$ , can be fully meet the most stringent requirements of our customers.



#### Features and Benefits

- Hydrophilic
- Compatible with a broad range of solvents
- Durable at elevated temperatures.
- SGS and RoHS certificate

#### Applications

- Collection of algae and cells
- Large particulate filtration
- Background filter for automated particle imaging systems
- Pre-filtration of solvents

#### Part Number Matrix

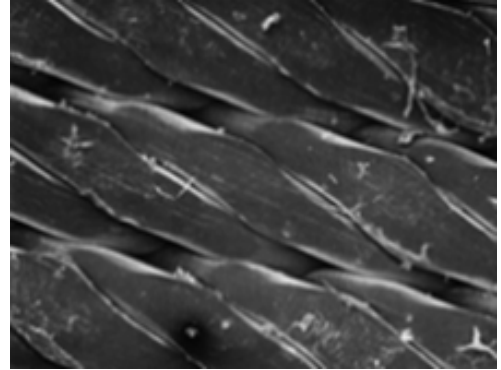
Membrane Material		Filter Diameter*(mm)	Pore Size( $\mu\text{m}$ )	Pre-Sterilized
ME	NY	047	100	
	NY=Nylon mesh	013=13 025=25 047=47 050=50 090=90 100=100 142=142 293=293	020=20 030=30 041=41 060=60 080=80 100=100 140=140 160=160 180=180 200=200 213=213	Blank=No S=Yes

\* other mesh and pore sizes available.

## Polypropylene (PP) Mesh Filter

### Introduction

Membrane Solutions Polypropylene (PP) Mesh Filters are ideally suited for general clarifying and prefiltration of solvents and contamination analysis. PP mesh filters are made of 100% virgin polypropylene. PP mesh filters also provide broad chemical compatibility.



### Features and Benefits

- Hydrophobic
- Broad chemical compatibility

### Applications

- Contamination analysis
- Large particle removal
- Collection of cells and protein precipitates

### Part Number Matrix

	Membrane Material	Filter Diameter(mm)	Pore Size( $\mu$ m)	Pre-Sterilized
ME	PP	047	100	
	PP microfiber	013=13 025=25 047=47 050=50 090=90 100=100 142=142 293=293	100=100 150=150	Blank=No S=Yes

\* other mesh and pore sizes available.

## CENTRIFUGE TUBES

### Introduction

Membrane Solutions Centrifuge Tubes are made of virgin polypropylene with black printed graduations and a large white write-on area to label samples. Available in conical or flat, self-standing, bottoms. Come with polyethylene caps and seal. High-Purity MS Centrifuge tubes are robust, chemically resistant, and clear to allow for transparency. MS Centrifuge Tubes are available in pre-sterilized or non-sterilized versions to satisfy various requirements. Suitable for chemical, analytical and lifescience applications.



### Features and Benefits

- Available in 15 ml and 50 ml volumes
- Conical bottom and self-standing bottom
- Longer length screw caps with sealing ring prevent leaks.
- Knurled cap allows for convenient single-handed opening and closing.
- Easy-to-read black graduations are accurate to  $\pm 2\%$ , 1 ml increments (15 ml tube) or 2.5 ml increments (50 ml tube)
- Max. RCF: 9,400 for conical bottom tubes; 6,000 for self-standing tubes
- Large frosted white write-on area for permanent labeling
- Both the graduations and writing areas are chloroform-resistant
- Autoclavable at 121 °C and freezable to -80 °C
- Sterilized by gamma irradiation

### Applications

- Sample storage
- Sample separation and purification

### Part Number Matrix

	Volume (mL)	Pre-Sterilized	Bottom Type
LBCT	150	S	
	150=15 500=50	N=No S=Yes	R=Round Bottom Blank= Conical Bottom

\* LBCT150S= Centrifuge Tubes, 50ml, Conical Bottom, sterile

## SPIN COLUMN

### Introduction

Membrane Solutions Spin Columns provide fast and convenient purification of DNA/RNA using affinity media. Each spin column fits securely in the supplied 2 mL collection tubes for use in a micro-centrifuge.



### Features and Benefits

- Convenient format for both usage and storage
- Available with 3, 4 or 5 layers of GF/F glass fiber filter media
- Flat and frosted cap surface, together with smooth and frosted body surface, provide easy and sample labeling.

### Applications

- Rapid purification of PCR amplification products
- Recovery of DNA bands from agarose gel
- Plasmid DNA extraction, Genomic DNA extraction
- RNA purification
- Isolation of specific DNA from reaction mixtures

### Part Number Matrix

	Filter Media	Pore Size(μm)	Layers
LBSC	002	020	02
	001=GF/B	Blank=N.A.**	01=1
	002=GF/F	022=0.22*	02=2
	003=GF/D	045=0.45*	03=3
	NY=Nylon	065=0.65*	04=4
	PES=PES	100=1.0*	
		*Nylon and PES only	
		**GF only	

\* MSPVDF02030301= PVDF Transfer Membrane, Pore: 0.22μm, Filter Size: 300\*3000mm

## SEROLOGICAL PIPETTES

### Introduction

Membrane Solutions Serological Pipettes are manufactured with high-grade polystyrene providing clear and accurate measurements. MS Serological pipettes (1ml, 2ml, 5ml, 10ml, 25ml and 50ml) are color coded for quick easy use. MS Serological pipette are ideal for liquid transfer in tissue culture, bacteriology and clinical research.



### Features and Benefits

- Accurate graduation (<2%)
- Smooth internal surface
- Drip-free tip design
- Convenient to use and read
- 100% virgin polystyrene, high-vis markings and labeling
- Industry-standard lengths
- Cotton filter plug for saving Pipette-Aids
- Negative graduation
- Non-pyrogenic, nuclease-Free
- Sterilized by gamma irradiation
- Individually packaged with split seams for easy opening

### Applications

- Tissue culture
- Tissue and Cell Culture
- Microbiology Research
- Biochemistry Experiment
- Clinical Research
- Food Safety Inspection

### Part Number Matrix

Part No	Total Volume(mL)	Graduation (mL)	Negative Grades(mL)	Qty/pK	Qty/case
LBSP01S	1	1/100	0.4	500	3000
LBSP02S	2	1/100	0.4	500	3000
LBSP05S	5	1/10	2.5	500	1500
LBSP10S	10	1/10	3	400	1200
LBSP25S	25	2/10	8	200	600
LBSP50S	50	1/2	10	100	300



## MICRODISC™ GRIDDED MEMBRANE FILTERS

### Introduction

Membrane Solutions (MS) Microdisc™ (Individual package) and Microfilm™ (Continuous package) Sterile Mixed Cellulose Ester (MCE) Gridded Membrane Filter are composed of Cellulose Acetate and Cellulose Nitrate. Because MCE membrane is biologically inert, it's one of the most widely used membranes in analytical and research applications. MCE Membrane Filter is characterized by a 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.



### Features and Benefits

- Excellent retention and colony growth, high recovery rates of microorganisms
- Individually wrapped in easy-peel pack
- Pre-sterilized by gamma irradiation
- Calibrated Mixed Cellulose filters, which designed to maximize flow rates
- The filter type, diameter, lot number, sterilization and expiration date are printed on package
- “Multi-fit”, are designed as “one size fits all”, compatible with most dispensers
- Membrane Solutions High Performance MCE membrane uses microbiological – “friendly” ink which promotes growth on grids to maximize recovery

### Applications

- Colony counting (Microbial enumeration)
- General Microscopy
- Particulate counting and analysis

### Industries

- Bottled Water
- Food & Beverage (Beer, Wine, carbonated drinks, etc.)
- Environmental
- Cosmetics
- Pharmaceutical

### Part Number Matrix

	Filter Media	Diameter(mm)	Pore Size(µm)	Package Format	Membrane/Grid Color	Pre-Sterilized
MF	MCE	047	022	G	W	S
	CA (Cellulose Acetate)	025=25 037=37	022=0.2 045=0.45	G=Individually packed	W=White membrane black grid	S=Yes N=No
	CN (nitrocellulose)	047=47	065=0.65	C=Continuous	B= Black membrane white grid	
	MCE (Mixed Cellulose Ester)	050=50	080=0.8 100=1.0 120=1.2 500=5.0 800=8.0		G= White membrane green grid	

\*MFMC047022GWS=Microdisc™ MCE gridded membrane filter, 47mm, 0.22µm, white membrane with black grid, individual packing.



### LAB FILTER PAPERS

#### Introduction

Filter papers separate solids from liquids or air, and retain particulate matter on the surface as well as within the matrix of the paper. Filter paper properties vary by fine particle filtration efficiencies, dirt holding capacities as well as by flow rates. Membrane Solutions uses only high quality raw materials in the production of its filter papers: cotton linters, high alpha-cellulose pulp, borosilicate micro-glass and high purity micro-quartz fibers. We offer a wide range of filtration products to meet most every laboratory filtration requirement.



MS<sup>®</sup> Qualitative Filter Paper

## Introduction

Membrane Solutions qualitative filter papers containing nearly 100% high alpha-cellulose are produced under tightly controlled manufacturing conditions to assure lot to lot consistency and reproducibility.

## Features and Benefits

- Qualitative analysis
- Low ash content 0.06%
- Binder free and untreated
- Consistent performance
- Custom cuts and sizes available

## Applications

- General laboratory filtration
- Liquid clarifications
- Air and water analysis.
- Rough sample preparation

## Part Number Matrix

SPQL	Pore Size*( $\mu\text{m}$ )		Filtration Rating
	0700		MS
	0320= $\phi$ 32	1500= $\phi$ 150	S=Slow (2~4 $\mu\text{m}$ )
	0425= $\phi$ 42.5	1800= $\phi$ 180	MS=Medium Slow (6 $\mu\text{m}$ )
	0700= $\phi$ 70	1850= $\phi$ 185	M=Medium (8 $\mu\text{m}$ )
	0900= $\phi$ 90	2400= $\phi$ 240	MF=Medium Fast (11 $\mu\text{m}$ )
	1100= $\phi$ 110	4657=460 $\times$ 570	F=Fast (20~25 $\mu\text{m}$ )
	1250= $\phi$ 125	6600=600 $\times$ 600	

\* other mesh and pore sizes available

MS<sup>®</sup> Quantitative Ashless Filter Paper

## Introduction

Quantitative ashless filter papers are recommended for use where a high purity is required for quantitative analysis. Membrane Solutions quantitative filter papers are acid-washed to remove impurities and are made using pure cellulose with an alpha-cellulose content of almost 100%. Ash content of our ashless grades are less than 0.01%.

## Features and Benefits

- Quantitative analysis
- Low ash content 0.01%
- High wet-strength
- Consistent performance
- Custom cuts and sizes available

## Applications

- Quantitative filter papers are the choice for gravimetric analysis
- Liquid clarifications
- Analytical separations, or air and water analysis.

## Part Number Matrix

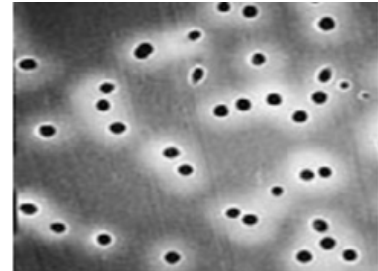
SPQTA	Diameter(mm)		Filtration Rating
	0900		S
	0470= $\phi$ 47	1500= $\phi$ 150	S=Slow (2~4 $\mu\text{m}$ )
	0700= $\phi$ 70	1800= $\phi$ 180	M=Medium (8 $\mu\text{m}$ )
	0900= $\phi$ 90	2400= $\phi$ 240	MF=Medium Fast (16 $\mu\text{m}$ )
	1100= $\phi$ 110	0810=203 $\times$ 254	F=Fast (20~25 $\mu\text{m}$ )
	1250= $\phi$ 125		

\* other mesh and pore sizes available

## TRACK-ETCHED POLYCARBONATE

### Introduction

Membrane Solutions Track-etched (TEM) Polycarbonate (PC) membranes are used for air monitoring, general filtration etc. This membrane is manufactured from high-quality Polycarbonate film. TEM PC membranes have a smooth surface and exhibit very low levels of extractable. They have precisely defined symmetrical pores, and excellent chemical and thermal resistance. They are suitable for the detection of particles in many corrosive fluids because of this broad chemical compatibility.



### Features and Benefits

- For the analysis of cell migration toward a chemical stimulus
- Thin and uniform; cylindrical pores facilitate rapid cell migration
- Reduces incubation time and the need to sterilize
- Smooth glass-like surface with cylindrical pores for maximum particulate capture
- Suitable for air monitoring
- Lowest, non-specific binding membrane
- Precise pore sizes and pore distribution for absolute filtration and separation
- Non-staining, providing an exceptional background for sample observations
- Very low extractables
- Optically translucent in most pore sizes
- Excellent chemical resistance and thermal stability
- Superior strength

### Applications

- Air Monitoring
- General Filtration
- Particle Analysis
- Blood Filtration and Cell Analysis
- Environmental analysis
- Microscopy
- Microorganism Analysis
- Nucleic Acid Studies
- Oceanographic Studies
- Cell biology
- Fuel testing
- Parapsychology

### Part Number Matrix

Membrane Material		Filter Diameter(mm)	Pore Size(μm)
MF	PC	025	020
		013=13	005=0.05
		020=20	010=0.1
		025=25	020=0.2
		037=37	040=0.4
		047=47	060=0.8
		090=90	080=0.8
		142=142	100=1.0
			300=3.0
			500=5.0
			800=8.0

\* MFPC025020= Polycarbonate membrane, 25mm,0.2um

## PETRI DISHES

### Introduction

Membrane Solutions (MS) Petri dishes are manufactured with virgin polystyrene in cleanroom environment. Made with transparent materials for optical clarity to assist in visual analysis in microbiological applications. They are available in a variety of shapes and sizes for using in routine procedures and with automated equipments.



### Features and Benefits

- Made of 100% virgin polystyrene in 35/50/70/90/150 mm and customized
- Easily to open with one hand
- Pre-sterilized by gamma irradiated or ETO
- Packaged in polyethylene sleeves
- Special vent design for 90mm\*15mm Petri Dish
- Numeric Scale and Quadrants for Easy Orientation, and Counting
- Unique stacking-ring design allows for convenient, space-saving and stable storage

### Applications

- Bacterial culture
- Ideal for Microbiological Analysis
- Petri dishes with absorbent pads can be used for culturing micro-organisms on either agar or broth-based media

### Part Number Matrix

Part No	Description	Qty/Pk
LBPD035S	Petri Dish,35x12mm, standard round, sterile, 10*200	2000
LBPD055S	Petri Dish,55x15mm, standard round, sterile,10/Pk, 10*100	1000
LBPD070S	Petri Dish,70x15mm, standard round, sterile, 10/Pk, 10*100	1000
LBPD090S	Petri Dish,90x15mm, standard round, sterile, 10/Pk, 10*50	500
LBPD190S	Petri Dish, 90x15mm, standard round, sterile, Two Layer, 10/Pk, 10*50	500
LBPD290S	Petri Dish, 90x15mm, standard round, sterile, Three Layer, 10/Pk, 10*50	500
LBPD150S	Petri Dish,150x15mm, standard round, sterile, 10/Pk, 10*20	200

# PART D

## INSTRUMENTS

- 1 Glass Filter Holders
- 2 Glass and Stainless-Steel Filtration Hardware
- 3 Hardware and Pumps
- 4 Lab Water System
- 5 Transducer Filter

## GLASS FILTER HOLDERS

### Introduction

Membrane Solutions Glass Filter Holders are high-quality ideal for aqueous, acid, base and solvent applications. Standard 47mm/50mm filtration funnels mount on filtration flask using a ground glass joint.

### Features and Benefits

- Made of 100% borosilicate glass, assures resistance to even the most aggressive solvents
- Available in 250mL/300mL/500mL glass funnel volume and 0.5L/1L/2L flask volume for various applications
- Support assembly's unique base design with integral vacuum connection prevents contamination of the vacuum line with filtrate

### Applications

- Vacuum filtration and degassing of aqueous, biological, organic or corrosive liquids
- Ideal for mobile phase particulate removal



### Part Number Matrix

Part No	Name	Description	Packaging
VFG025005	Glass Vacuum Filters	250ml Glass Funnel, 500ml Filter Flask, Anodized Aluminum Clamp, Solid Glass Frit with 8#Silicone Stopper	1 set
VFG025010	Glass Vacuum Filters	250ml Glass Funnel, 1000ml Filter Flask, Anodized Aluminum Clamp, Solid Glass Frit with 8#Silicone Stopper	1 set
VFG025020	Glass Vacuum Filters	250ml Glass Funnel, 2000ml Filter Flask, Anodized Aluminum Clamp, Solid Glass Frit with 8#Silicone Stopper	1 set
VFG030005	Glass Vacuum Filters	300ml Glass Funnel, 500ml Filter Flask, Anodized Aluminum Clamp, Solid Glass Frit with 8#Silicone Stopper	1 set
VFG030010	Glass Vacuum Filters	300ml Glass Funnel, 1000ml Filter Flask, Anodized Aluminum Clamp, Solid Glass Frit with 8#Silicone Stopper	1 set
VFG030020	Glass Vacuum Filters	300ml Glass Funnel, 2000ml Filter Flask, Anodized Aluminum Clamp, Solid Glass Frit with 8#Silicone Stopper	1 set
VFG050020	Glass Vacuum Filters	500ml Glass Funnel, 2000ml Filter Flask, Anodized Aluminum Clamp, Solid Glass Frit with 8#Silicone Stopper	1 set
VFG030010P	Glass Vacuum Filters	300ml Glass Funnel, 1000ml Glass Solvent Collection, Anodized Aluminum Clamp, Solid Glass Frit	1 set
VFG030020P	Glass Vacuum Filters	300ml Glass Funnel, 2000ml Glass Solvent Collection, Anodized Aluminum Clamp, Solid Glass Frit	1 set
VFG050020P	Glass Vacuum Filters	500ml Glass Funnel, 2000ml Glass Solvent Collection, Anodized Aluminum Clamp, Solid Glass Frit	1 set
VFG1000	Glass Filter Flask	Glass Filter Flask 1000ml, with 3/8" OD vacuum tubing	1 pcs
VFG2000	Glass Filter Flask	Glass Filter Flask 2000ml, with 3/8" OD vacuum tubing	1 pcs
VFG1000RB	Glass Solvent Collection	1000ml	1 pcs
VFG2000RB	Glass Solvent Collection	2000ml	1 pcs
VFG030F	Glass Filter Holders	All-Glass Microanalysis Filter Holder 47mm;300mL	1 pcs
VFG0500GF	Glass Funnel	500ml	1 pcs
VFG047SS	Vacuum Base	Working with 2000ml collection	1 pcs
VFG147SS	Vacuum Base	Working with 1000ml collection	1 pcs

## GLASS AND STAINLESS-STEEL FILTRATION HARDWARE

### Introduction

Membrane Solutions Filtration Hardware (Funnel and Base) is available in both Glass and 316LSS. Funnel and Funnel Base Glass Solvent Filters, all-glass design restricts contact with reactive surfaces such as steel or rubber to minimize contamination of sample or filtrate.

Standard 47/50 mm filtration funnels mount on filtration flask using a ground glass joint.



### Features and Benefits

- Glass Vacuum Filter aqueous, organic or corrosive liquids for particulate contamination analysis
- It is recommended for HPLC solvent filtration and it has the function of out-gas to guarantee the clean of mobile phase and avoid the blockage of HPLC liquid flow path.

### Part Number Matrix

Item#	Description	Packaging
VFM0101S	1) Stainless Steel Manifold	1set
	2) One Stainless Steel Filtration Units	
	3) One Glass Collect Bottle	
	4)Two pieces of hosepipe	
VFM0101G	1) Stainless Steel Manifold	1set
	2) One Glass Filtration Units	
	3) One Glass Collect Bottle	
	4)Two pieces of hosepipe	
VFM0103S	1) Stainless Steel Manifold	1set
	2)Three Stainless Steel Filtration Units	
	3) One Glass Collect Bottle	
	4)Two pieces of hosepipe	
VFM0103G	1) Stainless Steel Manifold	1set
	2) Three Glass Filtration Units	
	3) One Glass Collect Bottle	
	4)Two pieces of hosepipe	
VFM0106S	1) Stainless Steel Manifold	1set
	2) Six Stainless Steel Filtration Units	
	3) One Glass Collect Bottle	
	4)Two pieces of hosepipe	
VFM0106G	1) Stainless Steel Manifold	1set
	2) Six Glass Filtration Units	
	3) One Glass Collect Bottle	
	4)Two pieces of hosepipe	
VFMSM01	Stainless Steel Manifold, single	1pcs
VFMSM03	Stainless Steel Manifold, Three Units	1pcs
VFMSM06	Stainless Steel Manifold, Six Units	1pcs
VFMF100G	Glass Funnel, 100ml	1pcs
VFMF300G	Glass Funnel, 300ml	1pcs
VFMF300S	Stainless Steel Funnel, 300ml	1pcs

## HARDWARE AND PUMPS

### Introduction

Membrane Solutions (MS) Supervac™ Vacuum Pump has premium, corrosion-resistant wetted parts and is fitted with a patented multi-port valve system that increases performance and tolerates liquids accidentally drawn into the system without loss of performance. It is a compact, lightweight, and easy to use pump. This vacuum pump combines all the advantages of lower pressure pumps with the perfect uniformity of diaphragm type operation. It compresses air by means of a long-life diaphragm, which flexes within the compressor. The fan-cooled, ball-bearing motor is permanently lubricated and has a single-use (fuse) overload protector. This pump is designed for small volume/aqueous flask filtration applications, intended for filtration of liquids or gases, or for other continuous or intermittent use, with all types of filter holders.



### Features and Benefits

- Unit is light weight, easy to move and can work smoothly, which can guarantee the ideal vacuum and high rate of air flowing.
- It adopts the operation containing no friction, producing no calories and having no friction exhausts.
- The diaphragm is made of Nitrile Rubber, which resists the corrosion and has long operating life.
- Steady running, low noise and high operating efficiency

### Application

- Vacuum filtration
- Vacuum distillation
- Vacuum drying
- On rotary evaporators
- To extract and transfer gases

### Part Number Matrix

Part No	Description	Qty/pK
VPJ0332	Vacuum Pump, 250 mbar, 20 L/min	1
VPJ0201	Vacuum Pump, 300mbar, 12L/min	1
VPJ0501	Vacuum Pump,250mbar, 30L/min	1
VPJ0502	Vacuum Pump,50mbar 30L/min	1
VPJ1001	Vacuum Pump, 250mbar, 60L/min	1
VPJ0333	Vacuum Pump, 50mbar, 20L/min	1



## LAB WATER SYSTEM

### Introduction

Laboratories require ultrapure/pure water for application including simple routine washing and rinsing to the most critical science and analytical applications.

Membrane solutions applied our expertise gained from years of innovation, to offer reliable & cost-effective water purification systems.

Membrane solutions lab ultrapure water systems are designed and manufactured under ISO certification, top quality controlling commitment, ensure compliance with CE standards of EU, to guarantee completely meeting with the highest grade 1 water standards of ASTM, CAP, CLSI, EP and USP.



### Features and Benefits

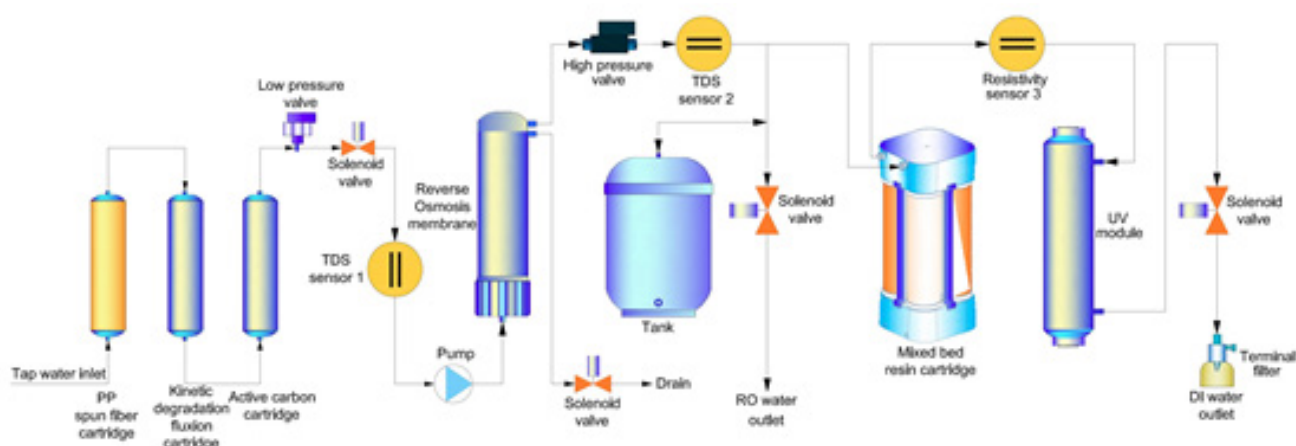
- Integrated pure and ultrapure water directly from tap water
- Dual point-of-delivery dispensers for easy and convenient remote delivery
- Intuitive interface and convenient operation
- Advanced monitoring technologies
- Automatic backwash cycle and leakage protection
- Easy installation and maintenance—quick-connection cartridge
- Multiple choices of final filters to remove specific contaminants for different applications



### Specifications

MS Item Number	Tap Water Inlet	DI Water Inlet	Type I Water	Type II Water	Type III Water	UV Lamp (245&185nm)	UV Lamp (245nm)	UF module 5000D	TOC level	Endotoxin level
UPW-S-T13-15	Y		Y		Y		Y		<10ppb	N/A
UPW-S-T13-15UF	Y		Y		Y		Y	Y	<10ppb	<0.001Eu/ml
UPW-S-T13-15UV	Y		Y		Y	Y			<3ppb	N/A
UPW-S-T13-15VF	Y		Y		Y	Y		Y	<3ppb	<0.001Eu/ml
UPW-S-T13-30	Y		Y		Y		Y		<10ppb	N/A
UPW-S-T13-30UF	Y		Y		Y		Y	Y	<10ppb	<0.001Eu/ml
UPW-S-T13-30UV	Y		Y		Y	Y			<3ppb	N/A
	Y		Y		Y	Y		Y	<3ppb	<0.001Eu/ml
UPW-S-P12		Y	Y	Y			Y		<10ppb	N/A
UPW-S-P12-UF		Y	Y	Y			Y	Y	<10ppb	<0.001Eu/ml
UPW-S-P12-UV		Y	Y	Y		Y			<3ppb	N/A
UPW-S-P12-VF		Y	Y	Y		Y		Y	<3ppb	<0.001Eu/ml
UPW-S-T23-15	Y			Y	Y		Y		N/A	N/A
UPW-S-T23-15UT	Y			Y	Y		Y		N/A	N/A
UPW-S-T23-30	Y			Y	Y		Y		N/A	N/A
UPW-S-T23-30UT	Y			Y	Y		Y		N/A	N/A

### Water Flow Path



### Applications

- Cell and culture media preparation,
- PCR
- Endotoxin analysis,
- Glassware washing/rinsing
- General lab equipment (water baths, incubators, etc.)
- High performance liquid chromatography (HPLC)
- Ion Chromatography (IC)
- ICP - MS, GC - MS, CF - AAS
- Cell and tissue culture
- Microbiology and molecular biology
- Drug discovery

### Part Number Matrix

UPW	S	-	T13	-	15	VF
MS Ultrapure Water System	Series Code S = S series B = B series M = M series		Inlet Water & Outlet Quality Type T13 = Tap to Type I & III T12 = Tap to Type I & II T10 = Tap to Type I only T23 = Tap to Type II & III T20 = Tap to Type II only P13 = Pure to Type I & III P23 = Pure to Type II & III P10 = Pure to Type I only		Production Rate 15 = 15L/Hour 30 = 30L/Hour	Configuration UV = UV Lamp UF = UF module UT = UV + POU* VF = UV + UF

\*Point of Use Filter

## TRANSDUCER FILTER

### Introduction

Membrane Solutions have been producing transducer protection filters for years and have the know-how to design a solution for your application.

Protecting the transducer sensor from moisture and humidity from a patient's breathing is a small but essential part in maintaining the operational performance of the ventilator/anesthesia machine. It is also crucial in preventing cross-contamination between patients.



### Features and Benefits

- Connections are available in female Luer lock inlet + male Luer slip outlet, double Luer lock, and stepped hose barb inlet + stepped hose barb outlet.
- Manufactured to ISO 9001:2015 and CE certified.
- Validated by Cytotoxicity <USP 87> and Biocompatibility <USP 88>, which guarantees the safety of users.
- Varied filter membrane materials are available; PTFE is the most popular for Ventilator/Anesthesia applications due to the natural hydrophobic properties of the membrane material.

### Applications

- Ventilator/Anesthesia systems.
- HST(Home Sleep Test) system cannula filters
- PSG(Polysomnography) system filters.
- Transducer production in other medical devices.

## Specifications

Housing material	ABS	
Filter material	PTFE (Polytetrafluoroethylene) membrane	
Sealing Technology	Thermally bonded	
Housing diameter	13 mm/23mm/50mm	
Filtration area	20 cm <sup>2</sup>	
Inlet/Outlet Connections	Female Luer lock inlet, Male Luer lock outlet Female Luer lock inlet, Male Luer slip outlet Stepped hose barb inlet, Stepped hose barb outlet	
Pore size (liquid rating)	0.22 µm	0.45 µm
Bubble point with isopropanol (60%)	0.2 µm, > 15.9psi (1.1 bar)	0.45 µm, > 13.1psi (0.9 bar)
Maximum operating pressure	43.5 psi (3.0 bar)	
Housing burst pressure	72.5 psi (5.0 bar)	
Sterilization	Irradiation sterilization/non- sterilization	
Flow rate for air at Δp =1.45 psi ( 0.1 bar)	0.22µm: 5 lpm;	0.45 µm: 8 lpm;
Biosafety	USP Plastics Class VI @ 121 °C	
Non-Fiber Releasing	non-fiber releasing as per CFR 21	
Cytotoxicity Test <USP 87>	Passed	
Biocompatibility Test <USP 88>	Passed	

## Part Number Matrix

TF	Membrane Material	Filter Diameter(mm)	Pore Size(µm)	Pre-Sterilized
	PTFE	013	022	N/S
	PTFE	013=13	022=0.2 045=0.45 100=1.0 300=3.0	N=No S=Yes

\* TFPTFE013022S=Transducer filter, PTFE membrane, 13mm,0.22µm, Female Luer lock inlet, Male Luer lock outlet

# PART E

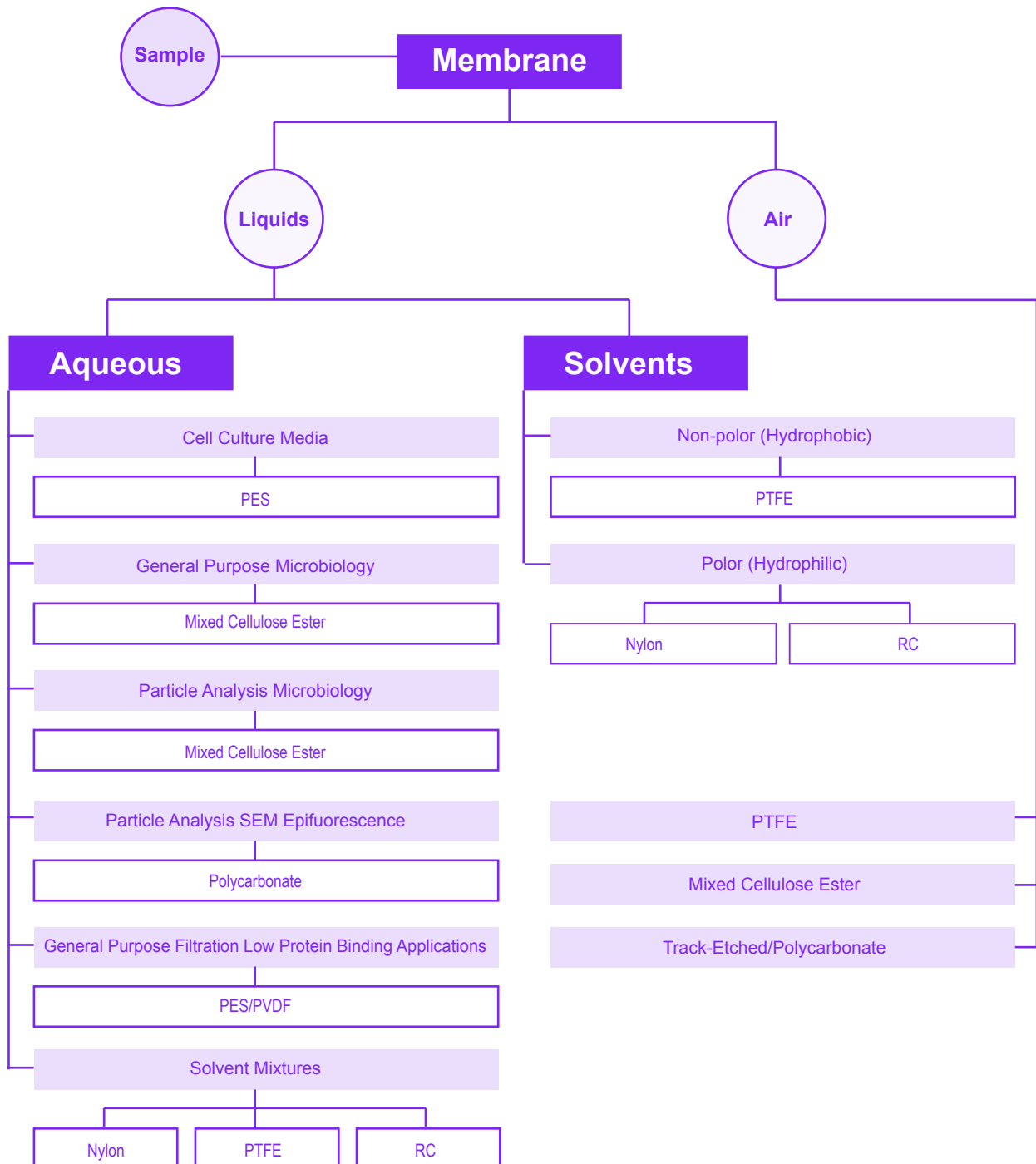
## OTHER

- 1 Quick Pick Reference Chart
- 2 Membrane Chemical Compatibility
- 3 Mission Statement
- 4 Quality Policy

## QUICK PICK REFERENCE CHART

### Introduction

MS brings to the laboratory user a range of membrane filters whose advanced technical specifications make them today's preferred choice for a wide range of applications. The membrane filters offer accurately controlled pore size distribution and higher strength and flexibility, which ensure reproducibility and consistency.



## MEMBRANE CHEMICAL COMPATIBILITY

	NY	PTFE	PVDF	PP	PES	CA
<b>ACIDS</b>						
Acetic, Glacial	L	C	C	C	N	N
Acetic, 25%	C	C	C	C	C	C
Formic, 25%	N	C	C	C	-	L
Hydrochloric, 25%	N	C	C	C	C	N
Nitric, 25%	N	C	C	C	-	N
Phosphoric, 25%	N	C	C	C	-	C
Sulfuric, 25%	N	C	C	C	-	N
Trichloroacetic, 10%	N	C	-	-	-	C
<b>ALCOHOLS</b>						
Amyl Alcohol, Butanol	C	C	L	C	L	C
Benzyl Alcohol	C	C	C	C	N	L
Ethanol, 70%	L	C	C	C	C	C
Ethanol, 98%	C	C	C	C	C	C
Ethylene Glycol	C	C	C	C	C	C
Glycerol	C	C	C	C	C	C
Isopropal, n-Propanol	C	C	C	C	C	C
Methanol, 98%	C	C	C	C	C	C
Propylene Glycol	C	C	C	C	C	L
<b>ALKALIES</b>						
Ammonium Hydroxide, 25%	C	C	C	C	C	C
Sodium Hydroxide 3 Normal	C	C	C	C	-	N
<b>HYDROCARBONS</b>						
Hexane	C	C	C	N	L	C
Sodium	C	C	C	N	C	C
Toluene, Benzene	C	C	C	N	S	C
<b>HALOGENATED HYDROCARBONS</b>						
Carbon Tetrachloride	C	C	C	L	C	L
Chloroform	C	C	C	L	N	N
Methylene Chloride	L	C	C	L	N	N
Monochlorobenzene, Freon	C	C	C	C	-	C
Trichloroethylene	C	C	C	C	N	C
<b>KEYTONES</b>						
Acetone, Cyclohexanone	C	C	C	C	N	N
Methy Ethyl Ketone	C	C	L	L	N	L
Methyl Isobutyl Ketone	-	C	N	L	-	-
<b>ESTERS</b>						
Amyl Acetate	C	C	L	L	-	L
Butyl Acetate	C	C	L	L	-	L
Ethyl acetate, Methyl acetate	C	C	L	L	N	N
Propyl Acetate	C	C	L	L	-	L
<b>OXIDES - ETHERS</b>						
Dimethylsulfoxide (DMSO)	-	E	N	C	N	N
Dioxane and Tetrahydrofuran	C	E	N	C	-	N
Ethyl Ether	C	E	C	L	C	C
<b>SOLVENTS WITH NITROGEN (AMIDES)</b>						
Acetonitrile	C	E	L	C	L	N
Aniline	-	-	N	-	-	N
Diethylacetamide	C	-	N	-	-	N
Dimethyl Formamide	L	N	N	C	-	N
Pyridine	C	L	S	N	L	N
<b>MISCELLANEOUS</b>						
Formaldehyde Solution, 30%	C	C	C	C	C	L
Hydrogen Peroxide, 30%	N	C	C	C	C	C
Phenol, Aqueous, 10%	N	C	L	C	N	N

## MISSION STATEMENT

To be a global leader in membrane chemistry and device manufacturer of filtration products for laboratory, industrial and residential markets by providing high performance products guaranteed by a quality management program and dedicated quality staff.

## QUALITY POLICY

Membrane Solutions is committed to providing quality products and services including continuous quality improvement through TQM & ISO9001 programs.

To consistently deliver quality products by adhering to the set specifications, regulatory, statutory requirements and customer contractual requirements.

To motivate and train staffs for continual improvement of quality standards.

To update and implement procedures complying with international standards.