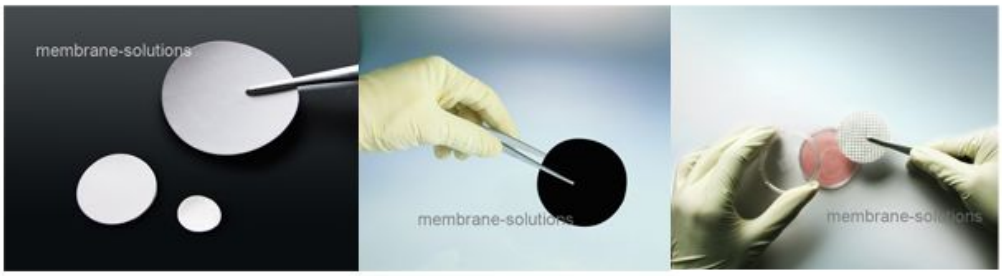
Membrane Solutions

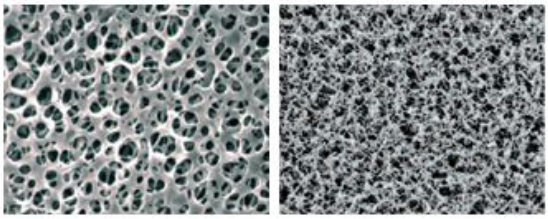
MS® Membrane Filters

Membrane filters or "membranes" are microporous films with specific pore size ratings. Membranes retain particles and microorganisms that exceed their pore ratings by acting as a physical barrier and capturing such particles on the surface of the membrane.

Membrane Solutions offers membrane discs in diameters from 13mm to 293mm and materials including PES,PVDF,PTFE,MCE,Nylon,PP,CA,CN and GF which are manufactured in ISO 9001 certified facilities and certification is available upon request.

Membrane Solutions's Chemcial Compatibility Chart will help you choose the right type of membrane for your application.





Electron microscope photoes

Order Information

Provide membrane slitting and cutting to meet special request of our clients.

Flexibility for OEM Requirement:

Membrane Solutions membrane are available in different diameters, pore size, lurelock connections and packing depends on your quantity, can be customized to meet your application requirements. Because Membrane Solutions is specialized OEM manufacture, all customization can be done easily and cost effectively.

Filter Series	Filter Media	Diameter	Micron Rating	Suffix
MF-Membrane Filter	PES-Polyethersulfone NY-Nylon PVDF-Polyvinylidene Fluoride PTFE-Polytetrafluoroethylene MCE-Mixed Cellulose Ester PP-Polypropylene CA-Cellulose Acetate CN-Cellulose Nitrate	013-13mm 025-25 mm 047-47 mm 060-60 mm 090-90 mm 100-100 mm 142-142 mm 200-200 mm 293-293 mm	015-0.15μm 022-0.22μm 030-0.30μm 045-0.45μm 065-0.65μm 080-0.80μm 100-1.0μm 200-2.0μm 300-3.0μm 500-5.0μm	MCE N-Nonsterile S-Sterile W-White B-Black G-Gridded PTFE B-Hydrophobic L-Hydrophilic GF B-Binder N-Binder Free

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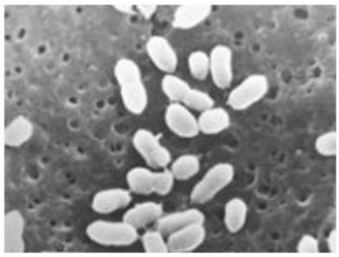
Membrane Solutions

MS® MCE Disc Membrane

Morphology:

Scanning electron micrographs of Pseudomonas diminuta ATTC 19146

Cultured in saline lactose broth



Cultured in soybean-casein digest broth

Microbiolgy Supplies:

The principle involved in the use of membrane filters in viable counting is the following:After the material to be tested has been passed through the filter, the organisms are retained on the surface of the filter.If the density of organisms on the filter is low,direct microscopy cannot be used.However ,if the filter is placed upon a culture of the filter, nurture the organisms,and permit them to grow into colonies visible to the naked eye.By counting the colonies which develop on the surface of the filter after a suitable incubation period,one obtains a count of the number of viable organisms that had been retained by the filter.

The viable count with a membrane filter is equivalent to a conventional plate count,but with considerably increased sensitivity,since a sample of almost unlimited size can be passed through the filter.In many fields,conventional plate counting is simply not possible because of the low densities of organisms,and in these fields the membrane filter has been a revolutionary development.Before the membrane filter was introduced,viable counting of low density materials could only be done by the cumbersome and inaccurate multiple-tube procedure.For most applications where the membrane filter have been compared,the membrane filter has been shown to be more accurate,equally sensitive,and much more convenient to use.

MF Technique:

1. Select the appropriate media, dispense the broth into a sterile Petri dish,evenly saturating the absorbent pad.

2. Flame the forceps, and remove the membrane from the sterile package. Place the membrane filter into the funnel assembly.

3. Flame the pouring lip of the sample container and pour the sample into the funnel.Turn on the vacuum and allow the sample to draw completely through the filter.

4. Place the membrane filter into the prepared Petri dish. Incubate at the proper temperature and for the appropriate time period.

5. Count the colonies

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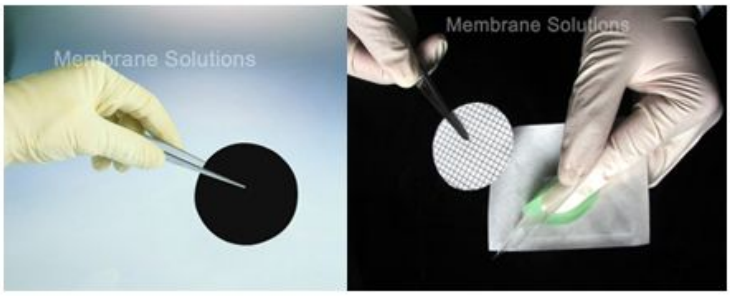
MS® Mixed Cellulose Esters (MCE) Membrane Disc Filter



Product Description:

Membrane filters or "membranes" are polymer films with specific pore ratings.MCE Membranes retain particles and microorganisms that exceed their pore ratings by acting as a physical barrier and capturing such particles on the surface of the membrane. MCE membranes are available in a variety of polymers, pore sizes, diameters, and surface types. Most membranes can be sterilized by autoclaving.

MCE gridded membranes are designed for the recovery and retention of bacteria in microbiological analysis applications. White gridded disks are designed for the recovery and retention of E. Coli bacteria in water/wastewater analysis as well as other microbiological tests. The filters are certified to meet specifications listed in APHA Standard Methods.

Features and Benefits:

- High porosity provides superior flow rates
- High protein binding can be blocked by pretreatment or utilized in applications
- High purity: Triton-free
- Autoclavable: Withstands autoclaving temperatures up to 130°C without adversely affecting bubble point, flow rate or microbiological recovery
- Rapid wetting time: <3 seconds to wet a 47 mm diameter disc with aqueous 1% methylene blue

Applications:

- Chemical Process Industry (pipes and fittings, pumps, valves, ...)
- Off shore oil industry (multilayer structures for oil and gas...)
- High purity fluid transportation
- Wire and cables (communication cable jacketing in the USA, ...)
- Plumbing
- Lithium batteries

Technical Parameter:

Membrane	Pore Size (μm)	Thickness (μm)	Bubble Point		Typical Flow Rate (ml/mincm²bar)	Pore%
			(MPa)	(kfg/cm)		
MCE	8.0	130	0.034~0.044	0.35~0.45	405~705	84
	5.0		0.044~0.074	0.45~0.75	330~404	84
	3.0		0.074~0.083	0.75~0.85	260~330	83
	1.2		0.083~0.113	0.85~1.15	182~260	82
	0.8		0.113~0.150	1.15~1.50	124~182	82
	0.65		0.150~0.226	1.50~2.30	48~124	81
	0.45		0.226~0.294	2.30~3.00	34~48	79
	0.3		0.294~0.392	3.00~4.00	18~34	77
	0.22		0.392~0.470	4.00~4.80	10~18	75
	0.15		0.470~0.550	4.80~5.60	7~10	74

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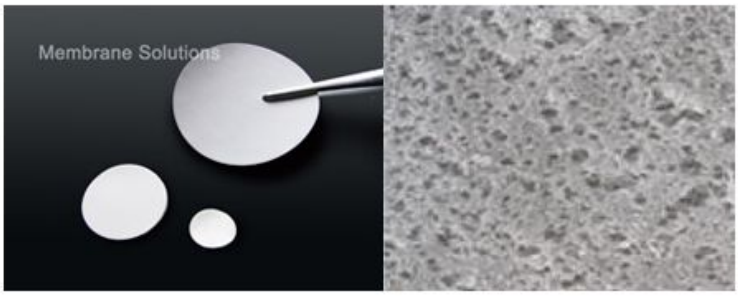
MS® Nylon Membrane Disc Filter



Product Description:

Minimum water Bubble point (WBT): 0.10μm:≥0.25Mpa； 0.22μm: ≥0.21Mpa； 0.45μm:≥0.14Mpa.Applicable:pH 6—13

Features and Benefits:

- Hydrophilic
- Superior thermo stability
- Combatible with aqueous and alcoholic solutions and solvents; suitable for HPLC
- Binds proteins, DNA and RNA

Applications:

- Bacterial and Particulate removal
- HPLC Solvent and Sample Filtration
- Diagnostic kit manufacturing
- Drug filtration
- Gene probe, Protein and Lateral flow assays
- IV filters

Technical Parameter:

Item	Pore Size (μm)	Bubble Point (MPa)	Water Flow(ml/min*cm²)
Nylon-6 no substrate	0.22	≥0.30	15
Nylon-6 no substrate	0.45	≥0.19	37
Nylon-6 on PET	0.22	≥0.30	10
Nylon-6 on PET	0.45	≥0.20	23
Nylon-6 no substrate	1.0	≥0.08	80

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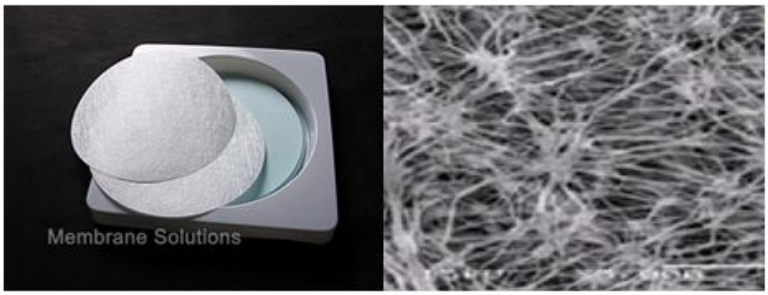
Membrane Solutions

MS® PTFE Disc Membrane



Product Description:

MS PTFE membrane media for filtration is made of PTFE(polytetrafluoroethylene), and were drawn 2-demension. It is micro-pore film. The PTFE membrane was laminated with s great variety of fabric and paper. They are new filter media. Applied to extensive industries, including pharmacy, biochemistry, microelectronic, and lab material and etc. Directly and indirectly related to pharmacy, brewing, manufacture of pure water and special need water, beverage and dairy, chemical reagent, biochemical reagent, air filtration of fermentation tank in microelectronic, purification and filtration in microelectronic plants, filtration and separation of antibacterial fluid, production of medicine, air conditioning of hospitals and commercial buildings.

Features and Benefits:

- PTFE membrane with supporting layer polyester or polypropylene.
- The PTFE membrane can effectively filtrate microorganism and other particulates.
- Wide chemical compatibility
- High temperature resistance
- Low starting resistance

Applications:

- Filtration of strong acids and aggressive solutions
- Venting applications
- Phase separations
- Aerosol samplings

Technical Parameter:

Item	Substrate	Thickness (μm)	Pore Size (μm)	Bubble Point In IPA(MPa)	Air Perm(m^3/m^2hr) (ΔP=0.01MPa)	Maximum Temperature(°C)
PTFE	PP	160±10	0.45	0.08-0.13	500-800	150-170
PTFE	PP	160±10	0.22	0.14-0.16	300-500	150-170
PTFE	PET	140±10	0.45	0.08-0.14	500-800	250
PTFE	PET	140±10	0.22	0.14-0.18	300-500	250

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MS® Polyethersulfone (PES) Disc Membrane

Product Description:

The highly asymmetrical pore structure of our Micro PES flat membrane offers a high dirt loading capacity, increasing the filtration performance to give higher throughputs and higher flow rates than symmetrical membranes.

Features and Benefits:

- High flow rates and throughputs due to a highly asymmetric pore structure
- Inherently hydrophilic
- Low protein binding characteristics
- Good chemical compatibility
- Superior thermo stability

Applications:

- Raki and beer filtration
- Especial chemical reagent filtration
- Liquid of high temperature filtration

Technical Parameter:

Product types	Nominal Pore Size [µm]	Bubble point in IPA [Bar]	[psi]	Min.TMF** [ml/min cm² bar]
1F PH	0.04	2.8*	40.6	4
2F EL	0.1	2.8*	29.9	10
2F	0.2	4.3*	62.4	35
4F	0.45	3.0*	43.5	60
5F	0.5	2.3*	33.4	90
6F	0.65	1.9*	27.6	90
8F	0.8	1.4*	20.3	245
12F	1.2	1.0*	15.2	260

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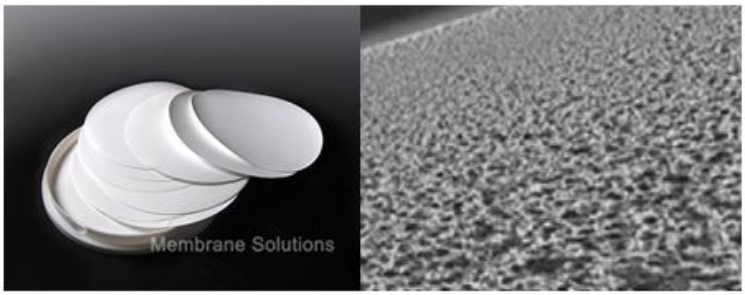
Membrane Solutions

MS® PVDF Hydrophobic Membrane Disc Filter



Product Description:

PVDF filter media, particularly microporous membranes, can be prepared to exhibit high efficiency for particle removal. PVDF has a low critical surface energy and conventional, hydrophobic, microporous PVDF membranes will not wet with aqueous fluids.MS Membrane stack consists of reinforced-type PVDF membrane. It can ensure wet air and other gas pass through smoothly, even when the differential pressure is very low. It holds the opposite capability against PVDF hydrophilic membrane.

Features and Benefits:

- Wide chemical compatibility
- Excellent mechanical properties
- High temperature capabilities (continuous use temperature up to 150°C) and excellent ageing resistance
- Easy processing by extrusion, injection, compression, blow molding, solution processes…
- Physiologically harmless and approved for contact with food products -Low extractable levels

Applications:

- Chemical Process Industry (pipes and fittings, pumps, valves, ...)
- Off shore oil industry (multilayer structures for oil and gas...)
- High purity fluid transportation
- Wire and cables (communication cable jacketing in the USA, ...)
- Plumbing
- Lithium batteries

Technical Parameter:

Item	Pore Size (μm)	Bubble Point (MPa)	Water Flow (ml/min*cm²)
PVDF on PET	0.22	0.08-0.15	10-15
PVDF on PET	0.45	0.05-0.07	37-60

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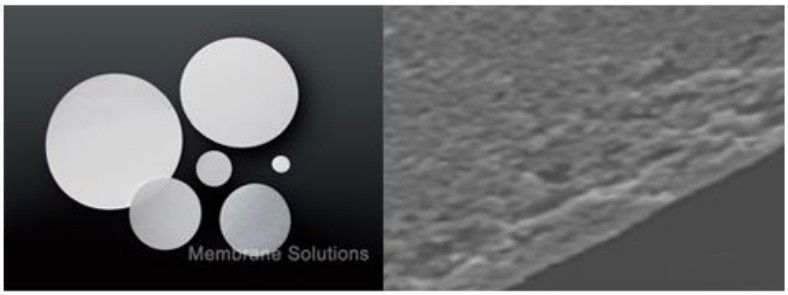
Membrane Solutions

MS® PolyPropylenen (PP) Disc membrane



Product Description:

Because of their hydrophobic nature,the polypropylene membrane are best suited for industrial processes such as gas filtration,chemical processes and photo-resist production as well as for application in the automotive industry.since polypropylene is a pure hydrocarbon material,there are no disposal problems relating to halogen content with PP membrane in contrast with other hydrophobic membranes such as PVDF or PTFE.

Features and Benefits:

- Hydrophobic
- Highly porous membrane
- Wide chemical compatibility
- High temperature resistance
- Low extractable levels

Applications:

- Aqueous and organic solvent filtration
- HPLC sample preparation
- Lon chromatography
- Gas filtration
- Photo-resist production

Technical Parameter:

Item	Nominal Pore Size (μm)	Bubble Point in IPA (Bar)	(psi)	Min.TMF* (ml/min·cm²·bar)
PP	0.15	2.1	30.5	2.5
PP	0.22	0.8	11.6	8.5
PP	0.45	0.11	1.60	

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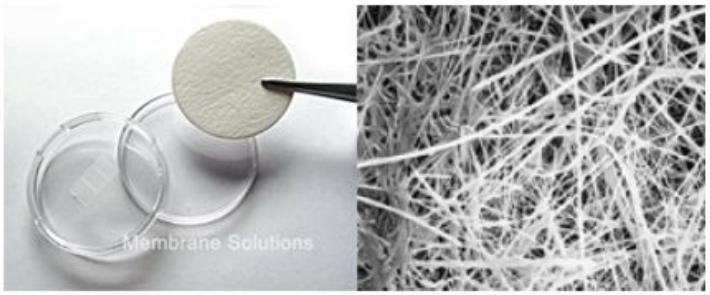
MS® Glass Fiber Disc Membrane



Product Description:

- Meet the requirements for suspended solids testing, as described in Standard Methods for the Examination of Water and Wastewater, current edition.
- Reduce filtration costs and premature clogging when filtering difficult-to-filter or highly contaminated solutions.
- Extend filter life and make fewer final filter changes with high capacity prefilters.
- Eliminate sample contamination. Binder-free borosilicate glass fiber has no added extractables.
- Filter a wide range of particulate loads and viscous solutions with a selection of filter thicknesses to choose from.
- Excellent wet strength for each handling and filter integrity.

Features & Benefits:

- Glass fiber filter use this open-mesh weave of tough fiberglass to reinforce roof patches.
- Embed membrane in the patching cement, the cover with another layer of cement. Membrane will become a strong.
- reinforced bridge between patch and the rest of the roof.
- High dirt holding capacity.
- Biologically inert.
- Bonding reduces media migration.

Applications:

- Water/air pollution analysis
- Liquid clarification
- Cell harvesting
- Protect final filter to extend its life
- Clarification of particulate laden solutions
- Filtration of long duration under pressure
- Binder increases high dirt loading capacity

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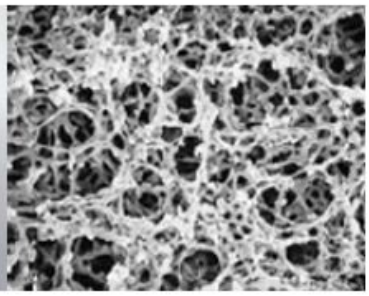
MS® Cellulose Acetate (CA) Disc Membrane



Product Description:

- Composed of cellulose di- and triacetate, these filters exhibit low static charge and high strength
- May be sterilized repeatedly without loss of integrity or change in bubble point
- Extremely low aqueous extractables (0.1 wt%)
- Good resistance to heat and low molecular weight alcohols (compared to MCE membranes)
- Use for filtration of enzyme solutions, diagnostic cytology, or receptor binding studies

Features and Benefits:

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

Applications:

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

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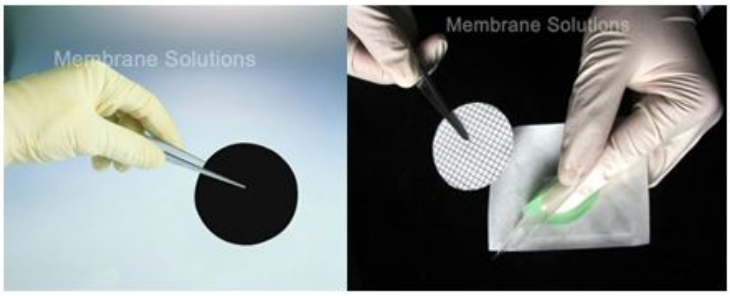

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Features and Benefits:

- High porosity provides superior flow rates
- High protein binding can be blocked by pretreatment or utilized in applications
- High purity: Triton-free
- Autoclavable: Withstands autoclaving temperatures up to 130°C without adversely affecting bubble point, flow rate or microbiological recovery
- Rapid wetting time: <3 seconds to wet a 47 mm diameter disc with aqueous 1% methylene blue

Applications:

- Chemical Process Industry (pipes and fittings, pumps, valves, ...)
- Off shore oil industry (multilayer structures for oil and gas...)
- High purity fluid transportation
- Wire and cables (communication cable jacketing in the USA, ...)
- Plumbing
- Lithium batteries

Technical Parameter:

Membrane	Pore Size (μm)	Thickness (μm)	Bubble Point		Typical Flow Rate (ml/mincm²bar)	Pore%
			(MPa)	(kfg/cm)		
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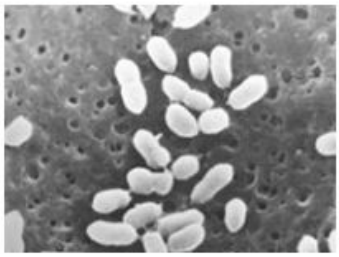
Morphology:

Scanning electron micrographs of Pseudomonas diminuta ATTC 19146

Cultured in saline lactose broth



Cultured in soybean-casein digest broth

Microbiolgy Supplies:

The principle involved in the use of membrane filters in viable counting is the following:After the material to be tested has been passed through the filter, the organisms are retained on the surface of the filter.If the density of organisms on the filter is low,direct microscopy cannot be used.However ,if the filter is placed upon a culture of the filter, nurture the organisms,and permit them to grow into colonies visible to the naked eye.By counting the colonies which develop on the surface of the filter after a suitable incubation period,one obtains a count of the number of viable organisms that had been retained by the filter.

The viable count with a membrane filter is equivalent to a conventional plate count,but with considerably increased sensitivity,since a sample of almost unlimited size can be passed through the filter.In many fields,conventional plate counting is simply not possible because of the low densities of organisms,and in these fields the membrane filter has been a revolutionary development.Before the membrane filter was introduced,viable counting of low density materials could only be done by the cumbersome and inaccurate multiple-tube procedure.For most applications where the membrane filter have been compared,the membrane filter has been shown to be more accurate,equally sensitive,and much more convenient to use.

MF Technique:

1. Select the appropriate media, dispense the broth into a sterile Petri dish,evenly saturating the absorbent pad.

2. Flame the forceps, and remove the membrane from the sterile package. Place the membrane filter into the funnel assembly.

3. Flame the pouring lip of the sample container and pour the sample into the funnel.Turn on the vacuum and allow the sample to draw completely through the filter.

4. Place the membrane filter into the prepared Petri dish. Incubate at the proper temperature and for the appropriate time period.

5. Count the colonies

www.membrane-solutions.com

USA Toll free: 800-553-9057 Fax: 732-412-4040
Address: 1108 Spring View Lane Plano,TX 75075

Japan Toll free: 0066- 33-800658
Address: Suite 803# 3-2-10, Kachidoki, Chou- ku, Tokyo, 104-0054

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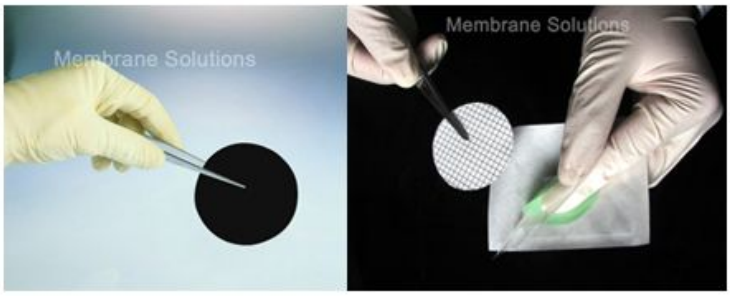
E-mail： info@membrane-solutions.com

Membrane Solutions

MS® Mixed Cellulose Esters (MCE) Membrane Disc Filter



Product Description:

Membrane filters or "membranes" are polymer films with specific pore ratings.MCE Membranes retain particles and microorganisms that exceed their pore ratings by acting as a physical barrier and capturing such particles on the surface of the membrane. MCE membranes are available in a variety of polymers, pore sizes, diameters, and surface types. Most membranes can be sterilized by autoclaving.

MCE gridded membranes are designed for the recovery and retention of bacteria in microbiological analysis applications. White gridded disks are designed for the recovery and retention of E. Coli bacteria in water/wastewater analysis as well as other microbiological tests. The filters are certified to meet specifications listed in APHA Standard Methods.

Features and Benefits:

- High porosity provides superior flow rates
- High protein binding can be blocked by pretreatment or utilized in applications
- High purity: Triton-free
- Autoclavable: Withstands autoclaving temperatures up to 130°C without adversely affecting bubble point, flow rate or microbiological recovery
- Rapid wetting time: <3 seconds to wet a 47 mm diameter disc with aqueous 1% methylene blue

Applications:

- Chemical Process Industry (pipes and fittings, pumps, valves, ...)
- Off shore oil industry (multilayer structures for oil and gas...)
- High purity fluid transportation
- Wire and cables (communication cable jacketing in the USA, ...)
- Plumbing
- Lithium batteries

Technical Parameter:

Membrane	Pore Size (μm)	Thickness (μm)	Bubble Point		Typical Flow Rate (ml/mincm²bar)	Pore%
			(MPa)	(kfg/cm)		
MCE	8.0	130	0.034~0.044	0.35~0.45	405~705	84
	5.0		0.044~0.074	0.45~0.75	330~404	84
	3.0		0.074~0.083	0.75~0.85	260~330	83
	1.2		0.083~0.113	0.85~1.15	182~260	82
	0.8		0.113~0.150	1.15~1.50	124~182	82
	0.65		0.150~0.226	1.50~2.30	48~124	81
	0.45		0.226~0.294	2.30~3.00	34~48	79
	0.3		0.294~0.392	3.00~4.00	18~34	77
	0.22		0.392~0.470	4.00~4.80	10~18	75
	0.15		0.470~0.550	4.80~5.60	7~10	74

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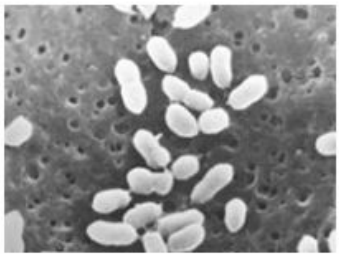
Membrane Solutions

MS® MCE Disc Membrane

Morphology:

Scanning electron micrographs of Pseudomonas diminuta ATTC 19146

Cultured in saline lactose broth



Cultured in soybean-casein digest broth

Microbiolgy Supplies:

The principle involved in the use of membrane filters in viable counting is the following:After the material to be tested has been passed through the filter, the organisms are retained on the surface of the filter.If the density of organisms on the filter is low,direct microscopy cannot be used.However ,if the filter is placed upon a culture of the filter, nurture the organisms,and permit them to grow into colonies visible to the naked eye.By counting the colonies which develop on the surface of the filter after a suitable incubation period,one obtains a count of the number of viable organisms that had been retained by the filter.

The viable count with a membrane filter is equivalent to a conventional plate count,but with considerably increased sensitivity,since a sample of almost unlimited size can be passed through the filter.In many fields,conventional plate counting is simply not possible because of the low densities of organisms,and in these fields the membrane filter has been a revolutionary development.Before the membrane filter was introduced,viable counting of low density materials could only be done by the cumbersome and inaccurate multiple-tube procedure.For most applications where the membrane filter have been compared,the membrane filter has been shown to be more accurate,equally sensitive,and much more convenient to use.

MF Technique:

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3. Flame the pouring lip of the sample container and pour the sample into the funnel.Turn on the vacuum and allow the sample to draw completely through the filter.

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