



POREX® Tubular Membrane Filter (TMF™) Module

FOR APPLICATIONS INCLUDING:

Heavy Metal Removal

- Plating Processes
- Printed Circuits

Semiconductor

Photovoltaic

Pre RO & RO Reclaim

- Power
- Steel/Iron
- Brine Recycling

Fluoride Removal

High Solids WW

Zero Liquid Discharge (ZLD) Systems



POREX
Filtration Group®

porexfiltration.com

Why Choose POREX Tubular Membrane Filters?



- Porex Tubular Membrane Filter modules provide consistent, reliable solid/liquid separations and long service life
- PE substrate with PVDF membrane offers high-performance tubular membrane with superior operating characteristics
- Patented PVDF substrate with PVDF membrane offers high temperature and enhanced chemical compatibility (pH range of 0-14 standard units)
- Highly chemical & abrasion resistant
- Multiple membrane pore sizes available on two different substrate options
- Uniform, thermally-bonded omni-directional substrate pore structure provides an optimized support structure for tubular membranes
- Multiple configurations available to suit your application's flux and solids level requirements (up to 5% by weight)

PERFORMANCE ATTRIBUTES

- High Flux
- Long Service Life
- Backwashable
- Multiple Pore Sizes
- PVDF or PE Substrate Available
- Excellent Chemical & Thermal Resistance
- Multiple Tube Configurations
- Patented Substrate Membrane Bond (PVDF/PVDF)



Product Ordering Guide

Tubular Cross-flow Module Part Number Matrix

Item must include a choice from each row of the center column. Example: MME3S01637VP

Type	MS MM	Module/Sintered Porous Plastic Module/Porous Membrane
Polymer	E V	Polyethylene Polyvinylidene Fluoride
Tube ID	2 3	0.50" (12.7 mm) 1.0" (25.4 mm)
Pore Size (microns)	002 005 S01 FIN COR	0.02 0.05 0.1 Fine Coarse
Length	1 6	1' (305 mm) 6' (1829 mm)
No. Tubes In Module	01 04 05 10 13 15 37 61	1 4 5 10 13 15 37 61
Membrane Polymer	O V	None Polyvinylidene Fluoride
Housing	P C	PVC CPVC

NOTES

Please consult factory for specific product availability.

- Module Type MS is only available in FIN and COR pore size configurations using Polymer Type E
- Module Type MM is only available in S01, 005 and 002 pore size configurations
- 15, 37 and 61 Tube Modules are only available with 0.50 inch Tube IDs

Structural Membrane Media For Optimal Performance

Porex Tubular Membrane Filter (TMF™) modules contain unique, patented, structural membrane tubes.

The superior strength of the membrane/substrate composite allows higher operating and backwash pressures for higher flux and reduced system footprint. The structural composite membrane features PVDF membrane bonded to PVDF substrate or anchored to PE substrate.

Chemical Resistance

Porex Porous Plastics are made from thermoplastics that are resistant to a broad spectrum of corrosive chemicals and reagents.

Operating Characteristics

Porex TMF modules are available in a wide range of configurations from single tube to 61 tube modules. At typical operating pressures of 20-80 psi, clean fluid is forced through the pores of the membrane, while suspended particulates remain in the retentate stream.

The turbulent flow of the retentate stream prevents the build-up of particles on the inner surface of the tube, providing high flux and prolonged filter life. This turbulent cross-flow performance and large bore tubular design may eliminate the need for prefiltration and should routinely handle high solids levels up to 5% by weight.

STRUCTURAL MEMBRANE TECHNOLOGY

- No membrane delamination
- Uniform chemical and temperature resistance
- Membrane fused to substrate

HIGHER PRESSURE RESISTANCE

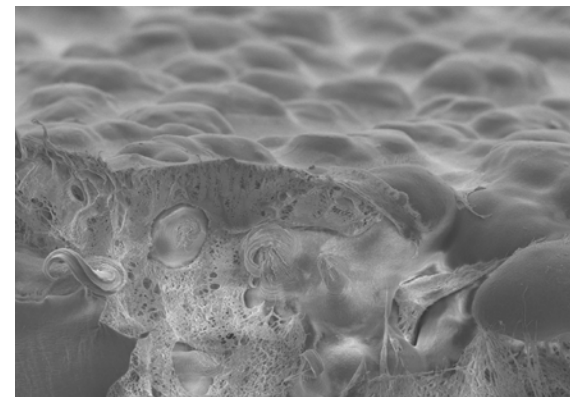
- Increased flux
- Reduced system size
- Improved backpulse efficiency

TOUGH UNIFORM MEMBRANE COMPOSITE

- Surface scratches will not destroy overall structural integrity



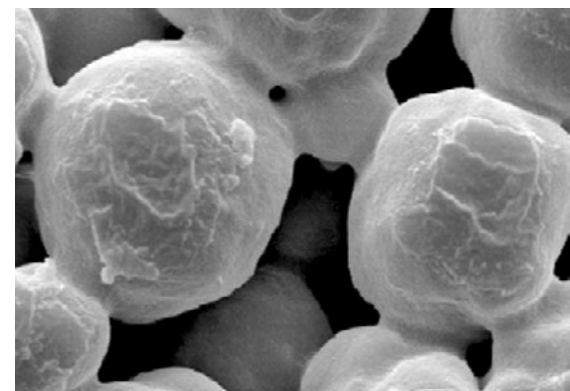
Porex TMF Installation



Membrane SEM

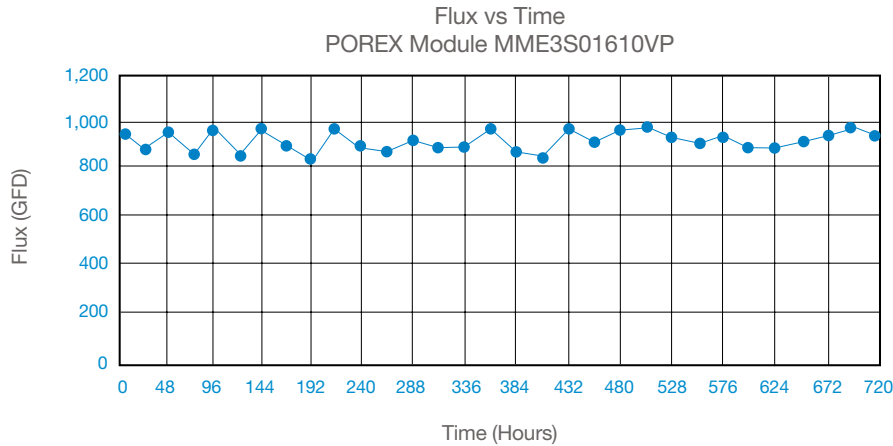
MATERIAL TECHNOLOGY

Each Porex Tubular Membrane Filter module contains multiple tubular membranes. These structural membrane tubes are made from a PE or PVDF sintered porous substrate that creates an intricate network of open-celled, omni-directional pores. These substrate pores are then filled with membrane which gives our tubes a unique combination of filtering capability and structural strength.



Sintered Substrate Tube SEM

TYPICAL MODULE EFFICIENCY



NOTE

The above chart depicts typical performance of a 6 ft., 10 tube module, with 0.1 micron nominal PVDF membrane on PE substrate processing a FeCl₃/NaOH dosed wastewater stream with NTU >500. Permeate quality delivered was <0.5 NTU. Module flux may vary by application and solids concentration. Performance in specific fluids need to be individually verified.

MATERIAL SPECIFICATIONS

Substrate Tube	Polyvinylidene Fluoride, Polyethylene
Membrane	Polyvinylidene Fluoride
Nominal Membrane Pore Size (µm)	0.1, 0.05, 0.02 (MM type)
Nominal Sinter Tube Pore Size (µm)	20, 100 (MS type)
Maximum Differential Pressure (PSI)	60 (1 inch tubes), 120 (½ inch tubes)
Housing Materials	PVC, CPVC
Housing Connections (10 x 1 inch tube), (13 x 1 inch tube), (37 x ½ inch tube)	Length – 72 inches Diameter – 6 inches Sc40 End Connections – 6 inch Nom. Pipe Size "Victaulic" groove Permeate Ports – 2½ inch Nom. Pipe Size "Victaulic" groove Sample Port – ¼ inch NPT plug
Housing Connections (4 x 1 inch tube), (5 x 1 inch tube), (15 x ½ inch tube)	Length – 72 inches Diameter – 4 inches Sc40 End Connections – 4 inch Nom. Pipe Size "Victaulic" groove Permeate Ports – 1.5 inch OD Stet Sample Port – ¼ inch NPT plug
Housing Connections (61 x ½ inch tube)	Length – 72 inches Diameter – 8 inches Sc40 End Connections – 8 inch Nom. Pipe Size "Victaulic" groove Permeate Ports – 2½ inch Nom. Pipe Size "Victaulic" groove Sample Port – ¼ inch NPT plug

Support Worldwide

As a global leader in porous polymer technology Porex is committed to quality, innovation, and customer satisfaction. Porex owns and operates manufacturing facilities in Europe, Asia, and North America —providing both standard and custom components to our customers through a global network of sales engineers, agents and distributors. Porex has attained ISO 9001 Certification at the USA, Germany and Malaysia operations. With an experienced engineering support staff and global distribution capabilities, Porex brings innovative solutions to the filtration marketplace.

FDA and NSF Approved

The majority of the raw materials used in the production of Porex Tubular Membrane Filters have been certified by their raw material suppliers as meeting FDA requirements in the Code of Federal Registration, 21 CFR 177.1520, for food contact, including cooking applications. Many components have been used in liquid filtration devices that carry NSF certification. In applications requiring NSF approval, Porex will work in conjunction with the NSF to help guide a product through the NSF application certification process.

Technology Leader

Porex is all about innovation! For over 50 years Porex has been a leader in the development and manufacture of porous polymer technologies. Our innovative processes include high-volume production and state-of-the art tooling coupled with an advanced polymer laboratory and extensive material science expertise. This ensures timely, optimal solutions for a variety of applications in the healthcare, consumer and industrial markets. Continuous product innovation, vast technological resources, commitment to quality, and dedication to customers are what distinguish Porex in the marketplace.



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