

NanoSHIELD™ Hollow Fiber Series Polypropylene Filter Cartridges

High Flow Rates, Low Pressure Drop, and Longer Filter Lifetime

NanoSHIELD™ hollow fiber series polypropylene filter cartridges have been engineered to combine the highest level of particle retention with superior flow rates and minimal pressure drop for the most demanding applications in the latest technology node.

Peak Performance Provided by Hollow Fiber Technology (HFT)

NanoSHIELD hollow fiber series filter cartridges with HFT provide up to 2 times more surface area and up to 5 times higher flow rates at the same pressure drop when compared to pleated membrane cartridges. This increase to flow and decrease to pressure drop allows a typical 10" NanoSHIELD hollow fiber series filter cartridge to perform similarly to a 20" pleated filter cartridge. This significant advantage allows for the use of smaller and less costly filter housings which reduce hold-up volume, filter change-out times, and total cost-of-ownership for the life of the process. In addition, 3M Purification Inc.'s HFT produces a membrane that is up to 2 times thicker than other technologies which in turn maximizes the depth of filtration and particle removal efficiency.

NanoSHIELD™ Hollow Fiber Series Cartridge Construction

The hollow fiber polypropylene membrane in an all polyethylene construction provides low metallic/ionic contamination and excellent resistance to most chemicals. Metallic or ionic contaminants can extract from surface modified and or improperly manufactured filters, which may reduce shelf life and or change the photo-speed, viscosity, or molecular weight of advanced chemicals. For this reason, all NanoSHIELD hollow fiber series filters are critically cleaned and integrity tested to provide low extractables and process repeatability out of the box. The compact design of NanoSHIELD hollow fiber series polypropylene filter cartridges make them ideally suited for critical applications requiring low hold-up volume with superior flow rates and high particle retention from 100 nm down to 5 nm.

Features & Benefits

Hollow Fiber Technology.

- Up to 2 times more surface area as compared to equivalent sized pleated filters.
- Increased depth (2x thicker) of filtration results in improved particle retention.

Large Surface Area

- Up to 5 times higher flow rates as compared to other pleated cartridges.
- 10" NanoSHIELD hollow fiber series cartridges flow similar to 20" pleated cartridges
- Increased lifetime, throughput, and overall equipment effectiveness (OEE).

Compact Design.

- Allows for smaller, less costly filter housings.
- Reduces hold-up volume, exposure, and waste of expensive chemicals.

0.005 µm to 0.1 µm Retention Ratings.

- Superior removal of particles, gels, and micro-bubbles.
- Reduced micro-bridge and wafer level defects.

Quality Manufacturing.

- Manufactured in a cleanroom to reduce particle adders and extractables.
- Filters are critically cleaned and tested for process repeatability.



Applications

ARC, BARC, TARC

Polyimide

Solvents

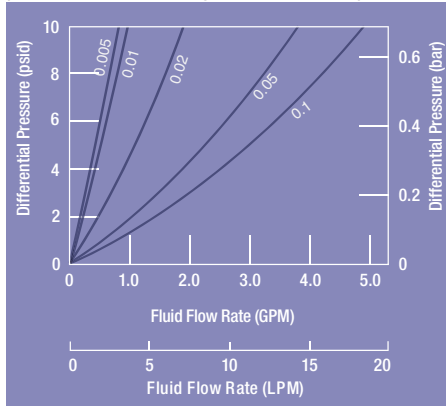
Developers

Etchants / Strippers

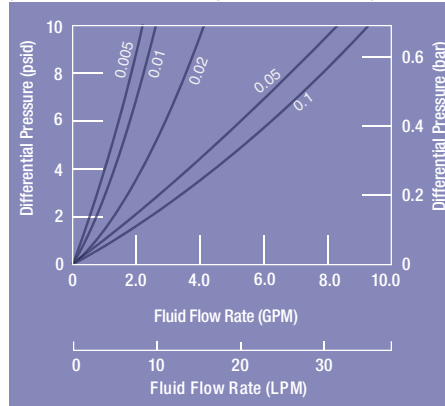
NanoSHIELD™ Hollow Fiber Series Polypropylene Filter Cartridge

Typical Cartridge Flow vs. Differential Pressure (1cps @ 25°C)

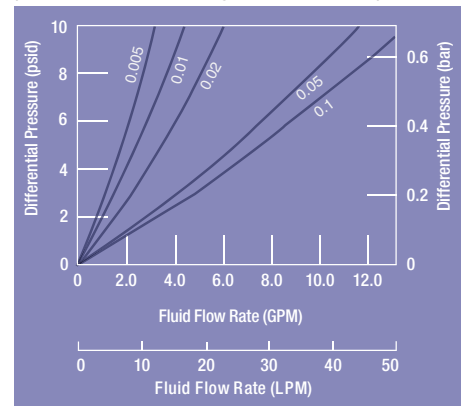
Graph 1: Typical Fluid Flow Rates @ 25° C
(5" NanoSHIELD Cartridge - 222 connector)



Graph 2: Typical Fluid Flow Rates @ 25° C
(10" NanoSHIELD Cartridge - 222 connector)



Graph 3: Typical Fluid Flow Rates @ 25° C
(20" NanoSHIELD Cartridge - 222 connector)



NanoSHIELD™ Hollow Fiber Series Cartridge Specifications

Membrane Material	Hydrophobic Polypropylene
Cage and End Caps	Polyethylene
Potting Material	Polyethylene
Filtration Surface Area	5" Cartridge – 10.8 ft ² (10,000 cm ²) 10" Cartridge – 23.7 ft ² (22,000 cm ²) 20" Cartridge – 47.3 ft ² (44,000 cm ²)
Cartridge Outside Diameter	2.75" (7 cm) nominal
Length	Nominal 5, 10, and 20" (12.7, 25.4, and 50.8 cm)
Maximum Operating Pressure	58 psig @ 77°F (4 bar @ 25°C)
Maximum Differential Pressure	28 psid @ 77°F (1.9 bar @ 25°C)
Maximum Operating Temperature	104°F (40°C)
Absolute Removal Ratings (µm)	0.005, 0.01, 0.02, 0.05, and 0.1
Filter Capsule Integrity	100% Tested

Ordering Guide

Media	Removal Rating	Configuration	Length	Fitting Connection	O-ring Material
NSP	05N - 0.005 µm 001 - 0.01 µm 002 - 0.02 µm 005 - 0.05 µm 010 - 0.1 µm	H	50 - 5" 01 - 10" 02 - 20"	B - 226 O-Ring & Spear C - 222 O-Ring & Spear F - 222 O-Ring & Flat Cap J - 226 O-Ring & Flat Cap	C - EPDM K - Fluorocarbon Encapsulated PTFE (FEP)

* Available in F end modification only.

** Available in F and J end modifications only.

Consult factory for pre-wet options.

Important Notice

3M Purification Inc. MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Since a variety of factors can affect the use and performance of a 3M Purification Inc. product in a particular application, some of which are uniquely within the user's knowledge and control, user is responsible for determining whether or not the 3M Purification Inc. product is fit for a particular purpose and suitable for user's method of application.

Limitation of Remedies and Liability

If the 3M Purification Inc. product is proved to be defective, THE EXCLUSIVE REMEDY, AT 3M Purification Inc.'S OPTION, SHALL BE TO REFUND THE PURCHASE PRICE OR TO REPAIR OR REPLACE THE DEFECTIVE PRODUCT. 3M Purification Inc. shall not otherwise be liable for loss or damages, whether direct, indirect, special, incidental or consequential, regardless of the legal theory asserted, including, but not limited to, contract, negligence, warranty or strict liability.

Warranty

Seller warrants its equipment against defects in workmanship and material for a period of 12 months from date of shipment from the factory under normal use and service and otherwise when such equipment is used in accordance with instructions furnished by Seller and for purposes disclosed in writing at the time of purchase, if any. Any unauthorized alteration or modification of the equipment by Buyer will void this warranty. Seller's liability under this warranty shall be limited to the replacement or repair, F.O.B., point of manufacture, of any defective equipment or part which, having been returned to the factory, transportation charges prepaid, has been inspected and determined by Seller to be defective. THIS WARRANTY IS IN LIEU OF ANY OTHER WARRANTY, EITHER EXPRESSED OR IMPLIED, AS TO DESCRIPTION, QUALITY, MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE OR USE, OR ANY OTHER MATTER. Under no circumstances shall Seller be liable to Buyer or any third party for any loss of profits or other direct or indirect costs, expenses, losses or consequential damages arising out of or as a result of any defects in or failure of its products or any part or parts thereof or arising out of or as a result of parts or components incorporated in Seller's equipment but not supplied by the Seller.



3M Purification Inc.

400 Research Parkway
Meriden, CT 06450
U.S.A.

Phone (800) 243-6894
(203) 237-5541
Fax (203) 630-4530
www.3Mpurification.com

Your Local Distributor:

Please recycle. Printed in U.S.A.
NanoSHIELD is a trademark of 3M Company used under license.
3M is a trademark of 3M Company.
© 3M 2012. All rights reserved.
70020187780 REV 0912