

NanoSHIELD®

Polypropylene Filter Cartridges

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

NanoSHIELD polypropylene filter cartridges have been engineered to combine the highest level of particle retention with superior flow rates and minimal pressure drop for demanding applications at the 45 nm node.

Peak Performance Provided by Hollow Fiber Technology (HFT)

NanoSHIELD 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 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, CUNO'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 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 filters are critically cleaned and integrity tested to provide low extractables and process repeatability out of the box. The compact design of NanoSHIELD polypropylene filter cartridges make them ideally suited for critical applications requiring low hold-up volume with superior flow rates and high particle retention at 0.01, 0.02, 0.05, and 0.1 μm



Applications

ARC, BARC, TARC	Alcohols
193 nm Photoresists	Bases
Polyimide	Developers
Solvents	Etchants / Strippers

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 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.

0.01 μm and 0.02 μm Retention Ratings.

- Superior removal of particles, gels, and micro-bubbles.
- Reduced micro-bridge and wafer level defects for 193 nm photoresists.

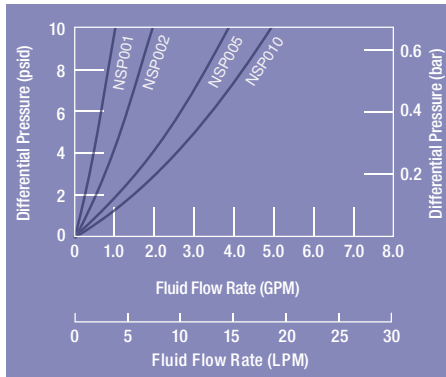
Quality Manufacturing.

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

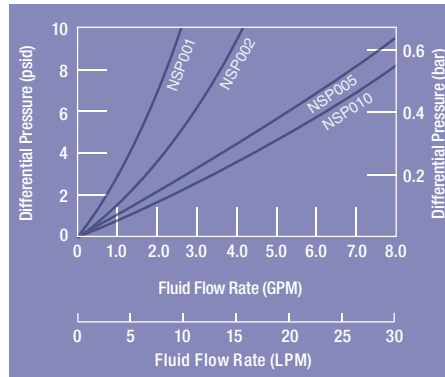
NanoSHIELD® Polypropylene Filter Cartridge

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

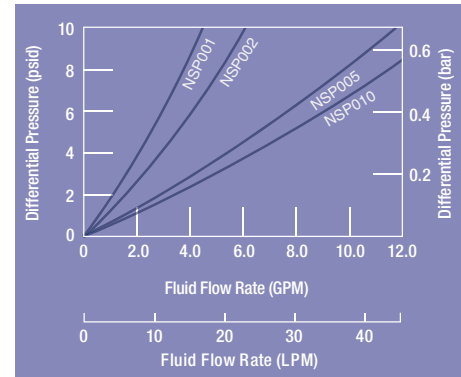
Graph 1: 5" NanoSHIELD Cartridge



Graph 2: 10" NanoSHIELD Cartridge



Graph 3: 20" NanoSHIELD Cartridge



NanoSHIELD 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)	0.01, 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	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.

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