

NanoSHIELD® MDC Filter Capsules

Superior Defect Reduction from Advanced Photoresists and Chemicals



NanoSHIELD MDC filter capsules have been specially designed to reduce wafer level defects from advanced photoresist and ancillary chemical applications. Utilizing Hollow Fiber Technology (HFT), NanoSHIELD filters are able to deliver superior flow with minimal pressure drop, while maintaining the highest level of filter efficiency in a compact design.

The small compact design of NanoSHIELD MDC filter capsules make them ideally suited for 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 .

NanoSHIELD Capsule Construction

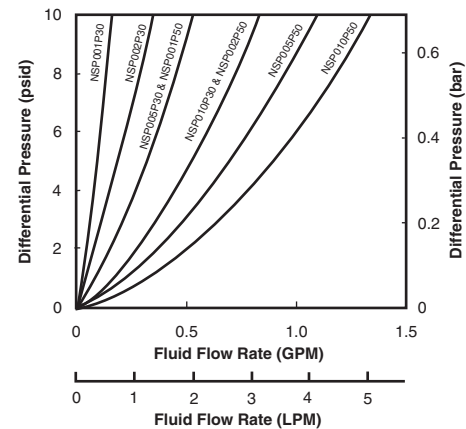
Manufactured in a clean room environment from polypropylene and polyethylene materials, NanoSHIELD capsules will not contribute to ionic, organic, and metallic contaminant levels in the pro-

cess fluid. Ionic, organic, and metallic contaminants can extract from surface modified and or improperly manufactured filters, which may reduce shelf life, or change the photo-speed and molecular weight of the photo-chemical. NanoSHIELD MDC capsules are critically cleaned, integrity tested, and rinsed with 18 megohm DI water to minimize extractables and allow process repeatability out of the box.

Applications

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

Typical 1 cps Flow vs Differential Pressure @ 25°C



| Features | Benefits |
|---|--|
| <ul style="list-style-type: none"> ■ Hollow Fiber Technology | <ul style="list-style-type: none"> ■ More surface area as compared to equivalent sized capsules ■ Provides both lower operating and differential pressure across the filter to minimize outgassing and micro-bubble formation ■ Increased lifetime, throughput, and overall equipment effectiveness (OEE) |
| <ul style="list-style-type: none"> ■ Polypropylene and Polyethylene Construction | <ul style="list-style-type: none"> ■ Excellent chemical resistance to ARC's, photoresists, and solvents ■ No pre-wetting required for solvent based chemicals |
| <ul style="list-style-type: none"> ■ 0.01 μm and 0.02 μm Retention Ratings | <ul style="list-style-type: none"> ■ Superior removal of particles, gels, and micro-bubbles ■ Reduced micro-bridge and wafer level defects for 193nm photoresists |
| <ul style="list-style-type: none"> ■ Superior Flow Rates | <ul style="list-style-type: none"> ■ Flow rates 3 - 5 times higher as compared to equivalent size competitive pleated capsules while not sacrificing particle removal efficiency |
| <ul style="list-style-type: none"> ■ Quality Manufacturing | <ul style="list-style-type: none"> ■ All filters are critically cleaned and tested in a cleanroom to reduce particle adders and extractables |

| Specifications | |
|-------------------------------|--|
| Membrane Material | Hollow Fiber Polypropylene |
| Capsule Body | Polyethylene |
| Potting Material | Polyethylene |
| Filtration Surface Area | 5" MDC - 4.1 ft ² (3800 cm ²) 3" MDC - 1.8 ft ² (1700 cm ²) |
| Maximum Operating Pressure | 58 psig @ 77°F (4 bar @ 25°C) |
| Maximum Operating Temperature | 104°F (40°C) |
| Absolute Removal Ratings (µm) | 0.01, 0.02, 0.05, and 0.1 |
| Maximum Differential Pressure | 28 psid @ 77°F (1.9 bar @ 25°C) |
| Filter Capsule Integrity | 100% Tested |

NanoSHIELD MDC Filter Capsule Ordering Guide

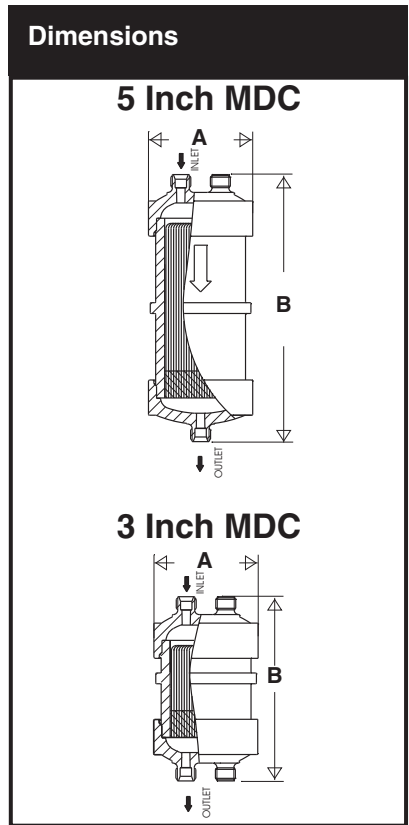
| Media | Removal Rating | Configuration | Length | Fitting Connection |
|-------|----------------|---------------|---------|-------------------------------------|
| NSP | 001 - 0.01 µm | P | 30 - 3" | F - 1/4" Swagelok® Fitting |
| | 002 - 0.02 µm | | 50 - 5" | G - 1/4" Flowell® Series 60 Fitting |
| | 005 - 0.05 µm | | | |
| | 010 - 0.1 µm | | | |

Example - A 0.02 micron MDC capsule with 1/4" Swagelok fittings would be NSP002P50F

Consult factory for pre-wet capsules

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Flowell is a registered Trademark of Flowell Corporation Joint Stock Company Japan



| End Fitting | 5" MDC | | 3" MDC | |
|-------------|--------|-------------------|--------|-------------------|
| | A | B | A | B |
| Swagelok | 2.28" | 5.81" 147.6 mm | 2.28" | 3.88" 98.5 mm |
| Flowell | 58 mm | 7.08" 180 mm | 58 mm | 5.15" 130.8 mm |

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