

# FNM Capsule Filters

Nylon 6,6 Membrane



## Applications

- ◆ Bottled Water
- ◆ Syrup
- ◆ Soft Drinks
- ◆ Container Wash/Rinse Water
- ◆ Aseptically Packaged Liquids

FNM Capsules are hydrophilic and manufactured with the highest quality Nylon 6,6 membrane. Nylon 6,6 exhibits very low extractables with precise retention ratings. FNM capsules are used for critical applications in the production of food & beverage products.

FNM capsule filters are used to remove organic contaminants from bottled water, process water, syrups, soft drinks and for sterilizing filtration of aseptically packaged products.

FNM capsules are rinsed with high purity water to remove manufacturing debris and extractable substances, assuring that products filtered using NM capsules are not affected by the filter.

Precise retention ratings in a filter with very low extractables

Final filtration of bottled water, process water, syrups, soft drinks

Sterilizing filtration of aseptically packaged liquids

## FNM Capsule Filters - Filtration Area

Media	Capsule Length				
	2"	5"	10"	20"	30"
<b>Nylon Membrane</b>	1.0 ft <sup>2</sup> (0.093m <sup>2</sup> )	3.0 ft <sup>2</sup> (0.279m <sup>2</sup> )	7.0 ft <sup>2</sup> (0.650m <sup>2</sup> )	14.0 ft <sup>2</sup> (1.301m <sup>2</sup> )	21.0 ft <sup>2</sup> (1.951m <sup>2</sup> )

## Flow Rate / Filtration Area

The following table represents typical water flow at a one psi (69 mbar) pressure differential across a single 2 inch capsule with 1.0 ft<sup>2</sup> (0.093 m<sup>2</sup>) of media with 1/2" FNPT ports. The test fluid is water at ambient temperature. Higher pressure drops are acceptable, but as flows increase the pressure drop of the housing becomes more apparent.

Pore Size	0.10 µm	0.22 µm	0.45 µm	0.65 µm
<b>GPM</b>	0.14	0.25	0.43	0.60
<b>LPM</b>	0.53	0.95	1.63	2.27

\* For approximate flow rates for 5" through 30" capsules, refer to the appropriate cartridge data sheet

## Construction Materials

<b>Housing</b>	Polypropylene
<b>Filtration Media</b>	Nylon 6,6 Membrane
<b>Media Support</b>	Polypropylene
<b>End Caps</b>	Polypropylene
<b>Center Core</b>	Polypropylene
<b>Outer Support Cage</b>	Polypropylene
<b>Sealing Method</b>	Thermal Bonding

## Maximum Operating Parameters

<b>Liquid Operational Pressure</b>	80 psi (5.5 bar) at 20 °C (68 °F)
<b>Gases Operational Pressure</b>	60 psi (4.1 bar) at 20 °C (68 °F)
<b>Operating Temperature</b>	43 °C (110 °F) at 30 psi (2.1 bar) in water
<b>Forward Differential Pressure</b>	50 psid (3.4 bard) at 20 °C (68 °F)
<b>Reverse Differential Pressure</b>	40 psid (2.7 bard) at 20 °C (68 °F)
<b>Recommended Changeout Pressure</b>	35 psid (2.4 bard)

## Integrity Test Specifications

Pore Size	Test Pressure (psi)	Max Diffusion Rate (cc/min -water wetted membrane)				
		2"	5"	10"	20"	30"
0.10	48	4.3	12.9	30	60	90
0.22	35	4.3	12.9	30	60	90
0.45	20	4.3	12.9	30	60	90
0.65	15	4.3	12.9	30	60	90

## Sanitization/Sterilization

**Autoclave**.....250° F (121° C), 30 min, 5+ cycles

**Chemical Sanitization** .....Nylon does not tolerate aggressive chemical sanitization protocols. Nylon membrane cartridges are best sanitized with 1% hydrogen peroxide or 1% hydrogen peroxide and peracetic acid. Follow the manufacturers instructions for use on nylon filter devices.

**Note** .....FNM capsules are not to be used in steam.

## FDA and EC Compliance

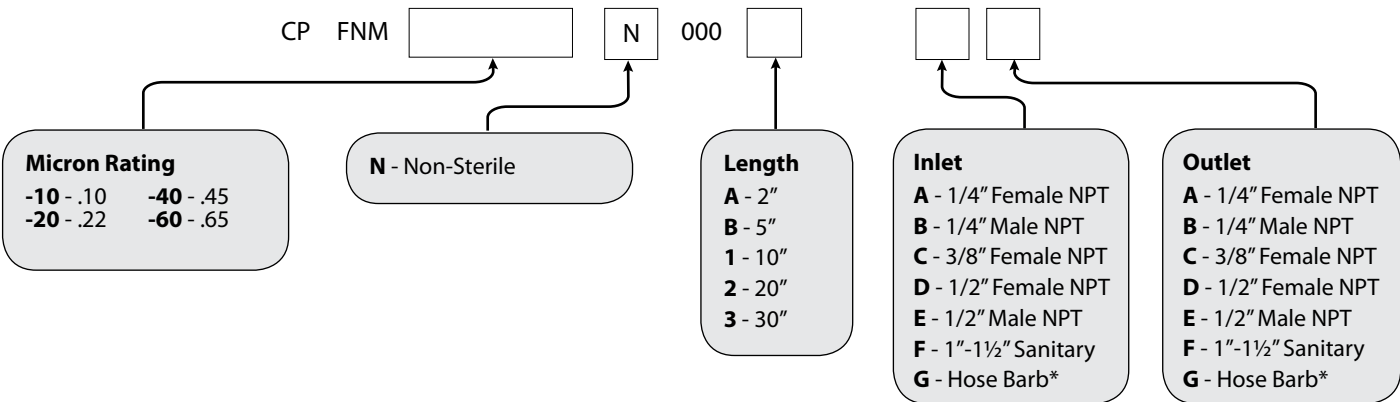
All Critical Process Filtration capsule filters are designed to meet the FDA requirements for processing food and beverage products. The materials used to construct food & beverage grade filters are listed by the FDA as appropriate for use in articles intended for repeated food contact as specified in Title 21 CFR sections 174.5, 177.1500, 177.1520, 177.1630, 177.2440 and 177.2600 as appropriate. Membrane filters comply with Title 21 CFR sections 210.3 (b)(6) and 211.72, for non-fiber releasing filters. All materials used to make the filters are listed in European Commission Regulation EU/10/2011, Annex 1.

## Extractables

Food & beverage grade filters typically exhibit low levels of non-volatile residues.

## Ordering Information

Capsule order number example: Food & Beverage Grade Nylon 6,6 Membrane, 0.22 Micron Rating, Non-Sterile, 10" Length, Sanitary Inlet, Sanitary Outlet = CPFNM-20N0001FF.



### Hose Barb Diameter Ranges\*

	Minimum	Maximum
<b>Outer Diameters</b>	11/32" (8.6mm)	9/16" (14.0mm)
<b>Inner Diameters</b>	5/32" (4.0mm)	13/32" (10.5mm)

## Validation

FNM capsules are validated using test procedures based on ASTM Method F838-05 and HIMA protocols. The challenge level is 10<sup>7</sup> organisms per cm<sup>2</sup> of filter media:

0.22 µm challenged with *Brevundimonas diminuta*;

0.45 µm challenged with *Serratia marcescens*;

0.65 µm challenged with *Saccharomyces cerevisiae*.

## Quality Assurance and Standards

Critical Process Filtration uses state of the art computer controlled equipment to consistently produce high quality products as well as significantly reduce hand operations that can compromise quality. All manufacturing and testing is continuously monitored in real time so that data can be quickly and easily analyzed to facilitate improvements in both quality and cost.

The Critical Process Filtration manufacturing and quality systems meet rigorous ISO 9001:2008 standards. Each operation, including assembly, testing, cleaning, drying and packaging, is done in an appropriately rated clean room. Manufacturing is controlled using a sophisticated manufacturing system that networks work stations, manufacturing centers and inspection points. During the manufacturing and inspection processes, data is collected in real time to allow continuous quality monitoring and full traceability of all materials and processes.

Each capsule assembly is integrity tested before release.

## Total Performance

Critical Process Filtration, Inc. is a vertically integrated manufacturer of filtration products to industries in which filtration is considered a critical part of the manufacturing process. We supply a complete line of products and services to help you cost effectively satisfy all your filtration requirements from a single source.

Request a QUOTE from your area representative



### Critical Process Filtration, Inc.

One Chestnut Street • Nashua, NH 03060

Tel: 603.880.4420 • Fax: 603.880.4536

[criticalprocess.com](http://criticalprocess.com) • [sales@criticalprocess.com](mailto:sales@criticalprocess.com)

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