



# PTM Filters

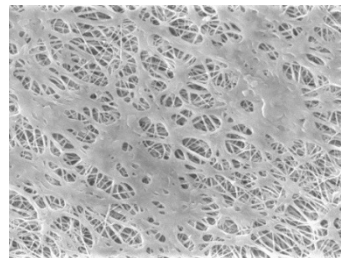
PTFE Membrane



PTM cartridge and capsule filters are constructed using a Polytetrafluoroethylene (PTFE) membrane and are validated for sterilizing filtration of gases and non-aqueous liquids. Pore sizes range from 0.10 to 5.0  $\mu\text{m}$  and the filter sizes scale from laboratory to full production using identical materials to ensure consistent results.

The hydrophobic PTM filters resist wetting by airborne water droplets, making them ideal for air and gas applications. The broad chemical compatibility of the PTM filters makes them well suited for aggressive solvents and other non-aqueous liquids. Each cartridge module is individually tested using the water intrusion method before it is released from manufacture.

Critical Process provides unrivaled delivery times, technical consulting before purchasing, and very competitively priced high-performance products. Our comprehensive testing & analysis and validation services support your team whenever they need it. Your process experts partnering with our filtration experts is how we deliver your company's solution right the first time.

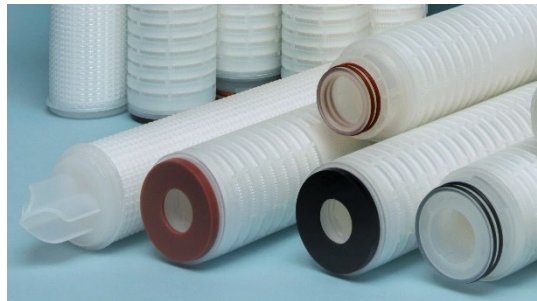


PTM sterilizing filters are recommended for:

- Compressed Air
- Pressurized Gases
- Fermentation Air
- Solvents
- Tank Vents

## Sterilizing Filters

### Tank Vent & Process Gas



**CARTRIDGES – Nominal Dimensions**  
Length: 5 to 40 in. (12.7 to 101.6 cm)  
Outside Diameter: 2.75 in. (7.0 cm)



**CAPSULES – Nominal Dimensions**  
Length: 2 to 30 in. (5.1 to 76.2 cm)  
Outside Diameter: 3.50 in. (8.9 cm)

## Maximum Operating Parameters

	CARTRIDGES	CAPSULES
<b>Liquid Operational Pressure</b>	N/A	80 psi at 68 °F (5.52 bard at 20 °C)
<b>Gases Operational Pressure</b>	N/A	60 psi at 68 °F (4.14 bar at 20 °C)
<b>Operating Temperature (water)</b>	180 °F at 30 psid (82 °C at 2.07 bard)	110 °F at 30 psid (43 °C at 2.07 bard)
<b>Forward Differential Pressure</b>	80 psid at 68 °F (5.52 bard at 20 °C) (Liquid and Gas)	Liquid - 80 psid at 68 °F (5.52 bard at 20 °C) Gas - 60 psi at 68 °F (4.14 bar at 20 °C)
<b>Reverse Differential Pressure</b>	50 psid at 68 °F (3.45 bard at 20 °C)	50 psid at 68 °F (3.45 bard at 20 °C)
<b>Recommended Changeout Pressure</b>	35 psid (2.41 bard)	35 psid (2.41 bard)

## Sanitization & Sterilization

<b>Filtered Hot Water*</b>	90 °C (194 °F), 30 minutes, multiple cycles, max 3 psid forward flow	N/A
<b>Inline Steam*</b>	275 °F (135 °C), 30 min, 25+ cycles	N/A
<b>Autoclave*</b>	250 °F (121 °C), 30 min, 25+ cycles	250 °F (121 °C), 30 min, 5+ cycles
<b>Chemical Sanitization</b>	Performed using industry standard concentrations of hydrogen peroxide, peracetic acid, sodium hypochlorite and other selected chemicals.	

\*Cartridge Filters – For all elevated temperature procedures above, a stainless-steel support ring is required.

## Filtration Area (Nominal)

	CAPSULES	CARTRIDGES AND CAPSULES				CARTRIDGES
Length	2"	5"	10"	20"	30"	40"
	5.08cm	12.7cm	25.4cm	50.8cm	76.2cm	101.6cm
Area	1.4 ft <sup>2</sup>	3.8 ft <sup>2</sup>	8.2 ft <sup>2</sup>	16.4 ft <sup>2</sup>	24.6 ft <sup>2</sup>	32.8 ft <sup>2</sup>
	0.13m <sup>2</sup>	0.36 m <sup>2</sup>	0.76m <sup>2</sup>	1.52m <sup>2</sup>	2.29m <sup>2</sup>	3.05m <sup>2</sup>

## Integrity Testing

PORE SIZE	WATER INTRUSION TEST PRESSURE		BUBBLE POINT MINIMUM*	
	PSIG	BARG	PSIG	BARG
μm				
0.10	35	2.41	22	1.52
0.22	35	2.41	18	1.24
0.45	N/A	N/A	9	0.62
1.0	N/A	N/A	6	0.41
3.0	N/A	N/A	2	0.14
5.0	N/A	N/A	1	0.07

WATER INTRUSION SPECIFICATIONS (mL/10 min)						
Length	2"	5"	10"	20"	30"	40"
0.10μm	≤ 1.4	≤ 4.3	≤ 10	≤ 20	≤ 30	≤ 40
0.22μm	≤ 1.9	≤ 5.6	≤ 13	≤ 26	≤ 39	≤ 52

\* Bubble Point for membrane wetted with 60% IPA / 40% water solution.

## Construction Materials

<b>Filtration Media</b>	Polytetrafluoroethylene (PTFE) Membrane
<b>Media Support*</b>	Polypropylene
<b>End Caps, Center Core, Outer Support Cage, Capsule Housing*</b>	Polypropylene
<b>Sealing Method</b>	Thermal Bonding
<b>O-Rings/Gaskets Cartridges only</b>	Buna, Viton® (or FKM), EPDM, Silicone, FEP Encapsulated Silicone, FEP Encapsulated Viton (or FKM)

\*High Temperature Cartridge configuration is available.

## Validation

PTM filters are validated using test procedures that comply with ASTM F 838-15(ae1) protocols for the determination of bacterial retention in filters used for liquid filtration. The challenge level is a minimum of  $10^7$  organisms per  $\text{cm}^2$  of filter media. CPF filters have > 7-log removal when challenged with the organisms listed below (0.10 $\mu\text{m}$  and 0.22 $\mu\text{m}$  meet the FDA definition of sterilizing grade filters).

0.10 $\mu\text{m}$ : *Brevundimonas diminuta*

0.22 $\mu\text{m}$ : *Brevundimonas diminuta*

0.45 $\mu\text{m}$ : *Serratia marcescens*

Validation Guides available upon request.

## Endotoxins

The levels of bacterial endotoxins in aqueous extracts from PTM filters are below current USP limits as specified for water for injection.

## Extractables

PTM filters typically exhibit low levels of non-volatile residues.

## Toxicity Compliance

Materials used to construct the PTM filters are non-toxic and meet the requirements for the MEM Elution Cytotoxicity Test and the requirements for Biological Reactivity Tests in the current version of the United States Pharmacopeia (USP) for Class VI - 121 °C Plastics.

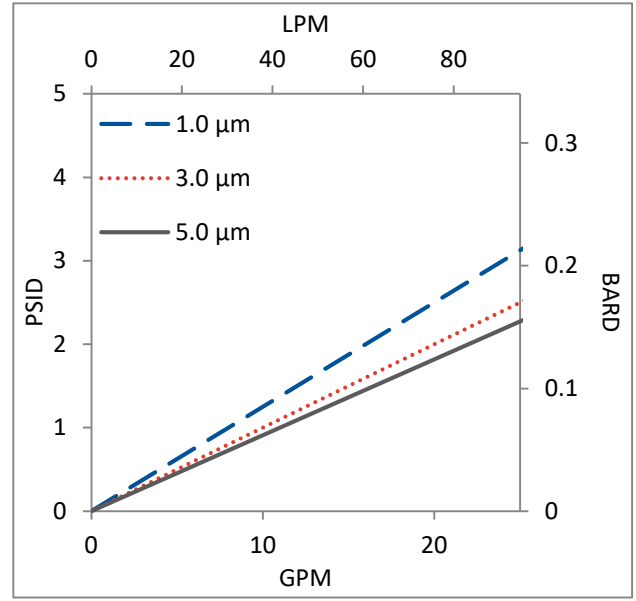
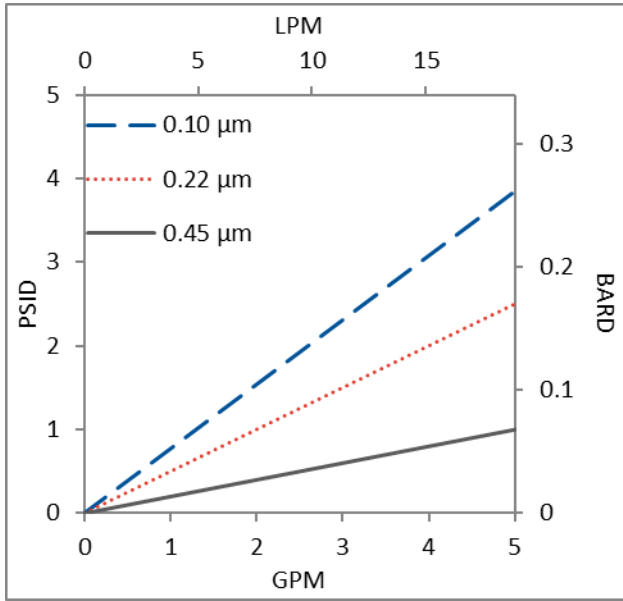
## Non-Fiber Releasing

PTM filters comply with Title 21 CFR sections 210.3 (b)(6) and 211.72, for non-fiber releasing filters.

## FDA Compliance

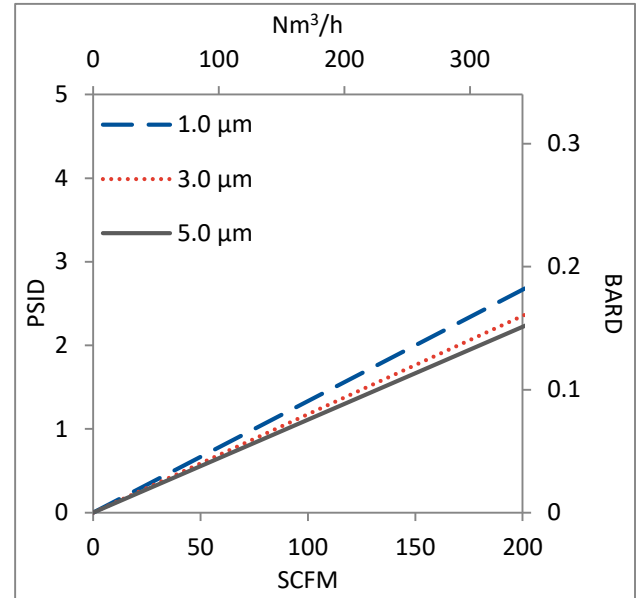
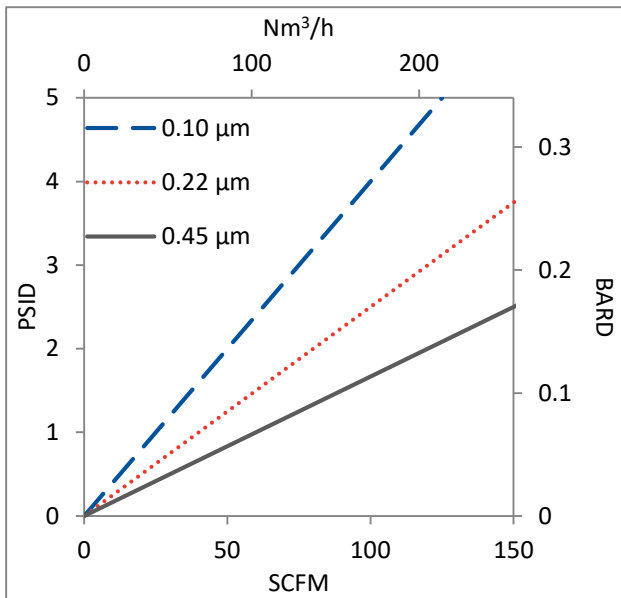
Materials meet the requirements listed by the FDA as appropriate for use in articles intended for repeated food contact as specified in Title 21 CFR sections 174.5, 177.1500, 177.1520, 177.1630, 177.2440, and 177.2600 as applicable.

## Water Flow Rates for PTM Cartridges by Pore Size



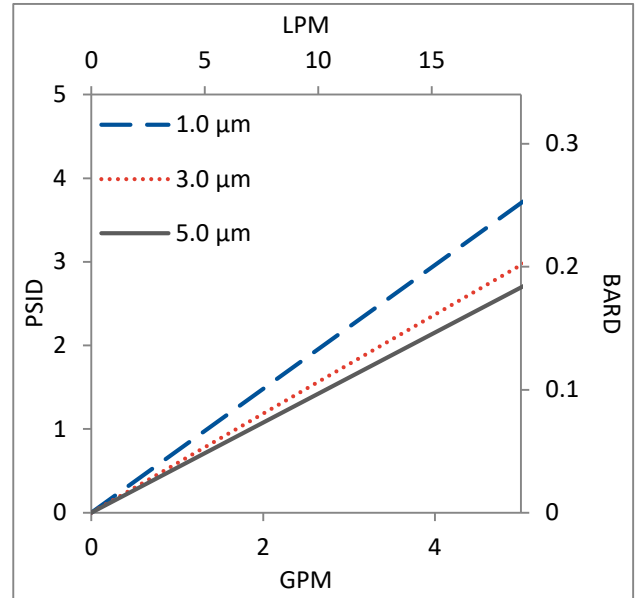
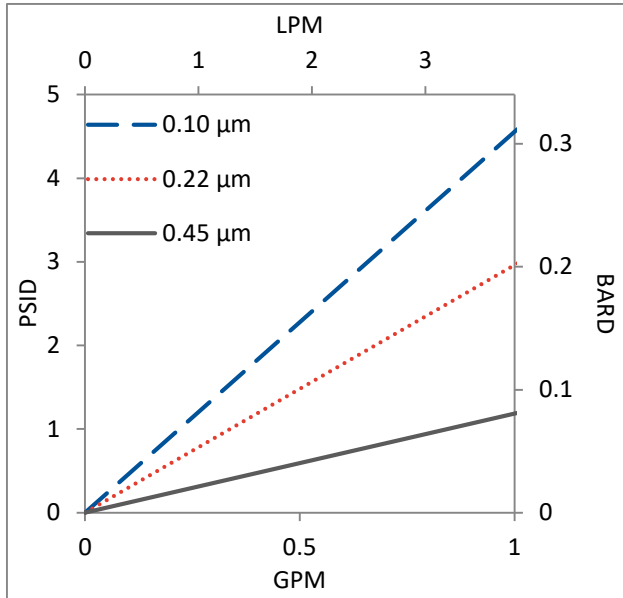
Flow rates for Cartridge filters are per 10-inch length. The test fluid is water or compressed air at ambient temperature.

## Air/Gas Flow Rates for PTM Cartridges by Pore Size



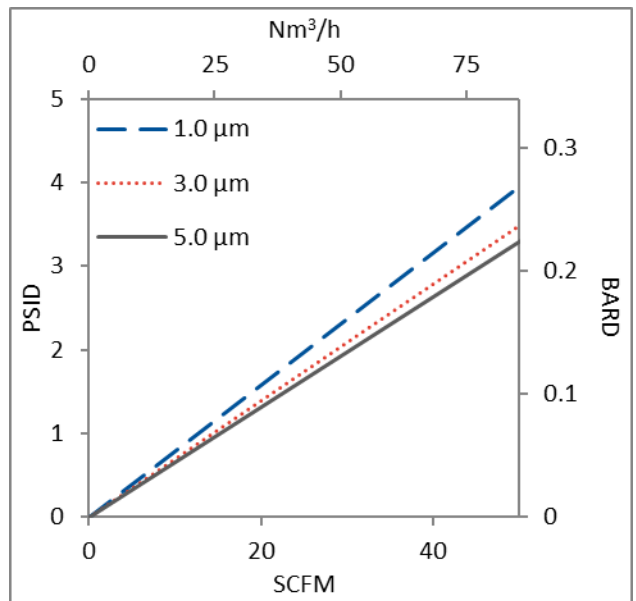
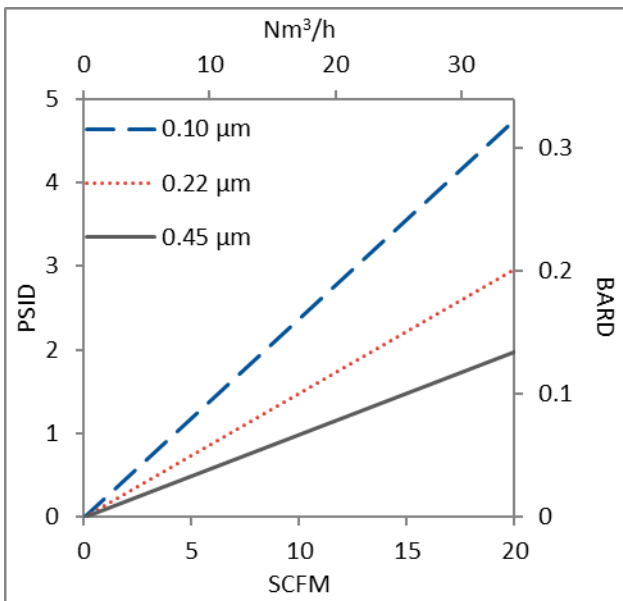
Flow rates for Cartridge filters are per 10-inch length. The test fluid is water or compressed air at ambient temperature.

## Water Flow Rates for PTM Capsules by Pore Size



Flow rates for Capsule filters are tested using a 2" capsule filter with 1" sanitary inlet and outlet ports. The test fluid is water or compressed air at ambient temperature. Flow rates for larger capsules will scale with filtration area. Rates will vary based on end configuration of the capsule.

## Air/Gas Flow Rates for PTM Capsules by Pore Size



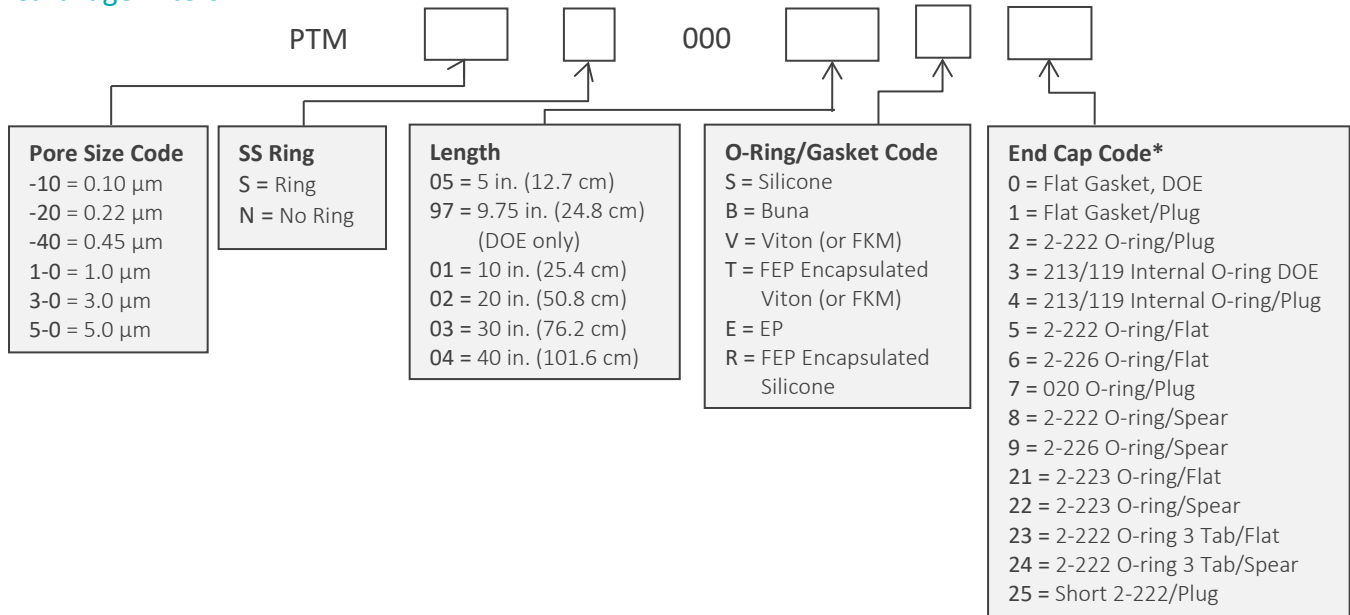
Flow rates for Capsule filters are tested using a 2" capsule filter with 1" sanitary inlet and outlet ports. The test fluid is water or compressed air at ambient temperature. Flow rates for larger capsules will scale with filtration area. Rates will vary based on end configuration of the capsule.

# PTM Filters Ordering Information

Fill in the corresponding codes in the boxes below to build your Part Number.

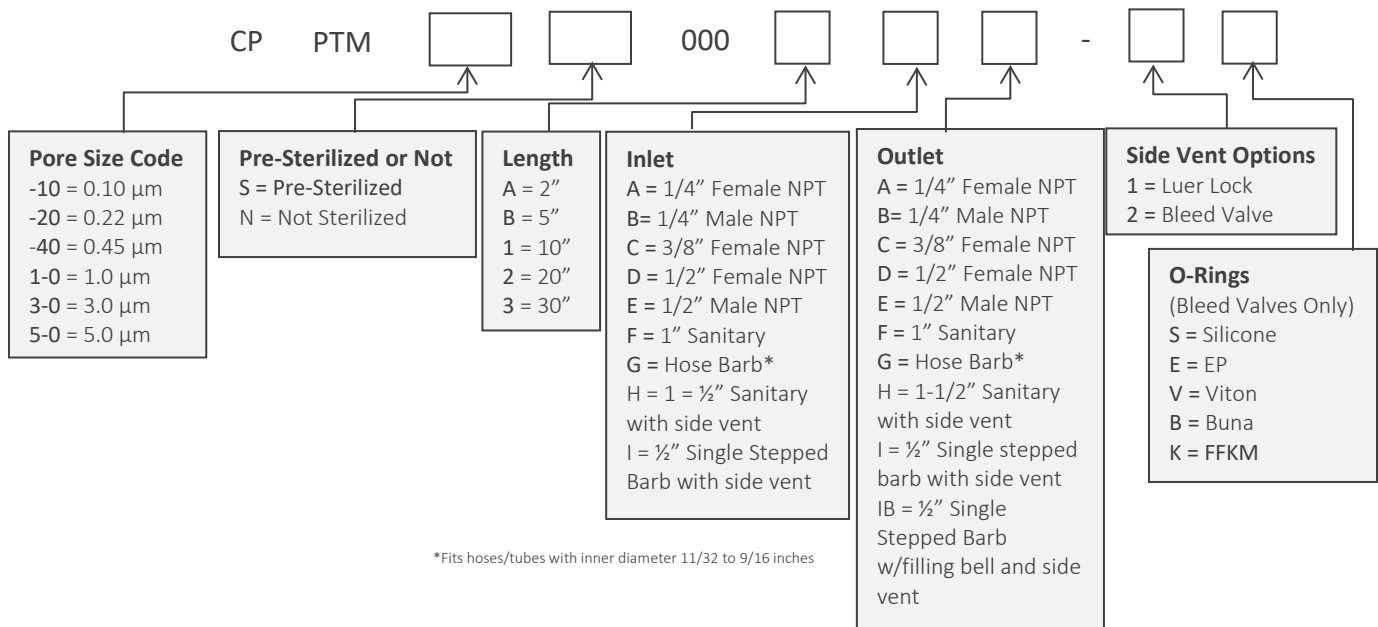
To consult with one of our technical team members, request a quote or place an order:  
call (603) 880-4420 Ext. 106, or send an email to [sales@criticalprocess.com](mailto:sales@criticalprocess.com)

## Cartridge Filters



[\\*Additional End Configurations Available](#)

## Capsule Filters



One Chestnut Street  
 Nashua, NH 03060  
 603.880.4420  
 FAX: 603.880.4536  
 CriticalProcess.com

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Data Sheet PTMDS Rev B