

# PTM Filters

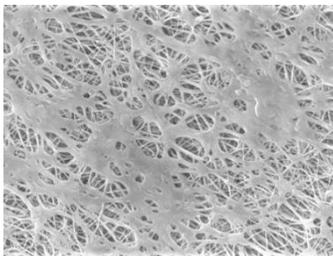
PTFE Membrane



PTM cartridge and capsule filters consist of a Polytetrafluoroethylene (PTFE) membrane and is validated for sterilizing the most stringent gas filtration applications 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

## 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. (7.0cm)



#### 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 (5.51 bard at 20 °C)
<b>Gases Operational Pressure</b>	N/A	60 psi at 68 °F (4.13 bar at 20 °C)
<b>Operating Temperature (water)</b>	180 °F at 30 psid (82 °C at 2.06 bard)	110 °F at 30 psid (43 °C at 2.06 bard)
<b>Forward Differential Pressure</b>	80 psid at 68 °F (5.51 bard at 20 °C) (Liquid and Gas)	Liquid - 80 psid at 68 °F (5.51 bard at 20 °C) Gas - 60 psi at 68 °F (4.13 bar at 20 °C)
<b>Reverse Differential Pressure</b>	50 psid at 68 °F (3.44 bard at 20 °C)	50 psid at 68 °F (3.44 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

	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	1.0 ft <sup>2</sup>	3.0 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>
	0.10m <sup>2</sup>	0.28m <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*		WATER INTRUSION SPECIFICATIONS (mL/10 min)						
	PSIG	BARG	PSIG	BARG	Length	2"	5"	10"	20"	30"	40"
μm					0.10μm	≤ 1.2	≤ 3.7	≤ 10	≤ 20	≤ 30	≤ 40
0.10	35	2.41	22	1.52	0.22μm	≤ 1.6	≤ 4.8	≤ 13	≤ 26	≤ 39	≤ 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							

\* 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.

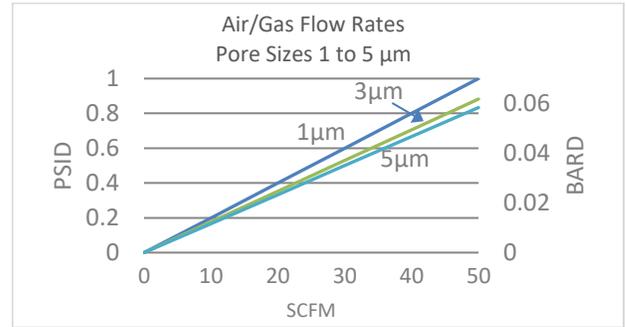
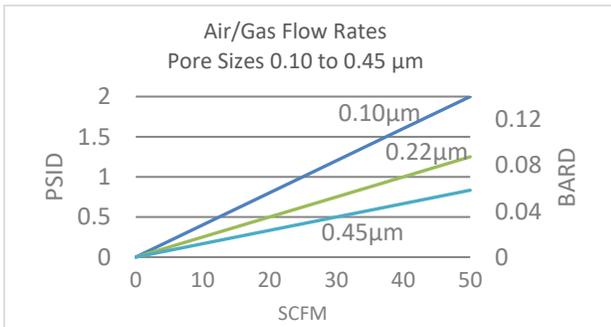
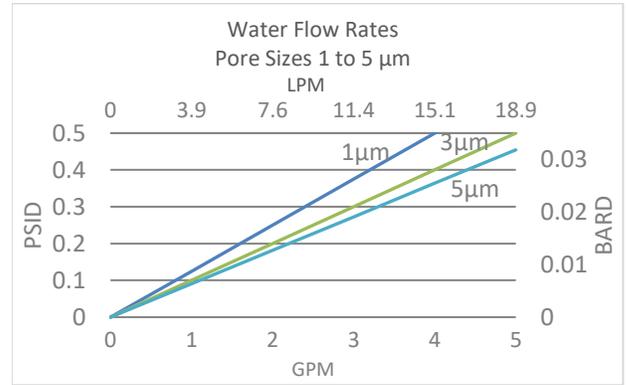
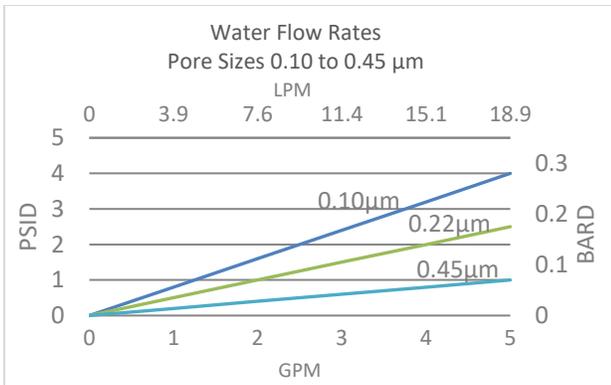
## Non-Fiber Releasing

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

## FDA Compliance

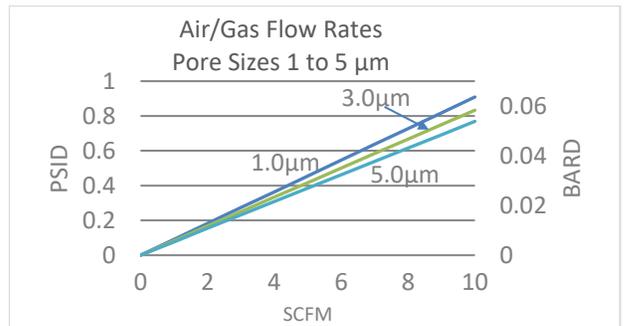
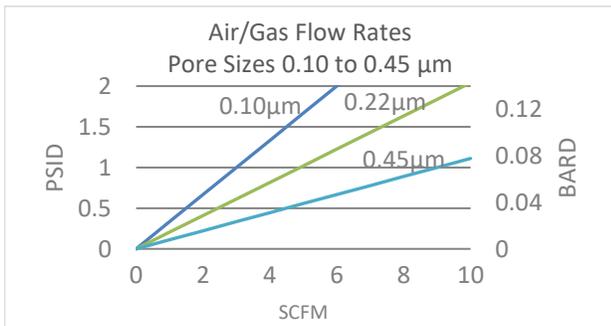
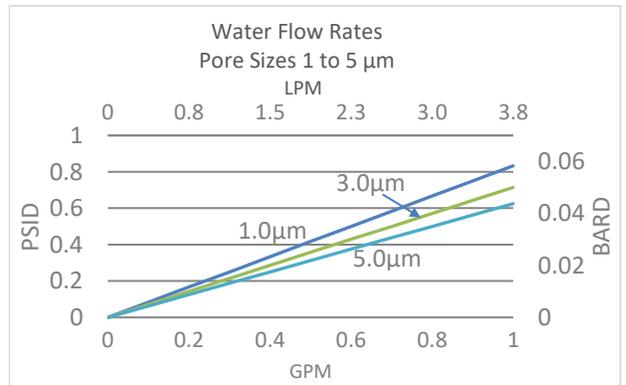
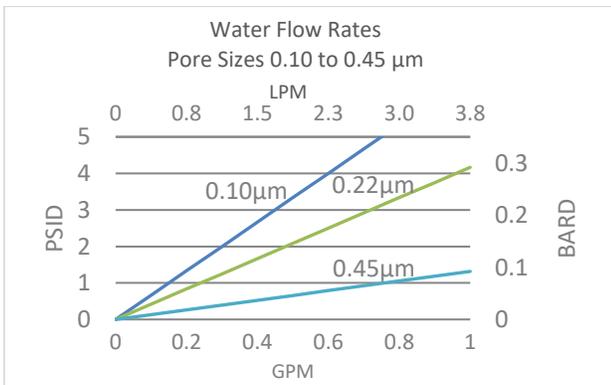
Materials meet the requirements listed by the FDA as appropriate for use in articles intended for repeated food contact as specified in Title 21 CFR sections 174.5, 177.1500, 177.1520, 177.1630, 177.2440, and 177.2600 as applicable.

## Flow Rates for PTM Cartridges



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

## Flow Rates for PTM Capsules

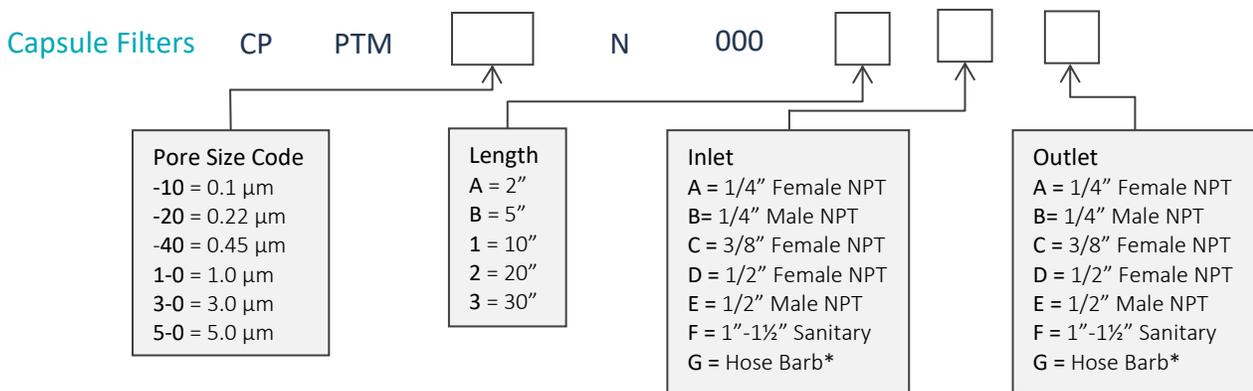
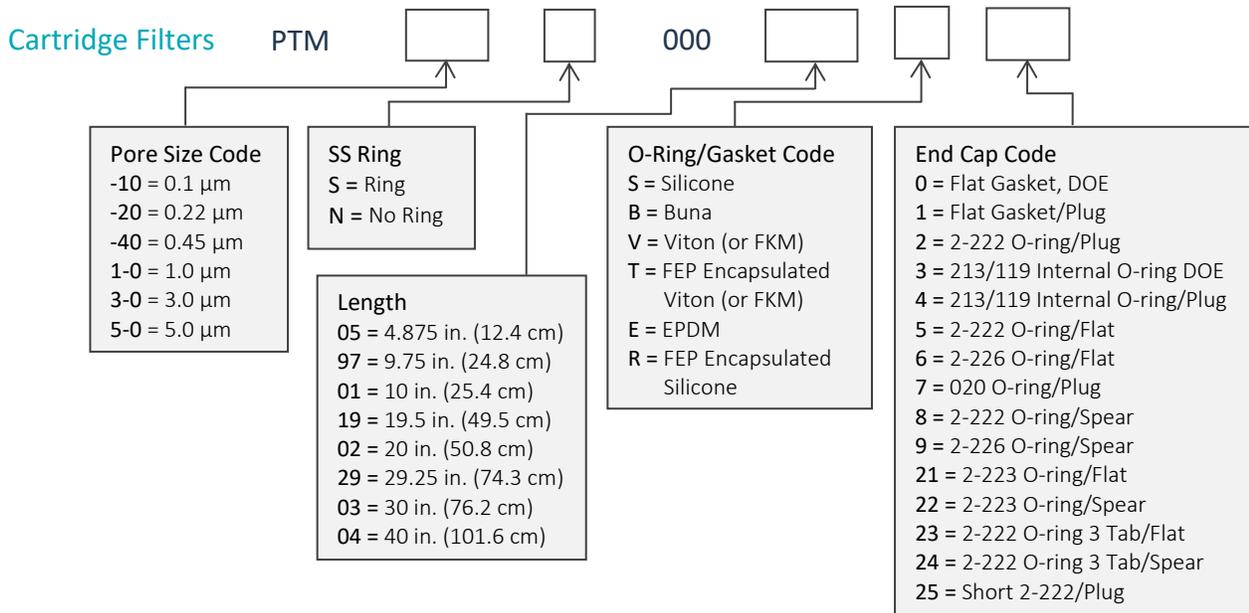


Flow rates for Capsule filters are per square foot of membrane area. The test fluid is water or compressed air at ambient temperature. Flows are tested using a 2" capsule filter with 1/2" FNPT inlet and outlet ports. Rates will vary based on end configuration of the capsule.

## PTM Filters Ordering Information

All Critical Process filters are configurable to meet customer specifications.  
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) 880-4220 Ext. 106, or send an email to [sales@criticalprocess.com](mailto:sales@criticalprocess.com)



\*Fits hoses/tubes with inner diameter 11/32 to 9/16 inches

### Housings

CPF offers Model CSH sanitary housings in Single-Round (Inline and T-Style) and Multi-Round (3, 6, 8, 12 and 21-round) configurations.



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