

# ETM Filters

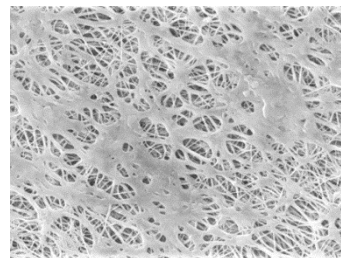
PTFE Membrane



ETM cartridge and capsule filters consist of a single layer Polytetrafluoroethylene (PTFE) membrane. Designed to meet the needs of the electronics and high-purity chemical industries, ETM products are resistant to virtually all chemicals making them very effective in removing particles in gas and non-aqueous liquid filtration. They are most often used as final filters at the point-of-use, such as at tools. The ETM can also be ordered pre-wetted with water for use in aqueous solutions. Pore sizes range from 0.05 to 5.0  $\mu\text{m}$  and the filter sizes scale from laboratory to full production using identical materials to ensure consistent results.

ETM filters are pulse power flushed until the rinse effluent reaches 18+ Megohm-cm and less than 3ppb TOC. Each filter is individually tested to ensure integrity.

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.



ETM filters are recommended for:

- Compressed Air
- Pressurized Gases
- Non-Aqueous Chemicals
- Solvents
- Tank Ventilation

## Fine Particle Removal 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, 25+ 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)

Length	CAPSULES	CARTRIDGES AND CAPSULES				CARTRIDGES
	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>	7.0 ft <sup>2</sup>	14.0 ft <sup>2</sup>	21.0 ft <sup>2</sup>	28.0 ft <sup>2</sup>
	0.10m <sup>2</sup>	0.28m <sup>2</sup>	0.65m <sup>2</sup>	1.30m <sup>2</sup>	1.95m <sup>2</sup>	2.60m <sup>2</sup>

## 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)

## Integrity Testing

PORE SIZE	BUBBLE POINT MINIMUM*	
	PSIG	BARG
μm		
0.05	43	3.0
0.10	22	1.5
0.22	15	1.0
0.45	9	0.62
1.0	6	0.41
3.0	2	0.14
5.0	1	0.07

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

## Extractables

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

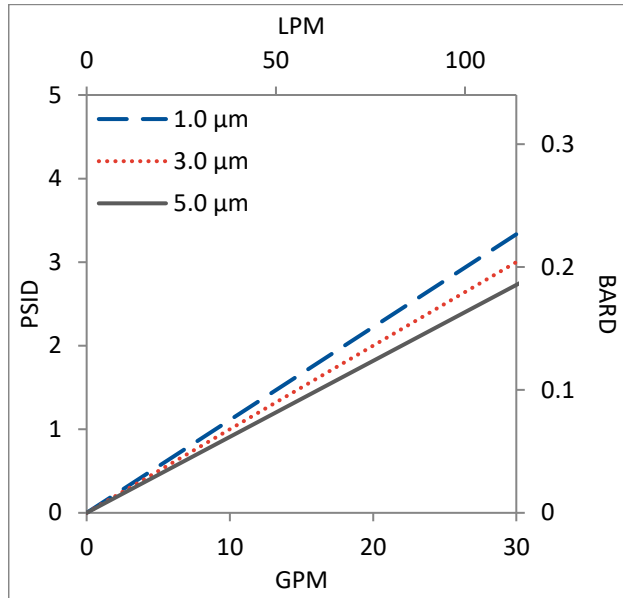
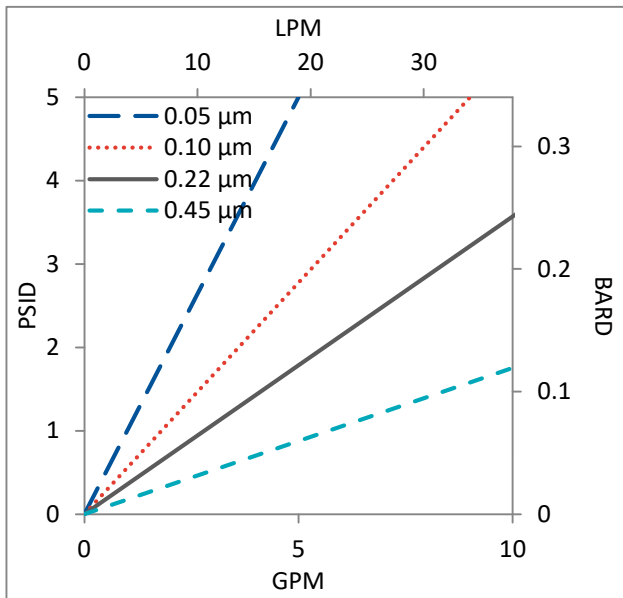
## TOC and Conductivity

ETM filter water effluent conforms with the TOC and water conductivity standards of SEMI Standard F63 after an appropriate flush with ultrapure water.

## Non-Fiber Releasing

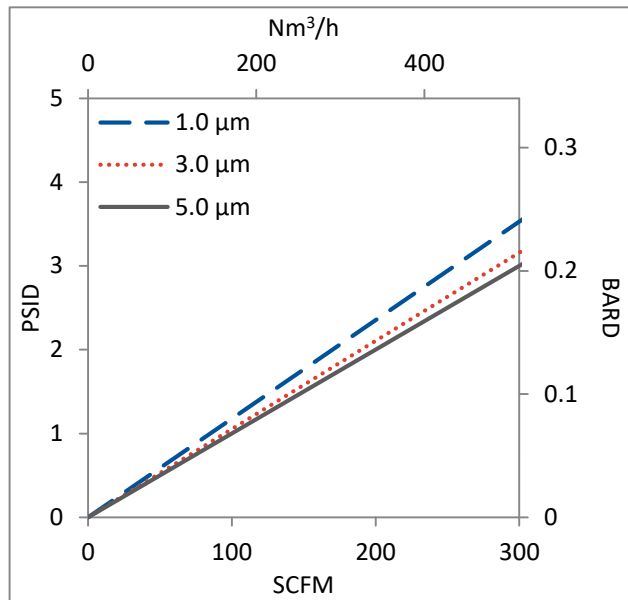
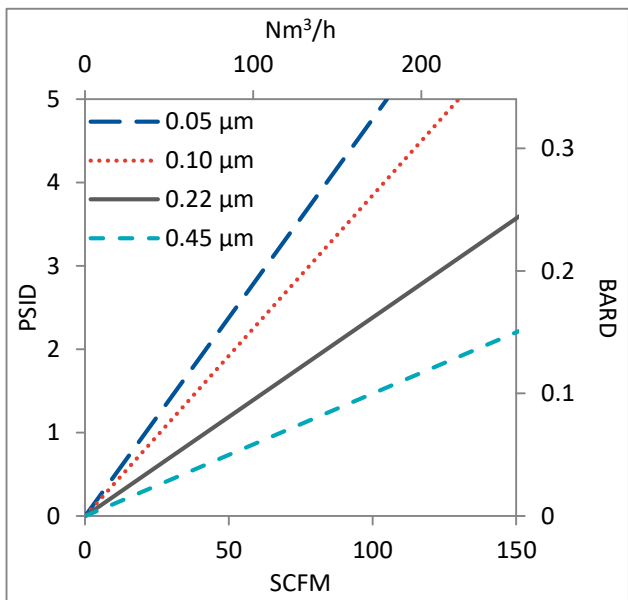
ETM filters comply with Title 21 CFR sections 210.3 (b)(6) and 211.72, for non-fiber releasing filters.

## Water Flow Rates for ETM Cartridges by Pore Size



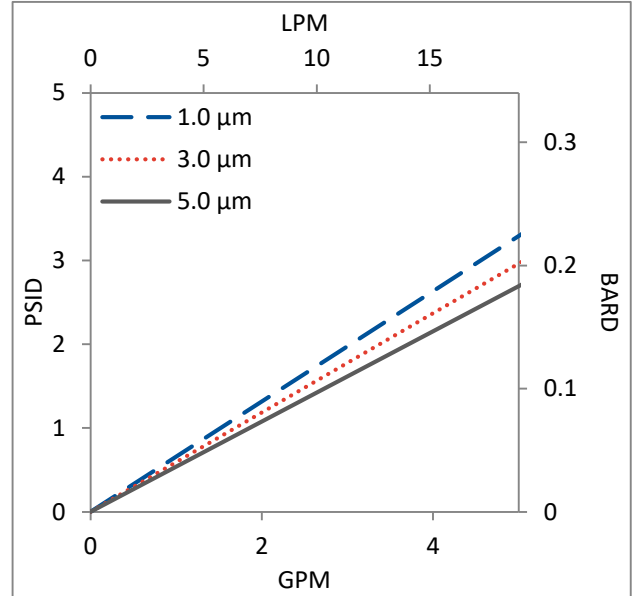
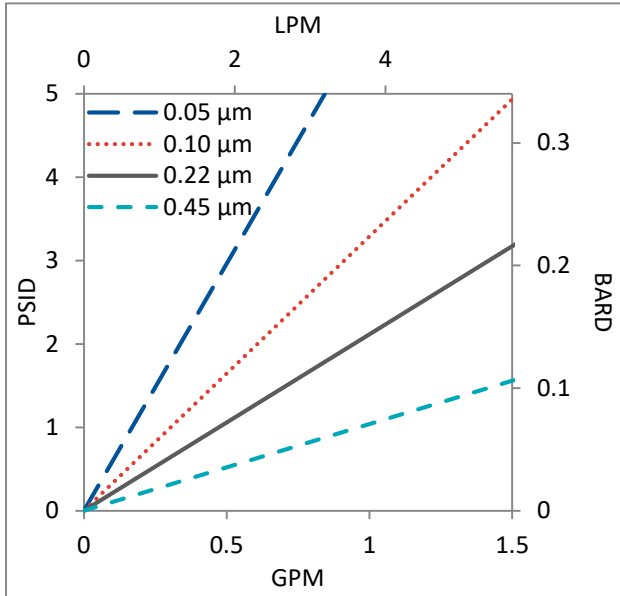
Flow rates for Cartridge filters are per 10-inch length. The test fluid is water or compressed air at ambient temperature.

## Air Flow Rates for ETM Cartridges by Pore Size



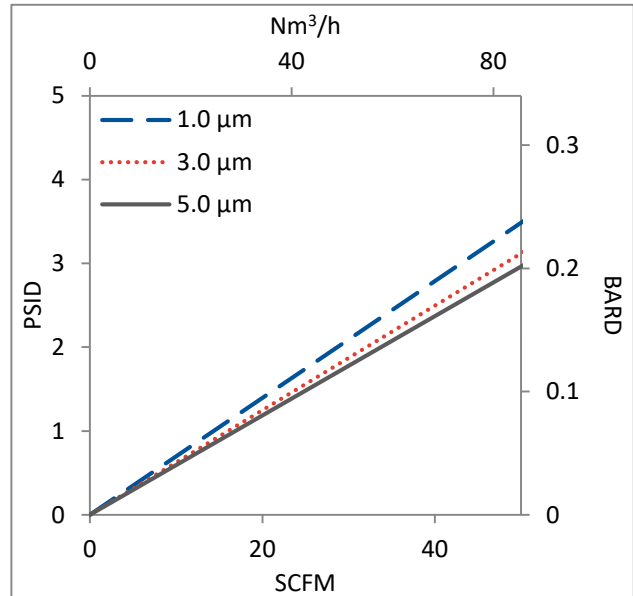
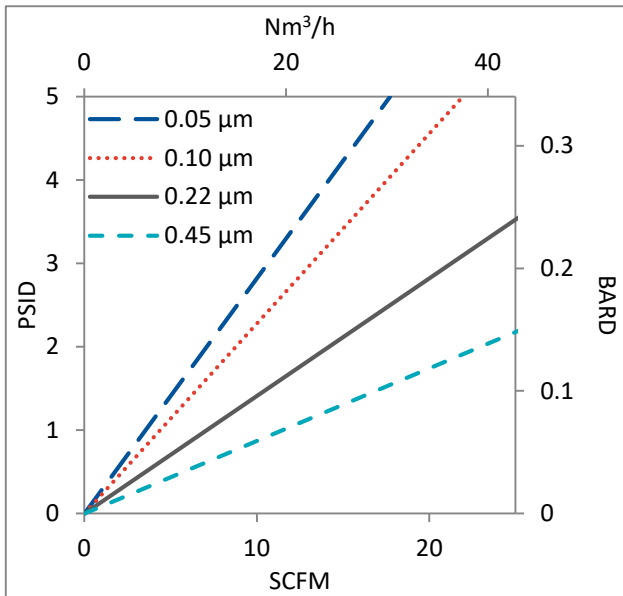
Flow rates for Cartridge filters are per 10-inch length. The test fluid is water or compressed air at ambient temperature.

## Water Flow Rates for ETM 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 Flow Rates for ETM Capsules by Pore Size



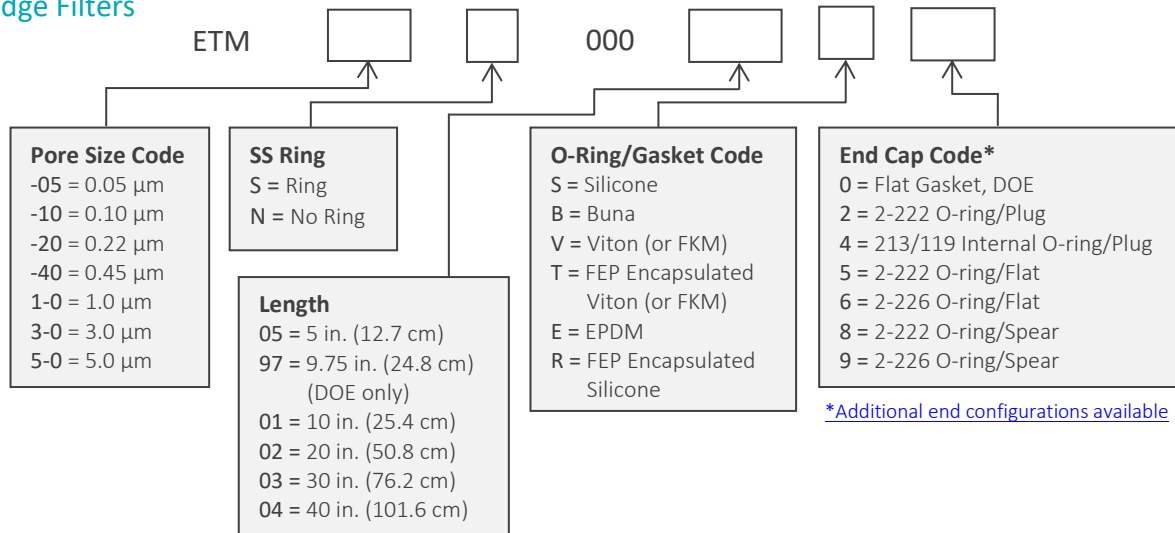
Flow rates for Capsule filters are tested using a 2" capsule filter with 1" sanitary inlet and outlet ports. The test fluid is water or compressed air at ambient temperature. Flow rates for larger capsules will scale with filtration area. Rates will vary based on end configuration of the capsule.

## ETM Filters Ordering Information

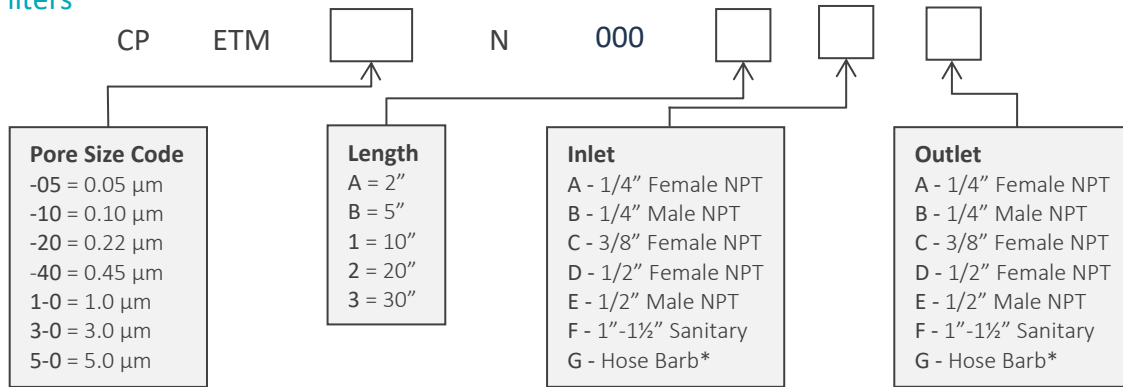
All Critical Process filters are configurable to meet customer specifications.  
Fill in the corresponding codes in the boxes below to build your Part Number.

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

### Cartridge Filters



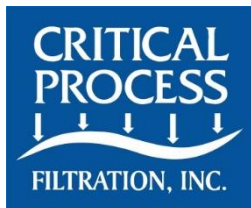
### Capsule Filters



\*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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