CRITICAL PROCESS FILTRATION, INC.

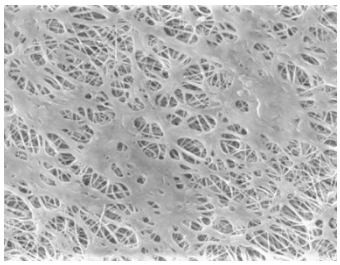
PTM/HA Filters

PTFE Membrane

PTM/HA cartridge and capsule filters are members of the PTM filter family that have a higher filtration area which delivers a higher flow rate. They are constructed using Polytetrafluoroethylene (PTFE) membrane and are validated for sterilizing filtration of gases and non-aqueous liquids. Pore sizes range from 0.10 to 5.0 µm and the filter sizes scale from laboratory to full production using identical materials to ensure consistent results.

The hydrophobic PTM/HA filters resist wetting by airborne water droplets, making them ideal for air and gas applications. The broad chemical compatibility of the PTM/HA 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/HA 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
Liquid Operational Pressure	N/A	80 psi at 68 °F (5.52 bard at 20 °C)
Gases Operational Pressure	N/A	60 psi at 68 °F (4.14 bar at 20 °C)
Operating Temperature (water)	180 °F at 30 psid (82 °C at 2.07 bard)	110 °F at 30 psid (43 °C at 2.07 bard)
Forward Differential Pressure	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)
Reverse Differential Pressure	50 psid at 68 °F (3.45 bard at 20 °C)	50 psid at 68 °F (3.45 bard at 20 °C)
Recommended Changeout Pressure	35 psid (2.41 bard)	35 psid (2.41 bard)

Sanitization & Sterilization

Filtered Hot Water*	90 °C (194 °F), 30 minutes, multiple cycles, max 3 psid forward flow	N/A
Inline Steam*	275 °F (135 °C), 30 min, 25+ cycles	N/A
Autoclave*	250 °F (121 °C), 30 min, 25+ cycles	250 °F (121 °C), 30 min, 5+ cycles
Chemical Sanitization	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	1.8 ft^2	4.8 ft^2	10.3 ft^2	20.6 ft^2	30.9 ft^2	41.2 ft^2
	0.16m^2	0.45 m^2	0.95m^2	1.90m^2	2.85m^2	3.80m^2

Integrity Testing

PORE SIZE	WATER INTRUSION TEST PRESSURE		BUBBLE POINT MINIMUM*	
µm	PSIG	BARG	PSIG	BARG
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	≤ 1.8	≤ 5.4	≤ 12.5	≤ 25	≤ 37.5	≤ 50
0.22µm	≤ 2.3	≤ 7	≤ 16.3	≤ 32.5	≤ 48.8	≤ 65

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

Construction Materials

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

*High Temperature Cartridge configuration is available.

Validation

PTM/HA 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 cm^2 of filter media. CPF filters have > 7-log removal when challenged with the organisms listed below (0.10µm and 0.22µm meet the FDA definition of sterilizing grade filters).

0.10µm: *Brevundimonas diminuta*
0.22µm: *Brevundimonas diminuta*
0.45µm: *Serratia marcescens*

Validation Guides available upon request.

Endotoxins

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

Extractables

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

Toxicity Compliance

Materials used to construct the PTM/HA 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.

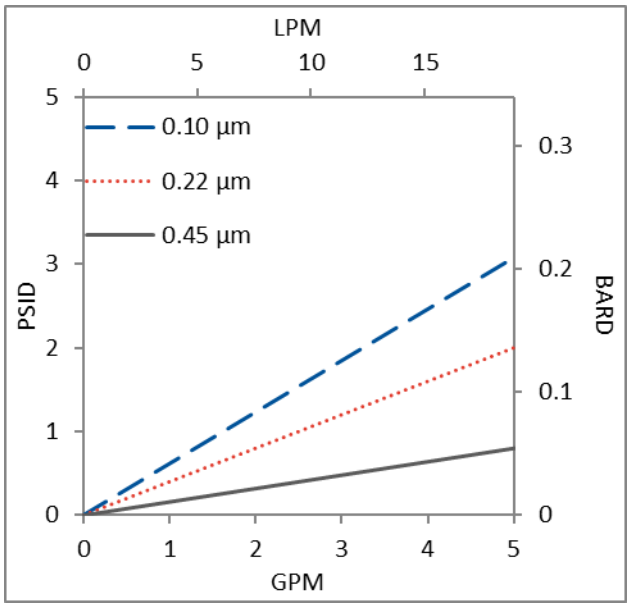
Non-Fiber Releasing

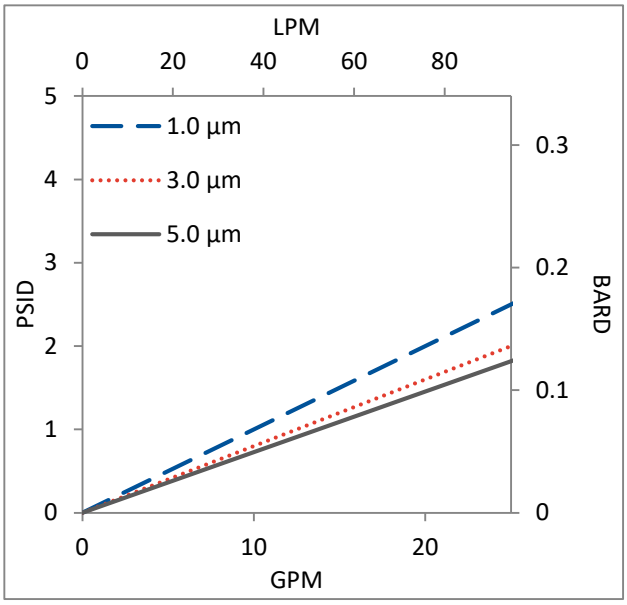
PTM/HA filters comply with Title 21 CFR sections 210.3 (b)(6) and 211.72, for non-fiber releasing filters.

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.

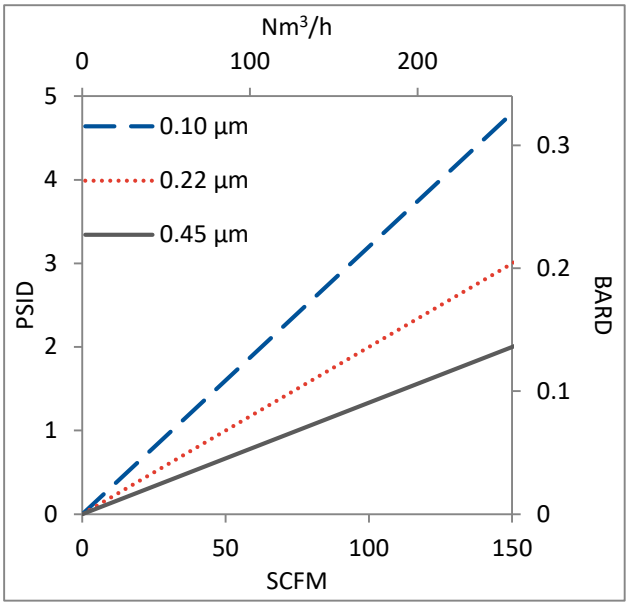
Water Flow Rates for PTM/HA Cartridges by Pore Size

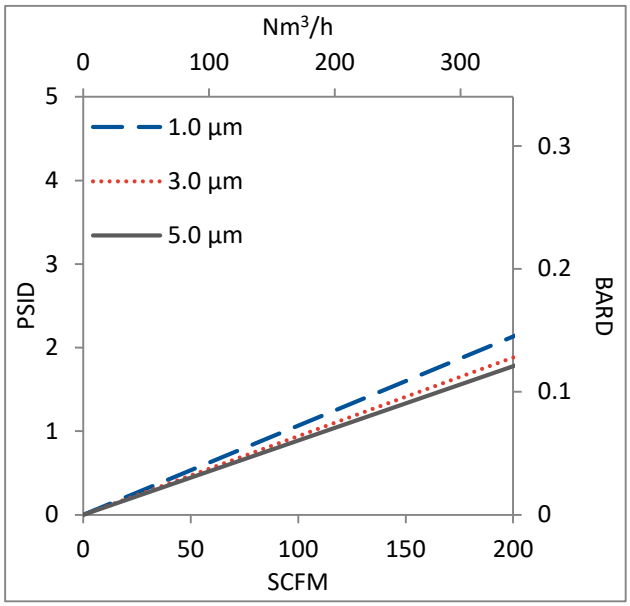




Flow rates for Cartridge filters are per 10-inch length. The test fluid is water or compressed air at ambient temperature.

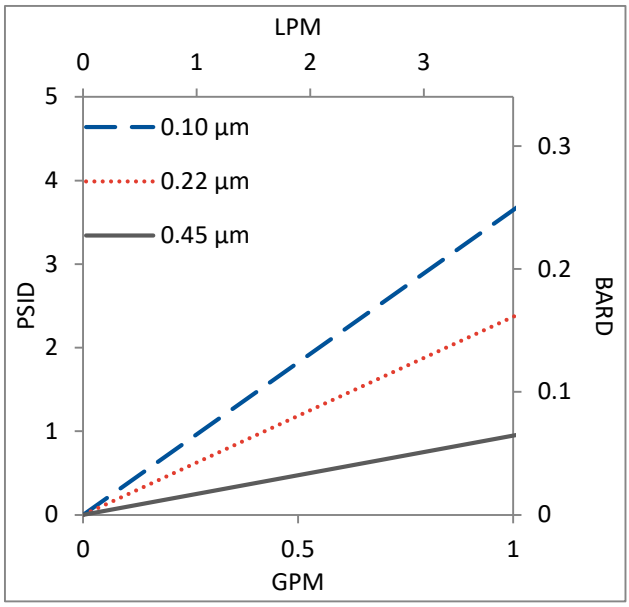
Air/Gas Flow Rates for PTM/HA Cartridges by Pore Size

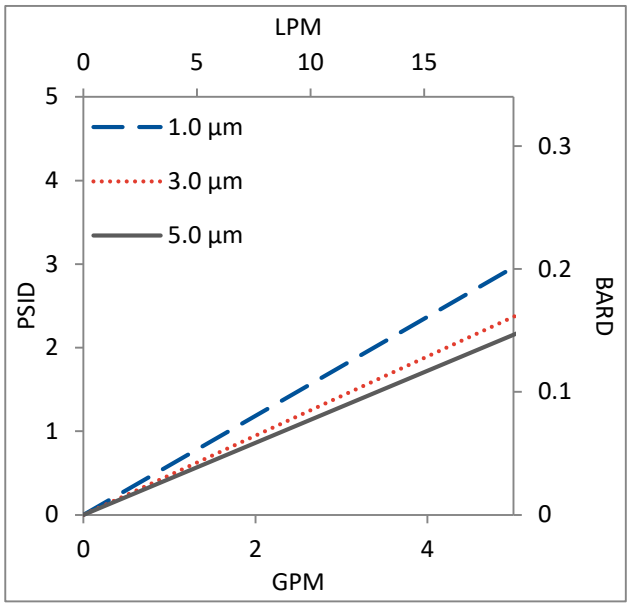




Flow rates for Cartridge filters are per 10-inch length. The test fluid is water or compressed air at ambient temperature.

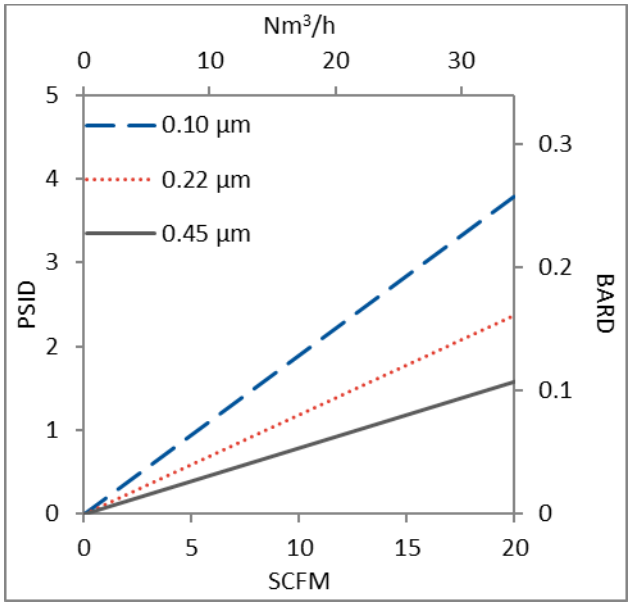
Water Flow Rates for PTM/HA Capsules by Pore Size

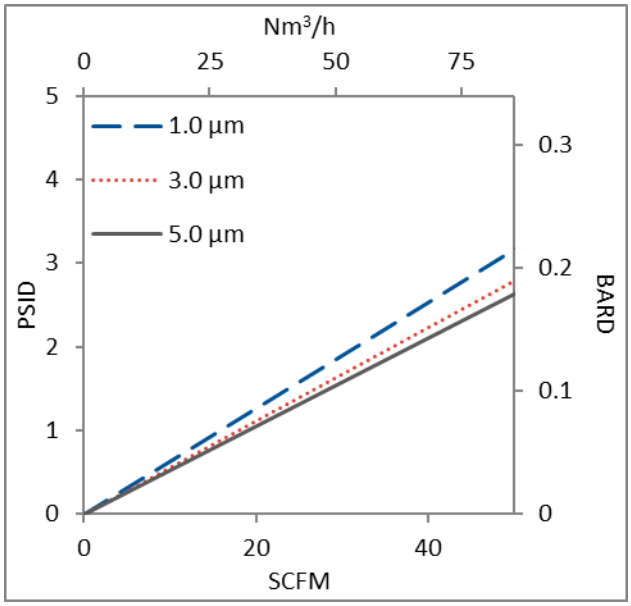




Flow rates for Capsule filters are tested using a 2" capsule filter with 1" sanitary inlet and outlet ports. The test fluid is water or compressed air at ambient temperature. Flow rates for larger capsules will scale with filtration area. Rates will vary based on end configuration of the capsule.

Air/Gas Flow Rates for PTM/HA 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/HA 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

Cartridge Filters

PTM [ ] [ ] 0HA [ ] [ ] [ ]

Pore Size Code
-10 = 0.10 µm
-20 = 0.22 µm
-40 = 0.45 µm
1-0 = 1.0 µm
3-0 = 3.0 µm
5-0 = 5.0 µm

SS Ring
S = Ring
N = No Ring

Length
05 = 5 in. (12.7 cm)
97 = 9.75 in. (24.8 cm) (DOE only)
01 = 10 in. (25.4 cm)
02 = 20 in. (50.8 cm)
03 = 30 in. (76.2 cm)
04 = 40 in. (101.6 cm)

O-Ring/Gasket Code
S = Silicone
B = Buna
V = Viton (or FKM)
T = FEP Encapsulated Viton (or FKM)
E = EPDM
R = FEP Encapsulated Silicone

End Cap Code*
0 = Flat Gasket, DOE
1 = Flat Gasket/Plug
2 = 2-222 O-ring/Plug
3 = 213/119 Internal O-ring DOE
4 = 213/119 Internal O-ring/Plug
5 = 2-222 O-ring/Flat
6 = 2-226 O-ring/Flat
7 = 020 O-ring/Plug
8 = 2-222 O-ring/Spear
9 = 2-226 O-ring/Spear
21 = 2-223 O-ring/Flat
22 = 2-223 O-ring/Spear
23 = 2-222 O-ring 3 Tab/Flat
24 = 2-222 O-ring 3 Tab/Spear
25 = Short 2-222/Plug

*Additional End Configurations Available

Capsule Filters

CP PTM [ ] N 0HA [ ] [ ] [ ] - [ ] [ ]

Pore Size Code
-10 = 0.10 µm
-20 = 0.22 µm
-40 = 0.45 µm
1-0 = 1.0 µm
3-0 = 3.0 µm
5-0 = 5.0 µm

Length
A = 2”
B = 5”
1 = 10”
2 = 20”
3 = 30”

Inlet
A = 1/4” Female NPT
B = 1/4” Male NPT
C = 3/8” Female NPT
D = 1/2” Female NPT
E = 1/2” Male NPT
F = 1”-1½” Sanitary
G = Hose Barb*
J = ¾” Single Step Barb with Side Vent
Y = 3/8” Compression (JACO©) (Top Luer lock vent only)
Z = 6mm Quick Disconnect (Top Luer lock vent only)

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Side Vent Options
1 = Luer Lock
2 = 1/8” Bleed Valve
3 = ¼” Bleed Valve

O-Rings
(Bleed Valves Only)
S = Silicone
E = EP
V = Viton
B = Buna
T = FKM

*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.

CRITICAL PROCESS FILTRATION, INC.

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