CRITICAL PROCESS FILTRATION, INC.

EPS Filters

Single Layer PES Membrane

EPS Filters provide a wide selection of single layer Polyethersulfone (PES) cartridge and capsule filters designed for the electronics industry and used for removing fine and ultrafine particles from aqueous liquids. Pore sizes range from 0.02 to 0.45 µm and the filter devices scale from laboratory to full production using identical materials to ensure consistent results.

The hydrophilic EPS filters have low extractables for fast rinse-up to conductivity limits and fast rinse-down to TOC limits. EPS filters deliver high flow and throughput with chemical compatibility across a wide pH range. They are commonly utilized in the final filtration of liquids for point of use tools.

EPS 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.

EPS Filter are recommended for:

- UPDI Water
- Acids & Bases
- Etch Baths
- Solvents
- Bulk Chemicals
- Plating Solutions

Particle Filtration

Clarification & Prefiltration

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 (5.51 bard at 20 °C)
Gases Operational Pressure	N/A	60 psi at 68 °F (4.13 bar at 20 °C)
Operating Temperature (water)	180 °F at 30 psid (82 °C at 2.06 bard)	110 °F at 30 psid (43 °C at 2.06 bard)
Forward Differential Pressure	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)
Reverse Differential Pressure	50 psid at 68 °F (3.44 bard at 20 °C)	50 psid at 68 °F (3.44 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, 25+ 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

	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	1.2 ft^2	3.4 ft^2	7.3 ft^2	14.6 ft^2	21.9 ft^2	29.2 ft^2
	0.11m^2	0.32m^2	0.68m^2	1.36m^2	2.04m^2	2.72m^2

Integrity Testing

PORE SIZE	DIFFUSION TEST PRESSURE		BUBBLE POINT MINIMUM	
µm	PSIG	BARG	PSIG	BARG
0.02	60	4.13	**	**
0.03	60	4.13	**	**
0.10	48	3.30	**	**
0.22	35	2.41	50	3.5
0.45	20	1.37	25	1.7

DIFFUSION SPECIFICATIONS						
Length	2”	5”	10”	20”	30”	40”
mL/min (0.02µm)	≤ 3.6	≤ 11.6	≤ 25	≤ 50	≤ 75	≤ 100
mL/min (all other pore sizes)	≤ 4.3	≤ 14.0	≤ 30	≤ 60	≤ 90	≤ 120

** Test pressure exceeds operational limits of capsule filters. Use the Diffusion Test method.

Construction Materials

Filtration Media	Single Layered Polyethersulfone (PES) 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)

Extractables

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

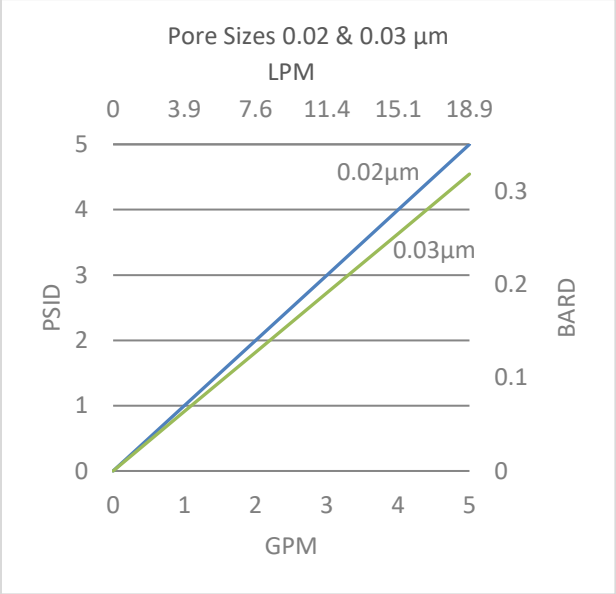
TOC and Conductivity

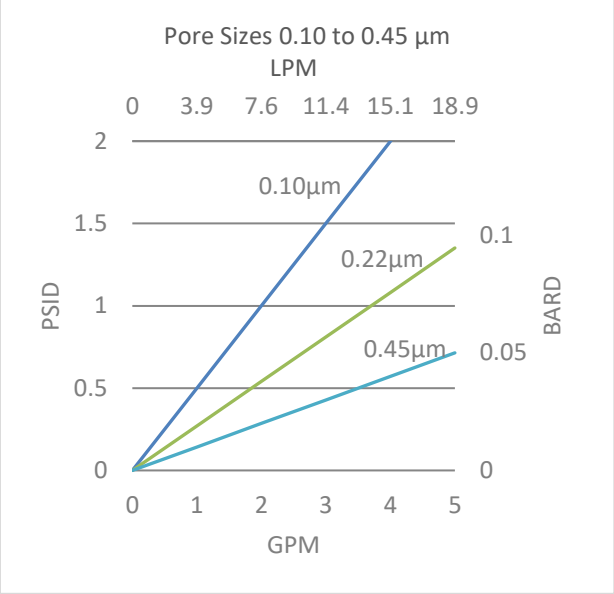
EPS filter water effluent conforms with the TOC and water conductivity standards of SEMI Standard F63 after an appropriate flush with ultrapure water.

Non-Fiber Releasing

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

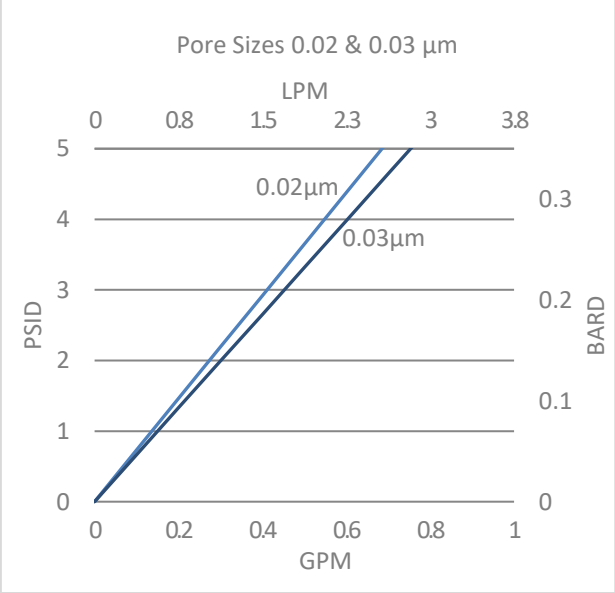
Flow Rates for EPS Cartridges

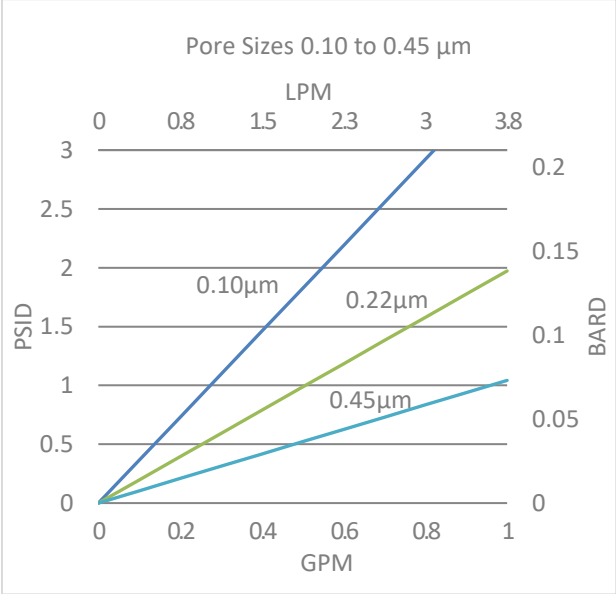




Flow rates for Cartridge filters are per 10-inch length. The test fluid is water at ambient temperature.

Flow Rates for EPS Capsules





Flow rates for Capsule filters are per square foot of membrane area. The test fluid is water at ambient temperature. Flows are tested using a 2" capsule filter with ½" FNPT inlet and outlet ports. Rates will vary based on end configuration of the capsule.

EPS 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

Cartridge Filters

EPS [ ] [ ] 000 [ ] [ ] [ ]

Pore Size Code
-02 = 0.02 µm
-03 = 0.03 µm
-10 = 0.1 µm
-20 = 0.22 µm
-40 = 0.45 µm

304 SS Ring
S = Ring
N = No Ring

Length
05 = 4.875 in. (12.4 cm)
97 = 9.75 in. (24.8 cm)
01 = 10 in. (25.4 cm)
19 = 19.5 in. (49.5 cm)
02 = 20 in. (50.8 cm)
29 = 29.25 in. (74.3 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

Capsule Filters

CP EPS [ ] N 000 [ ] [ ] [ ]

Pore Size Code
-02 = 0.02 µm
-03 = 0.03 µm
-10 = 0.1 µm
-20 = 0.22 µm
-40 = 0.45 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*

Outlet
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*

Housings

CPF offers industrial and sanitary housings in Single-Round (Inline and T-Style) and Multi-Round configurations. Contact us or visit our website for more information.

CRITICAL PROCESS FILTRATION, INC.

One Chestnut Street
Nashua, NH 03060
603.880.4420
FAX: 603.880.4536

CriticalProcess.com

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