

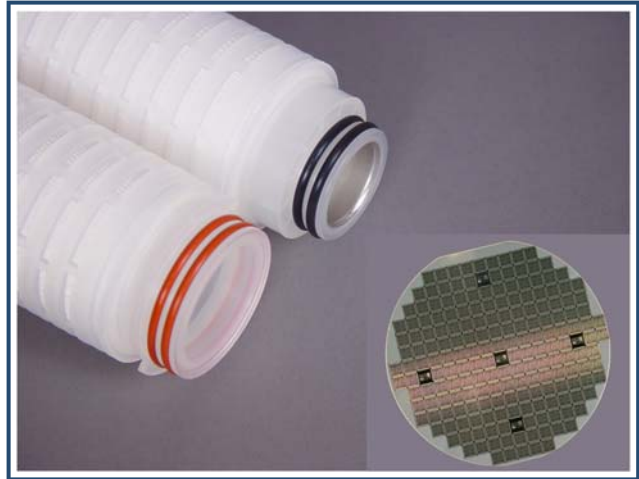


EPS grade

*Polyethersulfone Membrane Media Filter Cartridges
developed for the special needs of the electronics industry*

Critical Process Filtration, Inc.® • One Chestnut Street • Nashua, NH • 03060
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EPS cartridges are designed to meet the special needs of the electronics and high purity chemical industries. Polyethersulfone membrane cartridges are resistant to most acids and bases and capable of handling strong sanitization agents. High flow rates make Polyethersulfone a good choice for central DI water systems. This membrane will also handle elevated process temperatures in compatible fluids. To minimize extractables, each cartridge module is pulse, power flushed until the rinse effluent reaches 17+ Megohm-cm and less than 3 ppb TOC. Each cartridge module is also individually tested.



Construction Materials¹

Filtration Media: Polyethersulfone
Filtration Media Support: Polypropylene
End Caps: Polypropylene
Center Core: Polypropylene
Outer support Cage: Polypropylene
Sealing Method: Thermal Bonding
O-rings: Buna, Viton, EP, Silicone, Teflon® Encapsulated Silicone, Teflon® Encapsulated Viton

¹All materials of construction are FDA accepted. Final assemblies have been validated to pass USP class 6 Toxicology extractable tests, oxidizable substances for plastics, endotoxin level and other quality tests.

Maximum Operating Parameters

Forward Differential Pressure: ... 50 psi (3.4 bar) at 20°C.
Reverse Differential Pressure: 40 psi (2.7 bar) at 20°C.
Operating Temperature:..... 180°F (82°C) at 10 psid (0.69 bar) in water.
Recommended Change Out Pressure: ... 35 psid (2.4 bar)

Dimensions

Length: 5 to 40 inches (12.7 to 101.6 cm) nominal
Outside Diameter: 2.75 inches (7.0 cm) nominal
Filtration Area: 7.0 ft² (0.65 m²) Per 10" length

Validation

EPS grade cartridges are validated using modified HIMA protocols at a challenge level of 10⁶ organisms per cm² of filter media. (0.22 µm challenged with *Brevundimonas diminuta*) (0.45 µm challenged with *Serratia marcescens*) (0.65 µm challenged with *Saccharomyces cerevisiae*).

Applications

Final Filtration of:

- UP DI Water
- Acids & Bases
- Plating Solutions
- Etch Baths
- Chemicals
- Solvents
- Process Water
- Point of Use Filtration

Sanitization / Sterilization

Filtered Hot Water: 194°F (90°C)
Autoclave: 260°F (127°C), 30 min, multiple cycles
In-line Steam: 275°F (135°C), 30 min, multiple cycles

Chemical Sanitization : Industry standard concentrations of hydrogen peroxide, peracetic acid, sodium hypochlorite and other selected chemicals. Sanitization protocols designed to extend the useful life of EPS cartridges are available from Critical Process Filtration, Inc.®.

Integrity Test Specifications (per 10 inch length)
(water wetted membrane)

| Pore Size | Air Diffusion Rate |
|-----------|-----------------------------------|
| 0.03 µm | ≤ 30 cc/min at 60 psi (4137 mbar) |
| 0.1 µm | ≤ 30 cc/min at 48 psi (3307 mbar) |
| 0.22 µm | ≤ 30 cc/min at 35 psi (2412 mbar) |
| 0.45 µm | ≤ 30 cc/min at 20 psi (1378 mbar) |
| 0.65 µm | ≤ 30 cc/min at 15 psi (1044 mbar) |
| 0.8 µm | ≤ 30 cc/min at 12 psi (827 mbar) |
| 1.0 µm | ≤ 30 cc/min at 8 psi (552 mbar) |
| 1.2 µm | ≤ 30 cc/min at 7 psi (483 mbar) |

Flow Rate

The following table represents typical water flow at a one psi (69 mbar) pressure differential across a single 10 inch cartridge element. The test fluid is water at ambient temperature. Extrapolation for housings with multiple elements and higher pressure drops is acceptable, but as flows increase the pressure drop of the housing becomes more apparent.

| Pore Size | 0.03 µm | 0.10 µm | 0.22 µm | 0.45 µm | 0.65 µm | 0.80 µm | 1.0 µm | 1.2 µm |
|-----------|---------|---------|---------|---------|---------|---------|--------|--------|
| GPM | 1.5 | 2.5 | 4.5 | 7.0 | 8.3 | 9.0 | 9.5 | 9.8 |
| LPM | 5.67 | 9.46 | 17.03 | 26.49 | 31.41 | 34.06 | 35.96 | 37.09 |

Quality Standards

Our goal is to ensure our customers the greatest possible value for their filtration dollar. We achieve both low cost manufacture and high quality by employing state of the art manufacturing equipment. This computer controlled equipment is highly automated, reducing hand operations that compromise quality. Each operation including assembly, testing, cleaning, drying and packaging is done in appropriately rated clean rooms. Critical Process Filtration manages an ISO 9000 facility that produces validated products to rigorous standards. Manufacturing is controlled using sophisticated MRP software that is networked to work stations in manufacturing centers and inspection points. During the manufacturing and inspection processes, data is collected "real time" from machinery and measuring instruments. This allows variable and attribute data to be quickly and easily analyzed to facilitate constant improvements in both quality and cost.

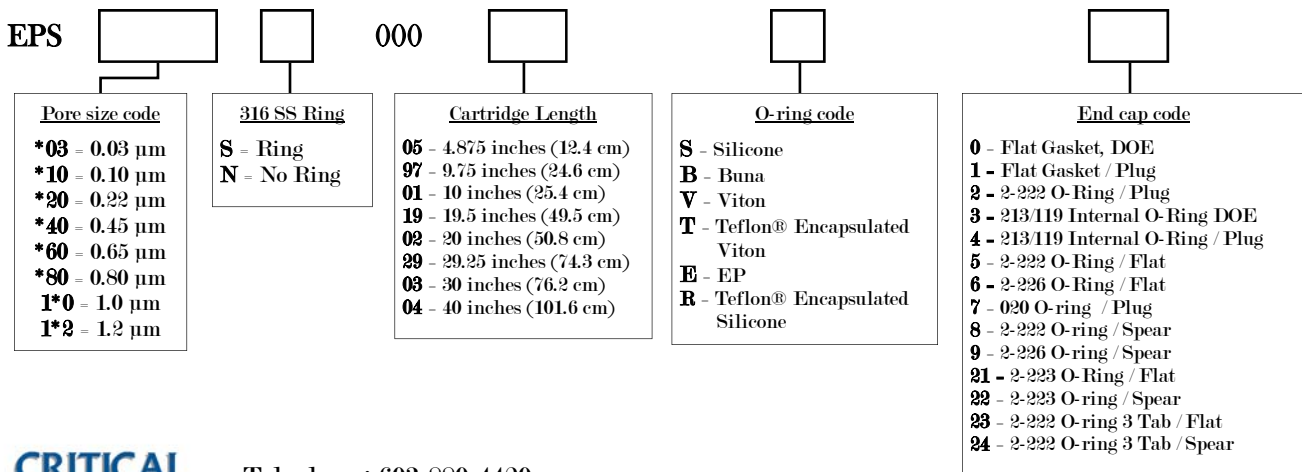
Total Performance

Critical Process Filtration, Inc.® is a vertically integrated supplier of filtration products and services to industries in which filtration is considered to be a critical part of the manufacturing process. We manufacture a complete line of products to help you achieve all your filtration requirements from a single source.



Ordering Information

The cartridge catalog number is made up of several variable characters i.e. pore size, end cap code, length, and O-ring material. For example: a 0.10 µm, 20 inch (50.8 cm.) long cartridge with 2-222, Teflon® Encapsulated Viton O-rings, no spear (flat top) and no 316 SS Ring would be designated as: EPS*10N00002T5.



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