



## *FPS grade*

*Polyethersulfone Membrane Media Filter Cartridges  
developed for the special needs of the food and beverage industry*

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FPS food and beverage grade cartridges have been designed to comply with all FDA requirements for the food industry. Polyethersulfone is low protein binding and therefore a good choice for fermented beverage filtrations. FPS cartridges are flushed with 17+ megohm-cm water to ensure that no manufacturing debris remains downstream to contaminate your product. This washing also ensures that all extractables which may effect the taste of the product are removed. Cartridges are designed to give maximum throughput and handle cleaning and sanitization protocols well. Each cartridge module is individually tested to ensure integrity and is absolute at the rated pore size.

### Construction Materials<sup>1</sup>

**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

<sup>1</sup>All 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 ft<sup>2</sup> (0.65 m<sup>2</sup>) Per 10" length

### Validation

FPS grade cartridges are validated using modified HIMA protocols at a challenge level of 10<sup>6</sup> organisms per cm<sup>2</sup> 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:

- Wine
- Beer
- Juices
- Vinegar
- Soft Drinks
- Bottled Water
- Process Water
- Aseptic Packaged liquids

### 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 FPS cartridges are available from Critical Process Filtration, Inc.®.

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

Pore Size	Air Diffusion Rate
<b>0.03 µm</b>	≤ 30 cc/min at 60 psi (4137 mbar)
<b>0.1 µm</b>	≤ 30 cc/min at 48 psi (3307 mbar)
<b>0.22 µm</b>	≤ 30 cc/min at 35 psi (2412 mbar)
<b>0.45 µm</b>	≤ 30 cc/min at 20 psi (1378 mbar)
<b>0.65 µm</b>	≤ 30 cc/min at 15 psi (1044 mbar)
<b>0.8 µm</b>	≤ 30 cc/min at 12 psi (827 mbar)
<b>1.0 µm</b>	≤ 30 cc/min at 8 psi (552 mbar)
<b>1.2 µm</b>	≤ 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, length, O-ring material, and end cap code. For example: a 0.45 µm, 20 inch (50.8 cm) long cartridge with 2-222, Silicone O-rings, no spear (flat top) and no 316 SS Ring would be designated as: FPS\*40N00002S5.

FPS	□	□	□	□	0000	□	□	□			
	<u>Pore size code</u> <b>*03</b> = 0.03 µm <b>*10</b> = 0.10 µm <b>*20</b> = 0.22 µm <b>*40</b> = 0.45 µm <b>*60</b> = 0.65 µm <b>*80</b> = 0.80 µm <b>1*0</b> = 1.0 µm <b>1*2</b> = 1.2 µm			<u>316 SS Ring</u> <b>S</b> = SS Ring <b>N</b> = No Ring		<u>Cartridge Length</u> <b>5</b> = 5 inches (12.7 cm) <b>1</b> = 10 inches (25.4 cm) <b>2</b> = 20 inches (50.8 cm) <b>3</b> = 30 inches (76.2 cm) <b>4</b> = 40 inches (101.6 cm)		<u>O-ring code</u> <b>S</b> - Silicone <b>B</b> - Buna <b>V</b> - Viton <b>T</b> - Teflon® Encapsulated Viton <b>E</b> - EP <b>R</b> - Teflon® Encapsulated Silicone		<u>End cap code</u> <b>0</b> - Flat Gasket, double open end <b>1</b> - Flat Gasket w/Plug <b>2</b> - 2-222 w/ Plug <b>3</b> - 213/119 Both Ends <b>4</b> - 213/119 w/ Plug <b>5</b> - 2-222 O-Ring / Flat <b>6</b> - 2-226 O-Ring / Flat <b>7</b> - 020 O-ring <b>8</b> - 2-222 O-ring with Spear <b>9</b> - 2-226 O-ring with Spear  <b>Note:</b> For additional cap codes, see selection guide data sheet. CCDS0107	



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