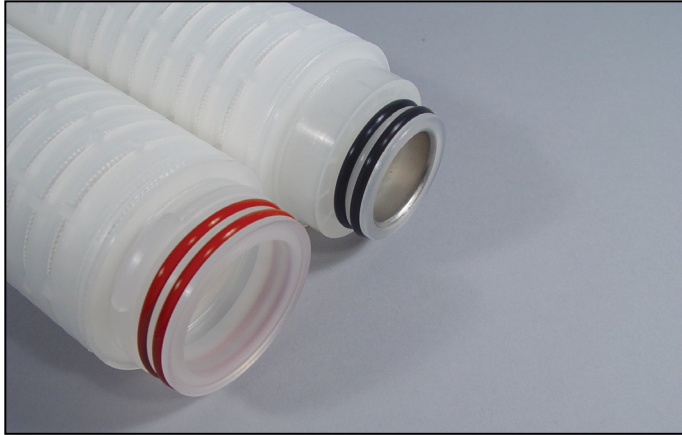
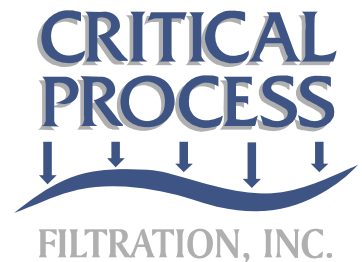


FPS Cartridge Filters

PES Membrane



FPS Filter Cartridges have been designed to comply with all FDA requirements for the food industry. Polyethersulfone (PES) is low protein binding and therefore a good choice for fermented beverage filtration. FPS Membrane Filter Cartridges are flushed with high purity water to remove manufacturing debris and protect your product. This washing also ensures that extractables which may affect the taste of the product are removed. FPS filters are designed to give maximum throughput and handle cleaning and sanitization protocols well. Each cartridge module is individually tested to ensure integrity before release from manufacture and will retain all particles at the rated pore size.

Construction Materials

Filtration Media	Polyethersulfone (PES) Membrane
Media Support	Polypropylene
End Caps	Polypropylene
Center Core	Polypropylene
Outer Support Cage	Polypropylene
Sealing Method	Thermal Bonding
O-rings	Buna, Viton® (or FKM), EP, Silicone, FEP Encapsulated Silicone, FEP Encapsulated Viton (or FKM)

Total Performance

Critical Process Filtration, Inc. is a vertically integrated manufacturer of filtration products to industries in which filtration is considered a critical part of the manufacturing process. We supply a complete line of products and services to help you cost effectively satisfy all your filtration requirements from a single source.

Applications

- ◆ Wine
- ◆ Beer
- ◆ Bottled Water
- ◆ Process Water
- ◆ Juices
- ◆ Soft Drinks
- ◆ Clean-in-Place Solutions

Integrity Test Specifications

10-inch cartridge, water wetted membrane

Pore Size	Air Diffusion Rate
0.03 µm	< 30 cc/min at 60 psig (4.1 barg)
0.10 µm	< 30 cc/min at 48 psig (3.3 barg)
0.22 µm	< 30 cc/min at 35 psig (2.4 barg)
0.45 µm	< 30 cc/min at 20 psig (1.4 barg)
0.65 µm	< 30 cc/min at 15 psig (1.0 barg)
0.80 µm	< 30 cc/min at 12 psig (0.8 barg)
1.0 µm	< 30 cc/min at 8 psig (0.55 barg)
1.2 µm	< 30 cc/min at 7 psig (0.48 barg)

Dimensions

Length	5 to 40 in. (12.7 to 101.6 cm) nominal
Outside Diameter	2.75 in. (7.0 cm) nominal
Filtration Area	7.0 ft ² (0.65 m ²) per 10 in. length

Maximum Operating Parameters

Differential Pressure	
• Forward	50 psid (3.4 barg) at 20 °C (68 °F)
• Reverse	40 psid (2.7 barg) at 20 °C (68 °F)
Operating Temperature	82 °C (180 °F) at 10 psid (0.69 barg) in water
Recommended Changeout Pressure	35 psid (2.4 barg)

Sanitization/Sterilization

Filtered Hot Water	90 °C (194 °F), 30 minutes, multiple cycles, max 3 psid forward flow
Autoclave	121 °C (250 °F), 30 min, multiple cycles
In-line Steam	135 °C (275 °F), 30 min, multiple cycles

For all elevated temperature procedures above, a stainless steel support ring is required.

Chemical Sanitization

Performed using industry standard concentrations of hydrogen peroxide, peracetic acid, sodium hypochlorite, and other selected chemicals.

FDA and EC Compliance

All Critical Process Filtration cartridge filters are designed to meet the FDA requirements for processing food and beverage products. The materials used to construct food & beverage grade filters are 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 appropriate. FPS filters comply with Title 21 CFR sections 210.3 (b)(6) and 211.72, for non-fiber releasing filters. All materials used to make the filters are listed in European Commission Regulation EU/10/2011, Annex 1.

Extractables

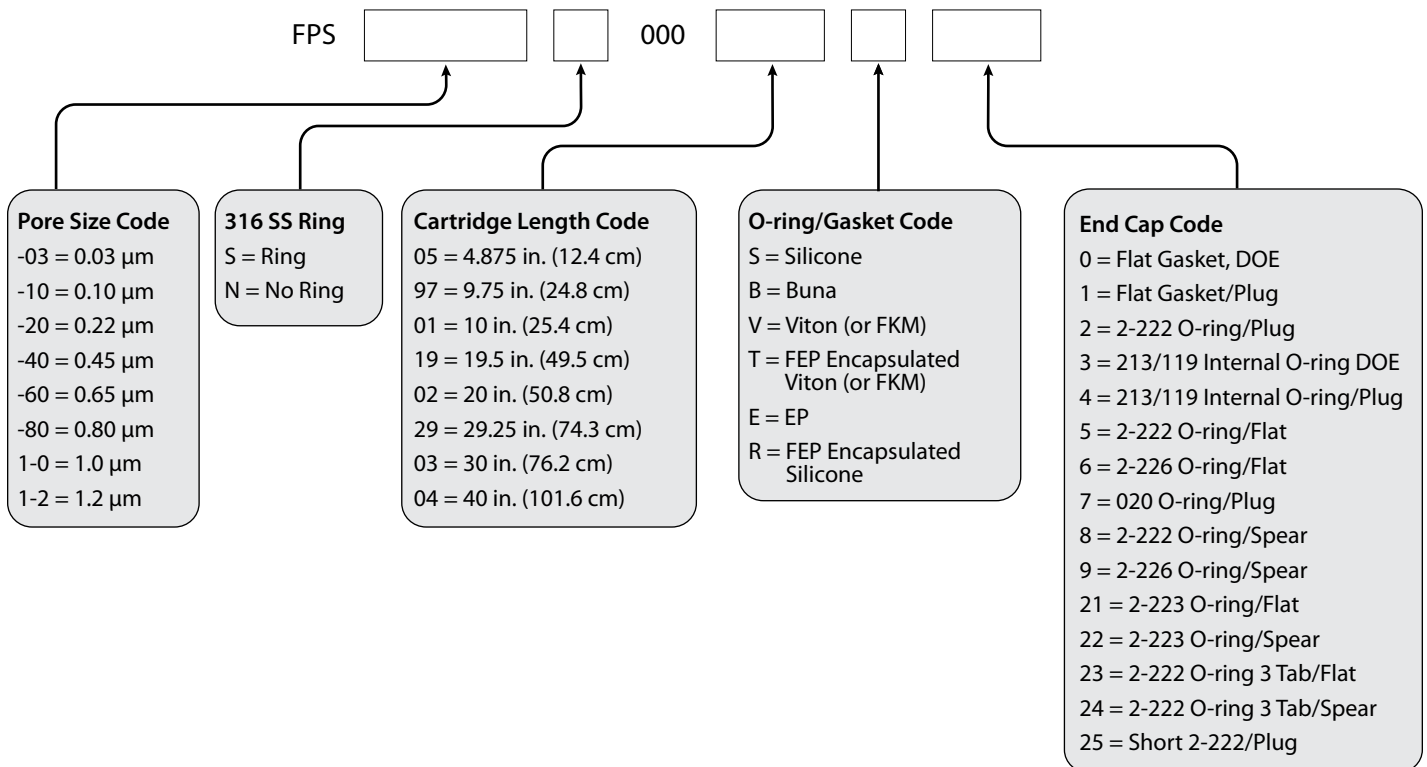
Food & beverage grade filters typically exhibit low levels of non-volatile residues.

Quality Assurance and Standards

Our goal is to ensure our customers the greatest possible value for their filtration dollar. Our state of the art manufacturing facility and quality management system both meet ISO 9001:2008 standards. Each operation from assembly and test to cleaning, drying, and packaging is done in appropriately rated clean rooms. A sophisticated MRP system collects and processes real time data from manufacturing centers and inspection points. This allows variable and attribute data to be quickly and easily analyzed driving constant improvements in both quality and cost.

Ordering Information

Cartridge order numbers have several variables from pore size to end cap type. For example, Food & Beverage Grade PES Membrane, 0.45 Micron Rating, With SS Support Ring, 20" Length, Silicone O-Rings, 2-226/Spear End Cap Configuration = FPS-40S00002S9.



Validation

FPS cartridges are validated using test procedures that comply with the intent of both ASTM F 838-05 and HIMA protocols for the determination of bacterial retention in filters used for liquid filtration. The challenge level is 10⁷ organisms per cm² of filter media: 0.10 μm challenged with *Acholeplasma laidlawii*; 0.22 μm challenged with *Brevundimonas diminuta*; 0.45 μm challenged with *Serratia marcescens*; 0.65 μm challenged with *Saccharomyces cerevisiae*.

Flow Rate

The Typical Flow Rates table represents typical water flow at ambient temperatures and a 1 psid (69 mbard) pressure differential across a single 10 in. cartridge element. 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

Typical Flow Rates

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

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