

# VPS Cartridge Filters

## Dual Layered Polyethersulfone (PES) Membrane



Wine and beverage grade PS filter cartridges are designed to comply with all FDA requirements and EC directives for food and beverage manufacturing and food contact. Polyethersulfone is low protein binding and a good choice for fermented beverage filtrations. The unique dual membrane design retains organic and other contaminants while allowing valuable flavor components through the filter. VPS Filter Cartridges are flushed with high purity water to remove manufacturing debris and extractables that may affect the taste of the product. VPS filters are configured to increase the surface area, give maximum throughput and handle cleaning and sanitization protocols well. Each module is tested to ensure integrity and will remove all particulate and organic materials at the rated pore size.

### Construction Materials

<b>Filtration Media</b>	Polyethersulfone (PES) Membrane
<b>Prefiltration Media</b>	Polyethersulfone (PES) Membrane
<b>Media Support</b>	Polypropylene
<b>End Caps</b>	Polypropylene
<b>Center Core</b>	Polypropylene
<b>Outer Support Cage</b>	Polypropylene
<b>Sealing Method</b>	Thermal Bonding
<b>O-rings</b>	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
- ◆ Juices
- ◆ Soft Drinks
- ◆ Aseptic Packaged Liquids
- ◆ Process Water

### Integrity Testing

Per 10-inch length, water-wetted membrane

Pore Size	Air Diffusion Rate
<b>0.22 µm</b>	< 30 cc/min at 35 psig (2.4 barg)
<b>0.45 µm</b>	< 30 cc/min at 20 psig (1.4 barg)
<b>0.65 µm</b>	< 30 cc/min at 15 psig (1.0 barg)
<b>0.80 µm</b>	< 30 cc/min at 12 psig (0.8 barg)
<b>1.0 µm</b>	< 30 cc/min at 8 psig (552 mbarg)
<b>1.2 µm</b>	< 30cc/min at 7 psig (483 mbarg)

### Dimensions

<b>Length</b>	5 to 40 in. (12.7 to 101.6 cm) nominal
<b>Outside Diameter</b>	2.75 in. (7.0 cm) nominal
<b>Filtration Area</b>	6.9 ft <sup>2</sup> (0.64 m <sup>2</sup> ) per 10 in. length

### Maximum Operating Parameters

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

### Sanitization/Sterilization

<b>Filtered Hot Water</b>	90 °C (194 °F), 30 minutes, multiple cycles, max 3 psid forward flow
<b>Autoclave</b>	121 °C (250 °F), 30 min, multiple cycles
<b>In-line Steam</b>	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, paracetic 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. VPS 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

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

## Flow Rate

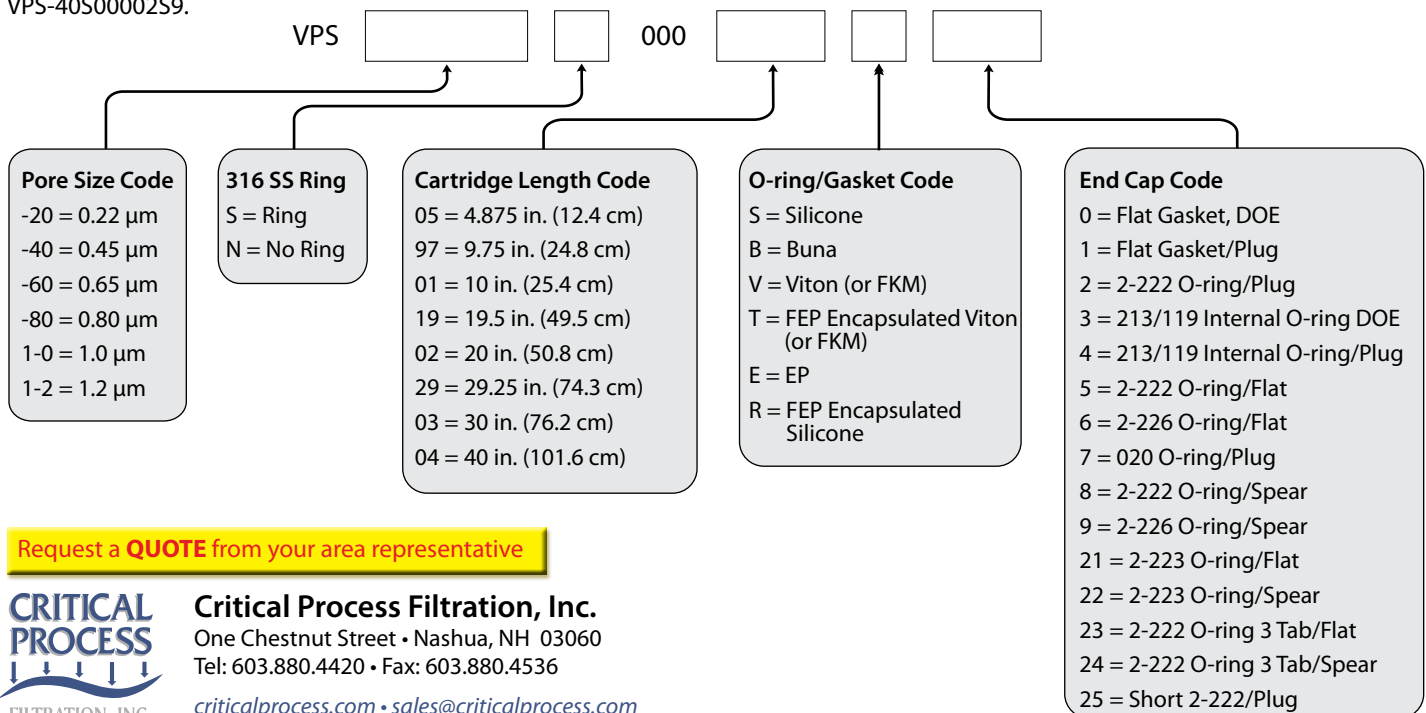
The following table represents typical water flow at ambient temperature and a 1 psid (69 mbard) pressure differential across a single 10 in. cartridge element. Extrapolation for housings with multiple elements and higher pressure drops is acceptable, but as flows increase the pressure drop of the housing becomes more apparent.

### Typical Flow Rates

Pore Size	0.22 µm	0.45 µm	0.65 µm	0.80 µm	1.0 µm	1.2 µm
GPM	3.2	5.0	5.9	6.4	6.8	7.0
LPM	12.11	18.93	22.33	24.22	25.74	26.50

## Ordering Information

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



Request a **QUOTE** from your area representative



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## 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.

## Validation

VPS 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 10<sup>7</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*.