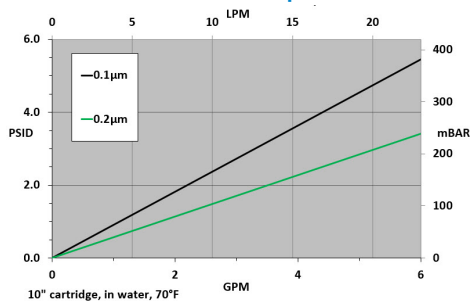


## PPES-Series Pharmaceutical Grade Polyethersulfone

PPES-Series High Purity Pharmaceutical Grade Polyethersulfone Filter Cartridges are ideal for sterile filtration and clarification of pharmaceutical and biological solutions. Each PPES cartridge is integrity tested during manufacturing and is supported by a validation guide for regulatory compliance. Low protein binding and the broad chemical compatibility characteristics of the polyethersulfone membrane, along with exceptional flow rate vs pressure drop, makes the PPES-Series the ideal choice for a variety of valuable and/or critical pharmaceutical solutions.

PPES cartridges are fully validated as sterilizing grade filters in accordance with HIMA and ASTM F838-05 guidelines. For the 0.2 micron series elements, validation studies demonstrate sterile effluent is achieved with challenge concentrations in excess of 10<sup>7</sup>, *Brevundimonas diminuta* per cm<sup>2</sup> of filter area. Additionally, validation studies of 0.1 micron series elements demonstrate 10<sup>7</sup> retention of *Mycoplasma* (*Acholeplasma laidlawii*) per cm<sup>2</sup> of filter area. Designed to tolerate repeated hot water sanitization and *in-situ* steam sterilization cycles for maximum service life. Manufactured in a clean-room environment to maintain high standards of purity and cleanliness.

### Flow Rate vs Pressure Drop



### Typical Applications

- Vaccines
- Large Volume Parentals (LVP's)
- Water for Injection (WFI)
- Diagnostics
- Ophthalmics
- Cell and Tissue Culture Media
- Protein Solutions
- Serum and Blood Products

### Construction Materials

**Membrane** ..... Polyethersulfone  
**Support Media** ..... Polypropylene  
**End Caps** ..... Polypropylene  
**Center Core** ..... Polypropylene  
**Outer Support Cages** ..... Polypropylene  
**O-Rings/Gaskets** ..... Buna, EPDM, Silicone  
 Teflon® Encapsulated Viton®, Viton®,  
 Teflon® Encapsulated Silicone<sup>2</sup>

**Note:** O-ring adapters include integral reinforcement that will not deform with repeated steam sterilization or hot water sanitation cycles.

### Dimension (Nominal)

**Length** ..... 10 to 40 in (25.4 to 101.6 cm)  
**Outside Diameter** ..... 2.70 in (6.4 cm)

### Operating Conditions

**Change Out ΔP (recommended)** ..... 35 PSID (2.4 bar)  
**Temperature (max)** ..... 176°F (80°C)  
**Differential Pressure (max)** ..... 72 PSID at 68°F  
 (5.0 bar at 20°C)

### Sanitization/Sterilization

**Hot Water** ..... 185° - 203°F (85°-95°C) for 30 min  
 max ΔP 7 psi  
**In-Line Steaming** ..... 273°F (134°C) for 30 min  
 max ΔP 7 psi, 100 cycles

### Toxicity

All polypropylene components meet the specifications for biological safety per USP Class VI – 121°C for plastics.

### Food Safety Compliance

Materials of construction comply with FDA regulations for food and beverage contact use as detailed in the US Code of Federal Regulations, 21CFR. Materials used to produce filter media and hardware are deemed safe for use in contact with foodstuffs in accordance with EU Directives 1935/2004, and/or 10/2011.

### Ordering Information

PPES	Rating(µ)	A	Length	C	End Cap Style	O-Rings/Gaskets
	0.1		10" (25.4cm)		2 = DOE Flat Gasket <sup>1 2</sup>	B = Buna-N
	0.2		20" (50.8 cm)		3 = 222 w/Fin	E = EPDM
			30" (76.2 cm)		4 = 222 w/Flat Cap	S = Silicone
			40" (101.6 cm)		6 = 226 w/Flat Cap	T = Teflon® Encapsulated Viton® <sup>1</sup>
					7 = 226 w/Fin	V = Viton®
					28 = 222 3-Tabs w/ Fin	Z = Teflon® Encapsulated Silicone <sup>2</sup>

1 - When ordering with DOE Flat Gasket, gasket style "T" is not available  
 2 - When ordering with DOE Flat Gasket, gasket style "Z" is not available

DISCLAIMER: Filtration data presented is representative of performance observed in controlled laboratory testing. It is not given as a warranty, specification or statement of fitness for use. Specific performance can vary widely depending on contaminant type, fluid properties, flow rates and environmental conditions. It is recommended that users conduct thorough qualification testing to assure the product functions as required. For additional technical support, a product Performance Guide is available upon request.