



## DESCRIPTION

Purolator's **BIO-PRO** Capsule-Clear PES filters are manufactured with advanced asymmetric hydrophilic polyethersulfone membrane (PES). PES provides sharp particle cut offs and is compatible with a broad range of chemicals and pH extremes. The filters are intended for applications where absolute bacterial retention and high flow rates are required as well as full material traceability. The capsules are offered with single or double layer membrane and a gamma stable option. There are 20 standard end fitting types to choose from, including quick disconnects.

## FEATURES AND BENEFITS

- Available fitting connections include hose barb, NPT, tri clamp, compression, luer lock, quick coupling, and filling bell.
- All materials of construction meet the requirements of USP Biological Test for Plastics, Class VI, 121 °C and meet the FDA requirements for food contact use as detailed in 21 CFR.
- The 0.2 µm filter demonstrates absolute retention of  $\geq 10^7$  CFU/cm<sup>2</sup> of *Brevundimonas diminuta* ATCC 19146 in accordance with ASTM F838-05.
- Capsule filters are assembled at an ISO 9001 Facility in a Class 10,000 clean room.
- Filters are rinsed with USP grade water, integrity tested by diffusional flow and bubble point, LAL tested (<0.25 EU/mL), and supplied with certificates of conformance.

## MATERIALS OF CONSTRUCTION

Membrane	Polyethersulfone
Membrane Supports	Polypropylene
Capsule, Core	Polypropylene
Inlet, Outlet	Polypropylene
Sealing Method	Thermal Bonding

## OPERATING CONDITIONS

Maximum Operating Temperature	176 °F (80 °C)
Maximum Forward Differential Pressure	73 psid (5.0 bar) 68 °F (20 °C)
Maximum Forward Differential Pressure	36 psid (2.5 bar) 122 °F (50 °C)
Maximum Forward Differential Pressure	17 psid (1.2 bar) 176 °F (80 °C)
Maximum Reverse Differential Pressure	44 psid (3.0 bar) 68 °F (20 °C)

## INTEGRITY

### Bubble Point:

WSM001P1	0.1 µm $\geq$ 23 psig (IPA)
WSM002P1	0.2 µm $\geq$ 50 psig (H <sub>2</sub> O)
WSM004P1	0.45 µm $\geq$ 33 psig (H <sub>2</sub> O)
WSM006P1	0.65 µm $\geq$ 18 psig (H <sub>2</sub> O)
WSM008P1	0.8 µm $\geq$ 13 psig (H <sub>2</sub> O)
WSM062P2	0.6/0.2 µm $\geq$ 50 psig (H <sub>2</sub> O)
WSM084P2	0.8/0.4 µm $\geq$ 33 psig (H <sub>2</sub> O)

Air Diffusion Per Minute:	Size 1	Size 2	Size 3	Size 4
WSM001P1 at 40 psig (H <sub>2</sub> O)	3 mL	6 mL	12 mL	24 mL
WSM002P1 at 36 psig	3 mL	6 mL	12 mL	24 mL
WSM004P1 at 24 psig	3 mL	6 mL	12 mL	24 mL
WSM006P1 at 14 psig	3 mL	6 mL	12 mL	24 mL
WSM008P1 at 10 psig	3 mL	6 mL	12 mL	24 mL
WSM062P2 at 36 psig	3 mL	6 mL	12 mL	24 mL
WSM084P2 at 24 psig	3 mL	6 mL	12 mL	24 mL

## STERILIZATION

**Autoclave** 60 Minutes, 259 °F (126 °C), up to 6x

**Gamma Irradiation** Capsules will withstand irradiation to 45 kGy

## FLOW RATE


Single Layer Capsules:	Size 1 (720 cm <sup>2</sup> )	Size 2 (1,380 cm <sup>2</sup> )	Size 3 (2,600 cm <sup>2</sup> )	Size 4 (5,200 cm <sup>2</sup> )
WSM001P1 with 1.5" Tri Clamps	2.83 lpm/5 psid	5.29 lpm/5 psid	9.07 lpm/5 psid	17.0 lpm/5 psid
WSM002P1 with 1.5" Tri Clamps	4.72 lpm/5 psid	8.50 lpm/5 psid	13.23 lpm/5 psid	22.0 lpm/5 psid
WSM004P1 with 1.5" Tri Clamps	2.65 lpm/2 psid	7.56 lpm/2 psid	13.23 lpm/2 psid	22.0 lpm/2 psid
WSM006P1 with 1.5" Tri Clamps	11.34 lpm/3 psid	15.12 lpm/3 psid	15.12 lpm/1 psid	30.0 lpm/1 psid
WSM008P1 with 1.5" Tri Clamps	11.34 lpm/2 psid	15.12 lpm/2 psid	15.12 lpm/1 psid	37.8 lpm/1 psid
Double Layer Capsules:	Size 1 (650 cm <sup>2</sup> )	Size 2 (1,260 cm <sup>2</sup> )	Size 3 (2,430 cm <sup>2</sup> )	Size 4 (4,860 cm <sup>2</sup> )
WSM062P2 with 1.5" Tri Clamps	4.72 lpm/5 psid	8.50 lpm/5 psid	13.23 lpm/5 psid	22.0 lpm/5 psid
WSM084P2 with 1.5" Tri Clamps	2.65 lpm/2 psid	7.56 lpm/2 psid	13.23 lpm/2 psid	22.0 lpm/2 psid

## CAPSULE SELECTION GUIDE

W	S	M	O	O	I	P	I	I	A	A
Style	Media		Grade		Series	Layer	EFA	Inlet		Outlet
W = Capsule	SM = PES		001 = 0.1 µm	P = Pharmaceutical	1 = Single	1 = 720 cm <sup>2</sup>	A = ¼" to ⅜" HB	A = ¼" to ⅜" HB		A = ¼" to ⅜" HB
			*002 = 0.2 µm	PG = Pharmaceutical (Gamma Stable)	2 = Double	2 = 1,380 cm <sup>2</sup>	B = ½" HB	B = ½" HB		B = ½" HB
			004 = 0.45 µm			3 = 2,600 cm <sup>2</sup>	C = ¼" MNPT	C = ¼" MNPT		C = ¼" MNPT
			006 = 0.65 µm			4 = 5,200 cm <sup>2</sup>	D = ¼" FNPT	D = ¼" FNPT		D = ¼" FNPT
			008 = 0.8 µm				E = 1 ½" T.C.	E = 1 ½" T.C.		E = 1 ½" T.C.
			062 = 0.6/0.2 µm				F = ⅜" HB	F = ⅜" HB		F = ⅜" HB
			084 = 0.8/0.4 µm				G = ⅜" HB	G = ⅜" HB		G = ⅜" HB
							H = ⅜" FNPT	H = ⅜" FNPT		H = ⅜" FNPT
							I = ½" MNPT	I = ½" MNPT		I = ½" MNPT
							J = ⅜" FNPT	J = ⅜" FNPT		J = ⅜" FNPT
							K = ¼" Compression	K = ¼" Compression		K = ¼" Compression
							L = ⅜" Compression	L = ⅜" Compression		L = ⅜" Compression
							M = ½" Compression	M = ½" Compression		M = ½" Compression
							N = Large F Luer	N = Large F Luer		N = Large F Luer
							O = ½" T.C.	O = ½" T.C.		O = ½" T.C.
							P = ⅜" Q.C. F M.L.	P = ⅜" Q.C. F M.L.		P = ⅜" Q.C. F M.L.
							Q = ¼" Q.C. M for M.L.	Q = ¼" Q.C. M for M.L.		Q = ¼" Q.C. M for M.L.
							R = ¼" Q.C. F M.L.	R = ¼" Q.C. F M.L.		R = ¼" Q.C. F M.L.
							T = ½" Q.C. M for M.L.	T = ½" Q.C. M for M.L.		T = ½" Q.C. M for M.L.
							GV = ⅜" HB + Filling Bell	GV = ⅜" HB + Filling Bell		GV = ⅜" HB + Filling Bell

\*a validation guide is available upon request (0.2µm)



Distributed By:



**OPTIMUM PROCESSING INC.**

336 Bon Air Center #128  
Greenbrae, Ca. 94904  
www.opibioprocess.com  
Office: 415 461-7033  
Mobile: 415 722-5747  
Fax: 415 461-3255  
pete@opibioprocess.com

**Peter Florez**

FILTRATION  DISPOSABLE BIOPROCESSING  BIOFUELS



**Purolator Liquid Process** 8314 Tiogawoods Drive, Sacramento, CA 95828  
Phone: 916-689-2328 Fax: 916-689-1035 Email: sales@purolator-lp.com

© Purolator Liquid Process, Inc. Printed in the USA CCPP 05/10