



BEVPOR MH Filter Cartridges

- liquid filters
- polyethersulphone

The BEVPOR range of membrane cartridge filters is available in a selection of retention ratings to provide protection of beverages from the effects of common spoilage organisms or to enable them to meet regulatory requirements.

However, it is possible that other smaller microorganisms may be present that, whilst not affecting microbiological stability, may nonetheless be undesirable from a quality viewpoint. BEVPOR MH provides higher removal efficiency than BEVPOR PH, the basis of which is the recognised standard in the pharmaceutical industry for a 0.2 micron sterilising grade membrane⁽¹⁾. Specifically developed as a beverage grade cartridge, BEVPOR MH utilises an advanced polyethersulphone membrane and integral prefilter layer to give high flow rates, long life and improved throughput. The combination of prefilter and the asymmetrical pore structure of the membrane provides graded filtration through the depth of the media, resulting in increased capacity to hold contaminants. Componentry has been selected to withstand repeated chemical cleaning and steam sterilisation. ^{(1)ASTM F838-83}

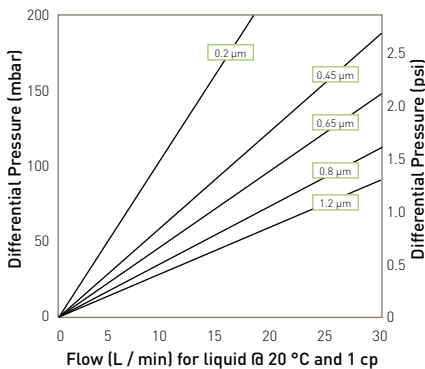
Features and Benefits

- Enhanced microbial retention based on pharmaceutical industry specifications
- Integral prefilter layer and high surface area combine to maximise service life
- Repeatedly integrity testable
- Cartridge can be regenerated and sanitised for extended service life
- Low adsorption of protein, colour and flavour components
- Asymmetrical membrane pore structure provides high contaminant loading capacity



Note: BEVPOR is a registered trademark of Parker domnick hunter

Performance Characteristics



For K size for a given flow rate multiply 10" size differential pressure by 2

10" Size (250 mm) Cartridge

Specifications

Materials of Construction

- Filtration Membrane: Polyethersulphone
- Prefilter Layer: Polyester
- Upstream Support: Polyester
- Downstream Support: Polyester
- Inner Support Core: Polypropylene
- Outer Protection Cage: Polypropylene
- End Caps: Nylon
- End Cap Insert (if applicable): 316L Stainless Steel
- Standard o-rings/gaskets: Silicone / EPDM
- Capsule Body: Nylon
- Capsule Vent Seals: Silicone

Food and Biological Safety

Materials conform to the relevant requirements of 21CFR Part 177, EC1935 / 2004 and current USP Plastics Class VI - 121 °C and ISO10993 equivalents.

Recommended Operating Conditions

Up to 70 °C (158 °F) continuous operating temperature and higher short-term temperatures during CIP to the following limits:

Temperature °C	Temperature °F	Max. Forward dP (bar)	Max. Forward dP (psi)
20	68	5.0	72.5
40	104	4.0	58.0
60	140	3.0	43.5
80	176	2.0	29.0
90	194	1.0	14.5
>100 (steam)	>212 (steam)	0.3	4.0

Whilst BEVPOR MH can withstand reverse pressure, poor control of backwash procedures can result in damage to the product. Consult Parker domnick hunter before using reverse flow or pressurisation techniques.

Capsules may be operated up to a temperature of 40 °C (104 °F) at line pressures up to 5.0 barg (72.51 psig) for liquids and 4.0 barg (58.01 psig) in air / gas.

Effective Filtration Area (EFA)

10" (250 mm) 0.8 m² (8.61 ft²)

Cleaning and Sterilisation

BEVPOR MH cartridges can be repeatedly steam sterilised in situ or autoclaved at up to 130 °C (266 °F). They can be sanitised with hot water at up to 90 °C (194 °F) and are compatible with a wide range of chemicals. Capsules can be repeatedly autoclaved up to 130 °C (266 °F).

For detailed operational procedures and advice on cleaning and sterilisation, please contact the Technical Support Group through your usual Parker domnick hunter contact.

Retention Characteristics

The retention characteristics of BEVPOR MH have been determined by a combination of controlled laboratory tests and in-use monitoring for a number of organisms. Bacterial challenge testing is carried out to methods specified in ASTM F838-05.

Organism	Approx. Cell Size* (diameter x length µm)
<i>Brevundimonas diminuta</i> ^a	0.3 x 0.6 - 0.8
<i>Serratia marcescens</i>	0.5 - 0.8 x 0.9 - 2.0
<i>Escherichia coli</i>	1.1 - 1.5 x 2.0 - 6.0
<i>Lactobacillus brevis</i>	0.5 - 1.2 x 1.0 - 10.0
<i>Saccharomyces cerevisiae</i>	1.0 (Spherical Buds)
<i>Brettanomyces</i> ^c	1.5 - 3.5 x 2.0 - 19.0

Organism	0.2		0.45		0.65		0.8		1.2	
	LRV	LRV Titre	LRV	LRV Titre	LRV	LRV Titre	LRV	LRV Titre	LRV	LRV Titre
<i>Brevundimonas diminuta</i>	>10	>10 ⁷	6	10 ⁶	-	-	-	-	-	-
<i>Serratia marcescens</i>	>9	>10 ⁷	9	10 ⁷	8	10 ⁷	6*	10 ^{6*}	-	-
<i>Escherichia coli</i>	>9	>10 ⁷	>9	>10 ⁷	>9	>10 ⁷	6	10 ⁶	2	10 ²
<i>Lactobacillus brevis</i>	>9	>10 ⁷	>9	>10 ⁷	>9	>10 ⁷	5	10 ⁶	-	-
<i>Saccharomyces cerevisiae</i>	>7	>10 ³	>7	>10 ³	>7	>10 ³	-	-	-	-
<i>Brettanomyces</i>	>6	>10 ⁶	>6	>10 ⁶	>6	>10 ⁶	4	10 ⁶	2	10 ²

* Results based on BEVPOR PT

Integrity Test Data

All filters are flushed with pharmaceutical grade purified water prior to despatch. They are integrity tested to the following limits:

Micron Rating		0.2	0.45	0.65	0.8	1.2
Diffusional Flow (barg)		2.4	1.7	1.4	1.0	0.8
Test Pressure (psig)		35.0	25.0	20.0	15.0	12.0
Max. Diffusional Flow (10 ⁻¹) (ml / min)	(K)	9.8	9.8	9.8	9.8	9.8
	(A)	8.0	8.0	8.0	8.0	8.0
	(B)	3.9	3.9	3.9	3.9	3.9
	(E)	1.8	1.8	1.8	1.8	1.8

Recommended Rinse Volume

Prior to use - 5 litres per 10" (250 mm) filter cartridge.

Ordering Information

Cartridges

Code Length (Nominal)	Code Micron	Code Endcap (10")	Code Format	Code O-rings
B 2.5" (65 mm)	02 0.2 µm	B dh DOE	A 10" Modular	E EPDM
A 5" (125 mm)	04 0.45 µm	C BF / 226 Bayonet	D Demi	S Silicone
K 5" (125 mm)	06 0.65 µm	G Recess / 222		
1 10" (250 mm)	08 0.8 µm	R BF / 222 Bayonet		
2 20" (500 mm)	12 1.2 µm			
3 30" (750 mm)				
4 40" (1000 mm)				
		Code Endcap (Demi)		
		T TRUESEAL		
		Y Demi Stub		
		Z Demi A & B Std		

Capsules

Code Length (Nominal)	Code Micron	Code Inlet Connection	Code Outlet Connection	Code Vent / Drain Seals
E 4.4" (113 mm)	02 0.2 µm	T 1" Tri-Clamp	T 1" Tri-Clamp	S Silicone
B 5.5" (140 mm)	04 0.45 µm	N 1/2" NPT Male	N 1/2" NPT Male	
A 7.9" (200 mm)	06 0.65 µm	H 1/2" Hosebarb	H 1/2" Hosebarb	
	08 0.8 µm	G Stepped Hosebarb	G Stepped Hosebarb	
	12 1.2 µm	M 1/4" NPT Male	M 1/4" NPT Male	

* Approx. values as in Holt, J.G., Krieg, N.R., Sneath, P.H.A., Staley, J.T., Williams, S.T., 1994. *Bergey's Manual of Determinative Bacteriology*, Ninth Edition, Williams & Wilkins.
 * Kurzmarm, C.P., Fell, J.W., 1998. *The Yeasts. A Taxonomic Study*, Elsevier Science Publisher BV, Amsterdam, The Netherlands.
 © PDA Technical Report 24, Sterilizing Filtration of Liquids

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