

Membrane Filtration
BECO® MEMBRAN PSplus

Membrane Filter Cartridges

BECO MEMBRAN PSplus filter cartridges are designed for reliable removal of spoilage microorganisms and meet extended service life requirements of beverages, liquid food, cosmetics, fine chemical and process water final filtration.

Features and Benefits

- The asymmetric polyethersulfone membrane provides high microbiological retention and can be integrity tested.
- Easily wettable, which means the integrity test is straightforward.
- The materials used enable regular cleaning and sterilization cycles and therefore very economic operation.
- Wide broad chemical compatibility from pH 1–14.
- Eaton can suggest the most economical configuration of pre and final filter.

Configuration

BECO MEMBRAN PSplus filter cartridges are made using high-quality polyethersulfone membranes. The membranes are protected by polyester support fleeces and offer wide chemical compatibility. Cage and core made of polypropylene ensures maximum mechanical stability. The nylon end caps facilitate wettability of the membrane filter cartridges for the integrity test.



Materials

Filter membrane:	Polyethersulfone
Support fleeces:	Polyester
Cage and core:	Polypropylene
End cap/adaptor:	Nylon, adaptor with stainless steel ring
O-rings:	Silicone (standard)

The plastic components meet the requirements of Directive 10/2011/EC and amendments. All materials used meet the FDA requirements according to 21 CFR.

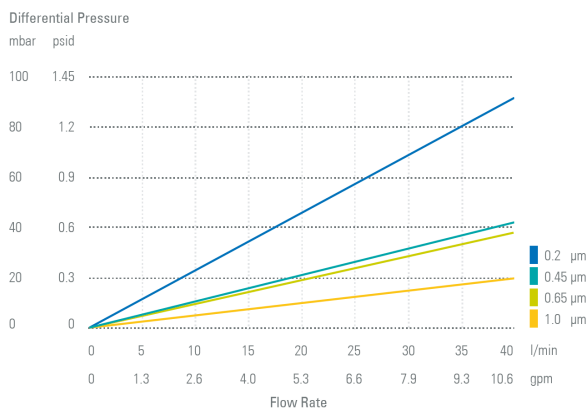
Technical Data

Nominal length	Filter area for 0.2 µm, 0.45 µm, 0.65 µm, 1.0 µm
10"/ 250 mm	7.5 ft² (0.7 m²)
20"/ 500 mm	15.1 ft² (1.4 m²)
30"/ 750 mm	22.6 ft² (2.1 m²)
40"/1,000 mm	30.1 ft² (2.8 m²)

Diameter:	2.75 in (70 mm)
Maximum operating temperature:	176 °F (80 °C)
Maximum differential pressure in flow direction:	72.5 psid at 68 °F (500 kPa, 5.0 bar at 20 °C) 29 psid at 176 °F (200 kPa, 2.0 bar at 80 °C) 4 psid at 250 °F (30 kPa, 0.3 bar at 121 °C)
Hot water sanitization:	Max. 194 °F (90 °C) for 30 minutes
Steam sterilization:	Max. 250 °F (121 °C) 100 cycles at 230 °F (110 °C) for 30 minutes

Flow Rate

30" element (750 mm) with water at 68 °F (20 °C) (standard values)



Integrity Test

Types	Test pressure	Max. diffusion rate per 10" element (250 mm)
PES02	35 psi (2.4 bar)	<= 20 ml/min
PES04	25 psi (1.7 bar)	<= 20 ml/min
PES06	14.5 psi (1.0 bar)	<= 20 ml/min
PES10	9 psi (0.6 bar)	<= 20 ml/min

The operation manual supplied with the device describes the procedure for the integrity test.

Titer Reduction

Pore size	Test organism	Titer reduction
PES02 (0.2 µm)	<i>Brevundimonas diminuta</i>	> 10 ⁷ cm ² (LRV > 7)
PES04 (0.45 µm)	<i>Serratia marcescens</i>	> 10 ⁷ cm ² (LRV > 7)
PES06 (0.65 µm)	<i>Saccharomyces cerevisiae</i>	> 10 ⁷ cm ² (LRV > 7)
PES10 (1.0 µm)	<i>Saccharomyces cerevisiae</i>	> 10 ⁶ cm ² (LRV > 6)

Adapter Codes

Code 0	Code 2
Single open end (SOE) 2-222 O-ring without spear	Single open end (SOE) 2-222 O-ring triple bayonet adapter with spear



Code 7

Single open end (SOE)
2-226 O-ring
double bayonet adapter
with spear



Ordering Information

BECO MEMBRAN PSplus filter cartridges with protective foil in carton.

Type	Retention rating	Adapter	Nominal length	Gasket
PES	02 = 0.2 µm	0 = Code 0*	1 = 10" (250 mm)	S = Silicone
	04 = 0.45 µm	2 = Code 2*	2 = 20" (500 mm)	
	06 = 0.65 µm	7 = Code 7	3 = 30" (750 mm)	
	10 = 1.0 µm**		4 = 40" (1000 mm)	

* On request

** Only in Code 7 and 30" (750 mm) available

Example:

PES	02	7	1	S
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BECO MEMBRAN PSplus filter cartridges; 0.2 µm retention rating; Code 7, 10" (250 mm); silicone gasket

Sterilization

Steam Sterilization:

With steam at 230 °F (110 °C)/7 psi (50 kPa, 0.5 bar).

Duration: 30 minutes after steam emerges from all openings of the filtration system.

Hot Water Sanitization:

Using water up to 194 °F (90 °C) max.

Duration: At least 30 minutes once the temperature reaches 185 °F (85 °C) from all openings of the filtration system. Soften and filter (ca. 1 µm) the water to avoid lime precipitation that could lead to premature clogging of the filter cartridge.

Regeneration

BECO MEMBRAN PSplus filter cartridges should be rinsed daily after use in the direction of product flow using filtered (approx. 1 µm), softened water under counter pressure. This will largely remove any deposited, water-soluble haze substances such as polysaccharides (glucanes), proteins, tannins, tartaric acid crystals. Rinsing with hot water (176 °F/80 °C) will usually also remove persistent residues, if used in time. The hot water may remain in the filter overnight.

Note: Detailed information on regeneration and chemical cleaning can be found in Note of Application 1 A 4.3.5.1.

Safety

When used as directed and handled correctly, there are no known unfavorable effects associated with this product. BECO MEMBRAN PSplus filter cartridges do not require the provision of safety-relevant information.

Storage, handling and transport do not present any environmental and health risks.

Disposal

BECO MEMBRAN PSplus filter cartridges should be treated as industrial waste. Any local and other official regulations in relation to the filtered product must be followed.

Storage

BECO MEMBRAN PSplus filter cartridges should be stored in their original packaging and in a dry, odor-free and UV ray protected place.

Use filter cartridges within 60 months after production date.

Certified Quality

During the production process, BECO MEMBRAN PSplus filter cartridges are regularly monitored to ensure consistent excellent quality control and are tested for 100% integrity as a part of the manufacturing process.

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