

The Protec® filter is a glass microfiber prefilter optimized to protect downstream sterile filters. The Protec® RF filter contains a single layer of 0.5 µm-rated borosilicate glass fiber media. The Protec® RM combines an outer layer of borosilicate glass fiber media in a choice of 0.2 µm, 0.3 µm or 0.5 µm with an inner layer of Meissner's proprietary hydrophilic PVDF membrane.

Protec® filters provide consistent submicron contaminant removal, high dirt-holding capacity and high flow rates, while removing colloids, aggregated and non-product proteins, lipids and other particles. Protec® effectively protects downstream membrane filters and equipment.

The filter cartridge is available in lengths up to 40 inches.

Design Features

- RF version is 0.5 µm absolute-rated
- RM version is 0.2 µm, 0.3 µm or 0.5 µm absolute-rated
- High flow rates and excellent filtration economics
- High contaminant holding capacity
- All-polypropylene support materials
- Protec® RM combines the retention performance of a PVDF membrane with the high adsorption and contaminant-holding capacity of a glass fiber media

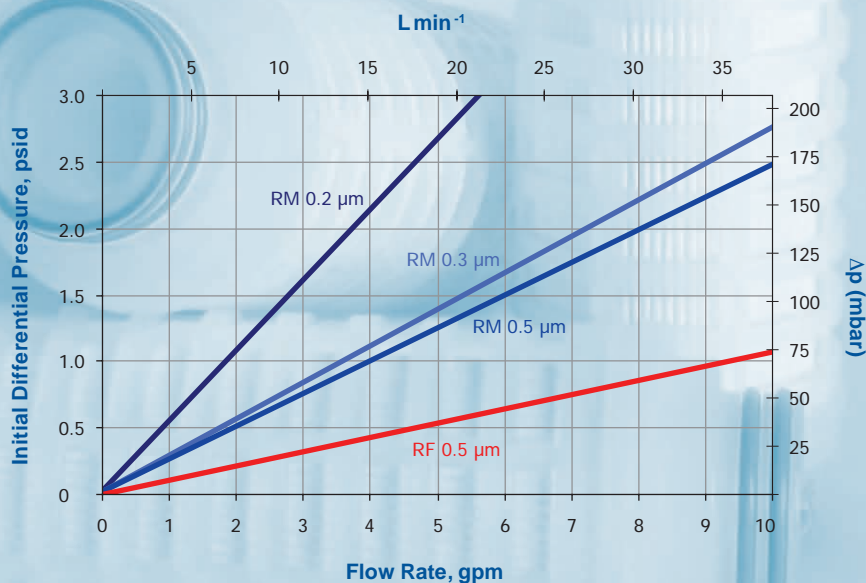
Typical Applications

Protec® filters are ideal for clarification, prefiltration and bioburden reduction in:

- Biological liquids, including serum, plasma fractions and other blood products
- Vaccines
- Tissue and cell culture media
- Protein solutions
- Fermentation media and feeds
- Cell removal from fermentation broths
- Pre-column chromatography
- Biopharmaceuticals



Water Flow Rates per 10" Cartridge



Specifications

Materials of Construction

Filter Media:
 RF (single layer) Borosilicate glass microfiber
 RM (double layer) Borosilicate glass microfiber with PVDF membrane
 Core: Polypropylene
 Outer Cage: Polypropylene
 End Caps: Polypropylene
 Sealing Method: Thermal bonding
 Gaskets/O-rings: Buna, EPR, silicone, Teflon®, Teflon® over silicone, Teflon® over Viton®, polyethylene

Protec® cartridges meet the criteria for a non-fiber releasing filter as defined in 21 CFR 210.3(b)(6). Protec® filter components are biosafe in compliance with USP Class VI

Plastics biological reactivity tests. All materials of construction are FDA approved for food contact use per CFR Title 21,177. Protec® cartridges are manufactured in conformance to cGMP.

Cartridge Dimensions (Nominal)

Diameter: 2.75 in (7 cm)

Nominal Lengths

10, 20, 30, 40 in (25, 50, 75, 100 cm)

Maximum Operating Temperatures & Pressures

100 °F @ 80 psid (38 °C @ Δp 5,5 bar)

150 °F @ 60 psid (66 °C @ Δp 4,1 bar)

180 °F @ 30 psid (82 °C @ Δp 2,1 bar)

Filtration Ratings

RF 0.5 μm, absolute
 RM 0.2 μm, 0.3 μm, 0.5 μm, absolute

Typical Microbial Retention per cm²

Grade	Rating	Organism	LRV
RF	0.5 μm	<i>Saccharomyces cerevisiae</i>	6
RM	0.5 μm	<i>Serratia marcescens</i> <i>Saccharomyces cerevisiae</i>	5 >7
RM	0.3 μm	<i>Serratia marcescens</i>	6
RM	0.2 μm	<i>Serratia marcescens</i>	>7

Sterilization

Steam-in-place (SIP):
 saturated steam @ 121-135 °C, 30-60 minutes [15 psi (1 bar) to 30 psi (2 bar), 30-60 minutes]
 Autoclave: 121-135 °C, 30-60 minutes

Protec® cartridges are capable of repeated sterilization cycles without loss of integrity. For applications requiring autoclave/SIP, a stainless steel reinforcement ring must be ordered. See "Reinforcement Ring Option" below.

Ordering Information

Filter Grade	Absolute Rating (μm)	Cartridge Length	End Cap Configuration	Reinforcement Ring Option	Gasket or O-ring Material
RM	0.5	2	F2	R	S

<p>RF = 0.5 Borosilicate glass microfiber media (single layer)</p> <p>RM = 0.2 Borosilicate glass microfiber media (outer layer) combined with a hydrophilic PVDF membrane (inner layer)</p>	<p>1 = 10" 2 = 20" 3 = 30" 4 = 40"</p>	<p>GS = DOE; flat gaskets (9.75", 19.5", 29.25", 39" length filters) GL = DOE; flat gaskets (10", 20", 30", 40" length filters) C1 = SOE; -222 nO-Ring®, button cap end F1 = SOE; -222 nO-Ring®, fin end C2 = SOE; -222 O-rings, button cap end F2 = SOE; -222 O-rings, fin end C5 = SOE; -226 nO-Ring®, button cap end F5 = SOE; -226 nO-Ring®, fin end C6 = SOE; -226 O-rings, button cap end F6 = SOE; -226 O-rings, fin end DN = DOE; internal -120 O-rings RN = SOE; internal -120 O-rings, recessed cap end DA = DOE; internal -213 O-rings RA = SOE; internal -213 O-rings, recessed cap end</p>	<p>(Blank) = Standard - no reinforcement ring</p> <p>R = Optional reinforcement ring; required for autoclave/SIP applications</p>	<p>B = Buna E = EPR S = Silicone T = Teflon® over silicone (O-rings) or all-Teflon® (gaskets) V = Viton® X = Teflon® over Viton® P = Polyethylene (gasket only)</p>
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4181 Calle Tesoro • Camarillo, CA 93012
 (800) 391-9458 • Fax (805) 388-5948
 International: +1-805-388-9911

www.meissner.com

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