Protec®

Glass Microfiber Filter

MEISSNER FILTRATION PRODUCTS

Protec® Filter Cartridge

The Protec® filter is a glass microfiber prefilter optimized to protect downstream sterile filters. The Protec® RF filter contains a single layer of borosilicate glass fiber media in a choice of absolute-rated 0.5 µm or 1 µm. The Protec® RM filter is available in a choice of absolute-rated 0.2 µm, 0.3 µm or 0.5 µm and combines an outer layer of borosilicate glass fiber media with an inner layer of Meissner's proprietary hydrophilic SteriLUX® 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. These filter cartridges are available in lengths of 10, 20, 30 and 40 inches.

Features and Benefits

- RF version can be specified in 0.5 µm and 1 µm absolute-rated
- RM version can be specified in absolute-rated 0.2 µm, 0.3 µm and 0.5 µm
- High flow rates and excellent filtration economics
- High contaminant holding capacity provides a long service life
- All-polypropylene support materials provide wide chemical compatibility and permit use in a broad range of fluids
- 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 a variety of applications.

- 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

Materials of Construction

Filter Media	
RF (single layer):	Borosilicate glass microfiber
RM (double layer):	Borosilicate glass microfiber with SteriLUX® PVDF membrane
Core/Outer Guard:	Polypropylene
End Caps:	Polypropylene
Sealing Method:	Thermal Bonding
O-ring/Gasket Seal:	Buna, EPR, polyethylene, silicone, Teflon® over silicone, Teflon® over Viton®

All materials of construction listed above are FDA approved for food contact use per 21 CFR 177.

Protec® filters are manufactured in conformance to cGMP. Protec® filters meet the requirements as specified in the current USP Class VI plastics, physicochemical, oxidizable substances, and cytotoxicity tests. Protec® filters are non-fiber-releasing as defined in 21 CFR 210.3(b)(6) and 211.72.

Filtration Ratings

Filter Grade	Absolute Particulate Ratings
RF	0.5 µm, 1 µm
RM	0.2 µm, 0.3 µm, 0.5 µm

Cartridge Dimensions (nominal)

Diameter: 2.75" (7 cm)
Lengths: 10", 20", 30", 40"
(25 cm, 50 cm, 75 cm, 100 cm)

Typical Microbial Retention per cm²

Grade	Rating	Organism	LRV
RF	0.5 µm	*Saccharomyces cerevisiae*	6
RM	0.5 µm	*Serratia marcescens*	5
		Saccharomyces cerevisiae	≥7
RM	0.3 µm	*Serratia marcescens*	6
RM	0.2 µm	*Serratia marcescens*	≥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

For applications requiring autoclave/SIP, a stainless steel reinforcement ring must be ordered. See “Reinforcement Ring Option” within Ordering Information.

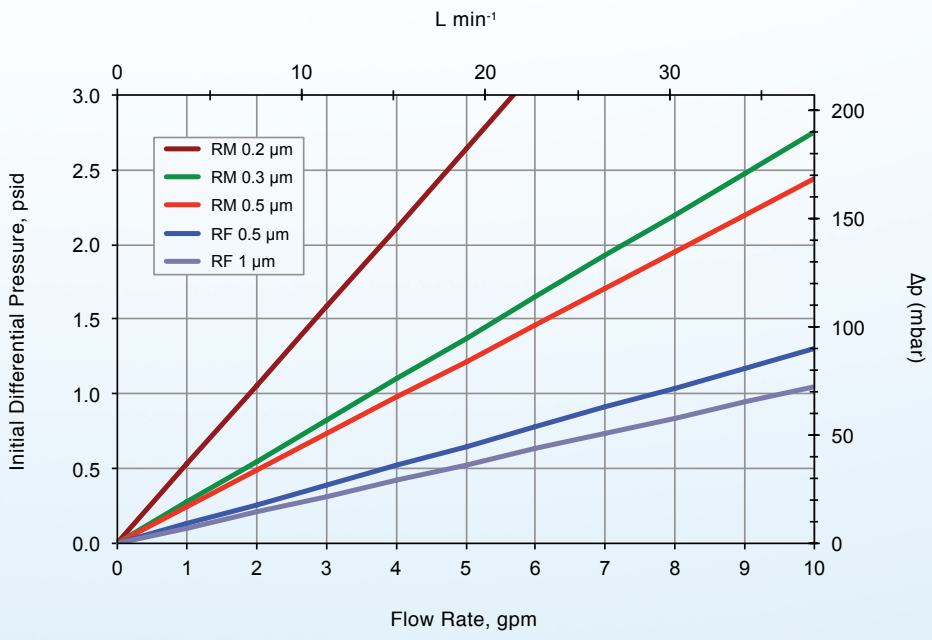
Maximum Operating Temperatures & Pressures

Δp 80 psi @ 32 °F to 100 °F
(Δp 5,5 bar @ 0 °C to 38 °C)

Δp 60 psi @ 150 °F
(Δp 4,1 bar @ 66 °C)

Δp 30 psi @ 180 °F
(Δp 2,1 bar @ 82 °C)

Typical Water Flow Rates per 10" Cartridge



End Cap Configuration

-226 O-ring

External -226 O-rings with locking tabs; open end for C6 and F6 SOE configurations

-222 O-ring

External -222 O-rings; open end for C2 and F2 SOE configurations

-226 nO-Ring®

External -226 nO-Ring® with locking tabs; open end for C5 and F5 SOE configurations

-222 nO-Ring®

External -222 nO-Ring®, open end for C1 and F1 SOE configurations

Flat Gasket

Flat Gasket; open end for GS and GL DOE configurations

Internal O-ring

Internal O-ring; open end for DN and DA DOE or RN and RA SOE configurations

Button Cap

Button Cap; closed end for C1, C2, C5 and C6 SOE configurations

Alignment Fin

Alignment Fin; closed end for F1, F2, F5 and F6 SOE configurations

Recessed Cap

Recessed Cap; closed end for RN and RA SOE configurations

DOE = Double Open End
SOE = Single Open End

Ordering Information

Filter Grade	Absolute Rating (µm)		Cartridge Length	End Cap Configuration	Reinforcement Ring Option	Seal Material (O-ring or Gasket)
RM	*0.2*	—	*3*	*F2*	*R*	*S*

RF = Borosilicate glass microfiber media (single layer)

RM = Borosilicate glass microfiber media (outer layer) combined with a hydrophilic PVDF membrane (inner layer)

0.5, 1

0.2, 0.3, 0.5

1 = 10" (25 cm)
2 = 20" (50 cm)
3 = 30" (75 cm)
4 = 40" (100 cm)

GS = DOE; flat gaskets (9.75", 19.5", 29.25", 39" length filters)
GL = DOE; flat gaskets (20", 30", 40" length filters)
C1 = SOE; -222 nO-Ring®, button cap end
C2 = SOE; -222 O-rings, button cap end
F1 = SOE; -222 nO-Ring®, fin end
F2 = SOE; -222 O-rings, fin end
C5 = SOE; -226 nO-Ring®, button cap end
C6 = SOE; -226 O-rings, button cap end
F5 = SOE; -226 nO-Ring®, fin end
F6 = SOE; -226 O-rings, fin end
DN = DOE; internal -120 O-rings
RN = SOE; internal -120 O-ring, recessed cap end
DA = DOE; internal -213 O-rings
RA = SOE; internal -213 O-ring, recessed cap end

(Blank) = Standard - no reinforcement ring

R = Reinforcement ring; required for autoclave/ SIP applications

O-ring Seal
B = Buna
E = EPR
S = Silicone
T = Teflon® over silicone
V = Viton®
X = Teflon® over Viton®

Gasket Seal
B = Buna
E = EPR
P = Polyethylene
S = Silicone
T = Teflon®
V = Viton®

RM 3.0

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