PALL Food and Beverage

Emflon® PFRW Junior Style Filter Cartridges

For Small Flow Sterile Filtration of Gases

Emflon PFRW junior style cartridges are sterilizing grade hydrophobic membrane filters designed to provide reliable retention of bacteria and bacteriophages in compressed gas and vent applications. They are suited to handle small gas flow rates in compact installations.

Description

The Pall Emflon PFRW filter family has been expanded to include small configurations to address the full range of gas filtration needs of the food and beverage industry. These filter elements feature Pall's advanced 0.2 micron polytetrafluoroethylene (PTFE) double-layer membranes, pleated with high area into single open-end cartridges. They are built to withstand adverse *in situ* steaming conditions in either the forward or reverse direction.

Even in the presence of high humidity or moisture, often the case in practice, Emflon PFRW cartridges provide sterile effluent and validated performance, ensuring process security. They are the cartridge of choice for small flow critical sterile gas applications.

Features and Benefits

Features	Benefits
Strongly hydrophobic 100 % PTFE membranes	• Prevents wetting out in humid conditions, even after repeated use and steaming cycles, allowing for unimpeded gas throughput
High area pleated, robust double-layer membranes	• High throughputs and low pressure drops, resulting in compact footprint and long life • Excellent resistance to mechanical damage
Multi-cycle *in situ* steam challenged	• Enhanced steaming resistance
0.2 micron sterilizing grade filters based on liquid bacteria removal	• Provides sterile effluent even in humid conditions, resulting in optimal protection of product, improved fermentation yields, and increased security in aseptic processes
Water Intrusion Testable (WIT)	• Simplifies *in situ* integrity testing
100% integrity tested prior to dispatch	• Documented quality
Individually serialized modules	• Full traceability to materials and production records

Emflon PFRW Junior Filter Cartridges

Materials of Construction

Component	Description
Filter Medium	Double-layer PTFE
Support / Drainage	Polypropylene
Cage, Core, and Flat Closed End Cap	Polypropylene
Adaptor	
MCY1110PFRW MCY3330PFRW MCY4440PFRW	Polypropylene
MCY2230PFRW MCY4463PFRW	Polypropylene with stainless steel reinforcing ring
O-ring Seal	Silicone Elastomer Ethylene Propylene Rubber

Quality

- Cartridges produced in a controlled environment
- Manufactured according to ISO 9001:2008 certified Quality Management System

Food Contact Compliance

Please refer to the Pall website http://www.pall.com/foodandbev for a Declaration of Compliance to specific National Legislation and/or Regional Regulatory requirements for food contact use.

Technical Information

The technical information provided is based on controlled laboratory tests done on typical production filters at the conditions described, unless otherwise indicated. Actual operating conditions may affect the filter's performance.

Operating Characteristics in Compatible Gases[1,2]

Maximum Differential Pressure	Operating Temperature
5.3 bard (77 psid) (forward)	≤50 °C (122 °F)
4.1 bard (60 psid) (forward)	≤80 °C (176 °F)

[1] Air, nitrogen, or other compatible gases.

[2] For maximum life at operating temperatures > 60 °C (140 °F), Emflon HTPFRW filters are recommended.

Autoclave and Steaming[3]

	Cumulative Steaming Resistance[4]	
Filter Configuration	Forward	Reverse
MCY1110PFRW MCY3330PFRW MCY4440PFRW	100 hours @ 142°C (287°F)	10 hours @ 125°C (257°F)
MCY2230PFRW	50 hours @ 142°C (287°F)	10 hours @ 125°C (257°F)
MCY4463PFRW	100 hours @ 142°C (287°F)	10 hours @ 125°C (257°F)
	Steaming Differential Pressure	
	Forward	Reverse
All Filter Configurations	0.3 bar (4.3 psid) max.	0.3 bar (4.3 psid) max.

[3] Cartridges should be cooled to system operating temperature prior to use.

[4] Steam life validated using one hour steam cycles. Data shown for forward steam flow also indicates autoclave resistance.

Typical Flow Rates[5]

Vent Conditions – Nm³/hour (scfm)

	Differential Pressure			
Filter Configuration	50 mbar (0.7 psid)	100 mbar (1.5 psid)	150 mbar (2.2 psid)	200 mbar (2.9 psid)
MCY1110PFRW	4 (2)	7 (4)	10 (6)	13 (8)
MCY3330PFRW	11 (6)	21 (12)	30 (18)	39 (23)
MCY4440PFRW	14 (8)	26 (15)	—	—
MCY2230PFRW	10 (6)	20 (12)	30 (18)	40 (24)
MCY4463PFRW	22 (13)	44 (26)	69 (41)	96 (57)

2 bar Supply Pressure – Nm³/hour (scfm)

	Differential Pressure			
Filter Configuration	50 mbar (0.7 psid)	100 mbar (1.5 psid)	150 mbar (2.2 psid)	200 mbar (2.9 psid)
MCY1110PFRW	6 (4)	12 (7)	17 (10)	22 (13)
MCY3330PFRW	19 (11)	36 (21)	49 (29)	—
MCY4440PFRW	23 (14)	42 (25)	—	—
MCY2230PFRW	19 (11)	33 (19)	46 (27)	57 (34)
MCY4463PFRW	39 (23)	64 (38)	83 (49)	99 (58)

[5] Typical flow rates per indicated cartridge type, air at 20 °C (68 °F) at the clean differential pressure drops indicated. Pressure drops are for filter elements only. To obtain the total pressure drop of a complete assembly the housing pressure drop must be added. For gases other than air, please contact Pall for proper sizing.

Removal Performance

Emflon PFRW filters have a microbial removal rating of 0.2 micron in liquids and a particulate removal rating of 0.003 micron in dry gases.

- Tested with *Brevundimonas diminuta* liquid challenge at ≥10^7 cfu/cm² effective filtration area, according to ASTM Method 838-05. Provides sterile effluent according to FDA Guidelines (2004)
- Tested in accordance with ISO 8573-4 and test method ISO 12500-3:2009[6].

Pall has an excellent history of use of the Emflon PTFE membrane used in the Emflon PFRW filters, see 'Validation Guide for Pall Emflon PFR Filter Cartridges', USTR2114 (2) demonstrating:

- MS-2 and PP7 bacteriophage aerosol challenge
- Airborne sodium chloride aerosol challenge
- *Brevundimonas diminuta* aerosol challenge in forward and reverse direction and under long term challenge conditions in forward direction with humidified air
- *Bacillus subtilis var* niger spores aerosol challenge

[6] For further details, please contact Pall.

Ordering Information

This information is a guide to the part numbering structure and possible options.
For availability of specific options and housing details, please contact Pall.

See bold reference code in tables.

Example Part Number: **MCY4463PFRWH4**

Part Number: MCY ☐ PFR W ☐
Table 1 Table 2

Table 1: Nominal Dimensions and Adaptor Description

Code	Length	Filter Area	Adaptor
1110	32 mm (1.3 inch)	0.05 m^2 (0.53 ft^2)	Plug seal with locking tabs and double external o-rings
3330	82 mm (3.2 inch)	0.17 m^2 (1.82 ft^2)	
4440	105 mm (4.1 inch)	0.23 m^2 (2.47 ft^2)	
2230	76 mm (3 inch)	0.14 m^2 (1.51 ft^2)	Internal plug seal with single 116 o-ring
4463	136 mm (5.3 inch)	0.28 m^2 (3.01 ft^2)	

Table 2: O-ring Seal Material

Code	Description
H4	Silicone Elastomer
J	Ethylene Propylene Rubber

MCY4440PFRW *(left)* and MCY4463PFRW *(right)*

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Please contact Pall Corporation to verify that the product conforms to your national legislation and/or regional regulatory requirements for water and food contact use.

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