

Fulflo® Abso-Mate® Filter Cartridges

■ Polypropylene

Pleated Series

Absolute, Cost-Effective Filtration From All-Polypropylene Cartridges

Parker's Fulflo® Abso-Mate® Cartridges provide the ultimate in economical filtration for even the most critical process fluids. The proprietary melt blown media are rigidly controlled for reliable results time after time.

Abso-Mate cartridges are produced without adhesives that can potentially contaminate fluids.

Abso-Mate Pleated Cartridges are available in 0.2µm, 0.45µm, 1µm, 2µm, 5µm, 10µm, 20µm, 40µm and 70µm absolute rated pore sizes.

Applications

- Electronics
- Membrane Prefilter
- Food & Beverage
- Pharmaceuticals
- Water
- Chemicals
- Precious Metal Recovery
- Catalyst Recovery
- Waste Water



Features and Benefits

- Absolute ratings for consistent and reliable performance (99.98%; $\beta = 5000$).
- Backwashable media, reduces replacement maintenance and cartridge disposal costs. See page 4 for procedure.
- Abso-Mate cartridges are non-fiber releasing and contain minimal extractables.
- All materials of construction are FDA listed as acceptable for potable and edible liquid contact according to CFR Title 21.
- One-piece construction eliminates bypass concerns on multilength cartridges.
- All-polypropylene construction offers wide chemical compatibility with most chemicals, acids, bases and solvents.
- Fused construction and continuous lengths eliminate the need for adhesives and allow accurate bubble point integrity testing.

Process Filtration Division



Ultimate Pleated Cartridge Performance

Fulflo® Abso-Mate® Filter Cartridges offer high efficiency, high purity, high flow rate capability and long service life. Abso-Mate extractable levels in water are less than 0.001% by weight. The result is a line of cartridges with

broad particle removal ratings that meet critical filtration requirements.

Abso-Mate cartridges make an ideal membrane prefilter and serve as a cost-effective alternative to membrane filters in many applications.

The unique construction allows for backwash cleaning that extends service life and reduces handling and disposal costs. Abso-Mate cartridges can be incinerated, significantly reducing hazardous material disposal costs.

Specifications

Absolute Filtration Ratings:

- 99.98% removal efficiency at 0.2µm, 0.45µm, 1µm, 2µm, 5µm, 10µm, 20µm, 40µm and 70µm pore sizes

Effective Filtration Area:

- Up to 7.2 ft²/10 in (0.7 m²/254 mm)

Materials of Construction:

- Filter Media and Support Layers: polypropylene
- Bonding Polymer: none, completely fusion-sealed
- Surface Treatment: none, chemically inert and neutral
- Media Protection: polypropylene cage
- Support Core: glass-filled polypropylene
- Pleat Pack Side Seal: fused polypropylene
- End Caps: polypropylene
- Seals: Buna-N, EPR, silicone, Viton*, Teflon* encapsulated Viton* O-rings, polyethylene foam gaskets

Recommended Operating Conditions:

- Change Out ΔP: 35 psi (2.4 bar)
- Maximum Temperature: 200°F (93°C)
- Maximum Temperature @ 35 psid (2.4 bar): 200°F (93°C)
- Maximum ΔP @ 70°F (21°C): 90 psid (6 bar)
- Maximum ΔP @ 200°F (93°C): 35 psid (2.4 bar)

Dimensions:

- Overall Length: See catalog sheet C-2090. SOE fits standard housings with O-ring seals.
- Cartridge Outside Diameter: 2-1/2 in (63.5 mm)
- Cartridge Inside Diameter: DOE - 1-1/16 in (27 mm) SOE - 1 in (25.4 mm)

Biological Safety:

- Meets USP XXI Class VI requirements for plastics
- Nontoxic per WI-38 Human Cell Cytotoxicity Test

Product Purity:

- All components FDA acceptable per 21 CFR, Section 177-1520
- Non-fiber releasing per FDA Part 210.3B (5) and (6). Refer to TAP-004
- Water Extractables: < 0.001% by weight per USP XXI Physico-Chemical Test Procedures
- Non-photosensitive
- Low Total Organic Carbon (TOC) extractables. Refer to TAP-003 (Contact Parker for TAP-003)

Sterilization Parameters:

- Maximum 10 cycles @ 250°F (121°C) for 15 minutes @ 15 psi (1.03 bar)
- Hot water @ 180°F (82°C) for 30 minutes

Deionized Water Rinse-Up Properties:

- Refer to TAP-002 (Contact Parker for TAP-002)

Liquid Particle Retention Ratings (µm) @ Removal Efficiency of:

Cartridge	β=5000 Absolute	β=1000 99.9%	β=100 99%	β=50 98%
A PAB002	0.2	<0.2	<0.2	<0.2
B PAB004	0.45	0.4	0.2	<0.2
C PAB010	1	0.8	0.4	<0.2
D PAB020	2	1.9	0.8	<0.2
E PAB050	5	3.8	1.4	0.4
F PAB100	10	7	2	0.5
G PAB200	20	13	4	1.8
H PAB400	40	22	7	3.2
J PAB700	70	52	22	15

Performance Data by Cartridge Grade

Cartridge	Water† ΔP	Gas Efficiency	Air Flow Rate
	PSID @ 1 gpm/10 in	DOP Efficiency	SCFM @ 1 psid
A PAB002	1.900	99.999+	13
B PAB004	1.000	99.999+	25
C PAB010	0.750	99.999	10
D PAB020	0.500	99.999	34
E PAB050	0.133	99.900	126
F PAB100	0.027	93.500	320
G PAB200	0.020	80.000	362
H PAB400	0.012	53.000	400
J PAB700	0.008	18.000	400

† Pressure drops are for water @ 1.0 cks and S.G. = 1. For other liquids, multiply pressure drop by the viscosity in cks (cks = cps/S.G.).

* A trademark of E. I. du Pont de Nemours & Co.

Performance Profile

Parker's Process Filtration Division test procedures address the varying filtration requirements of customers. Selection of media of the Fulflo® Abso-Mate™ product line maximizes performance in terms of efficiency, dirt-holding capacity, flow and other characterization variables. Tests and analyses were conducted using microprocessor technology.

High Filtration Efficiency

Filtration efficiency is affected by media pore size and fluid velocity. The removal efficiency is based on a design flow rate of 2.5 gpm per

10 in (9.5 lpm per 254 mm) cartridge. Lower flow rates yield higher efficiencies and higher flow rates result in lower efficiencies.

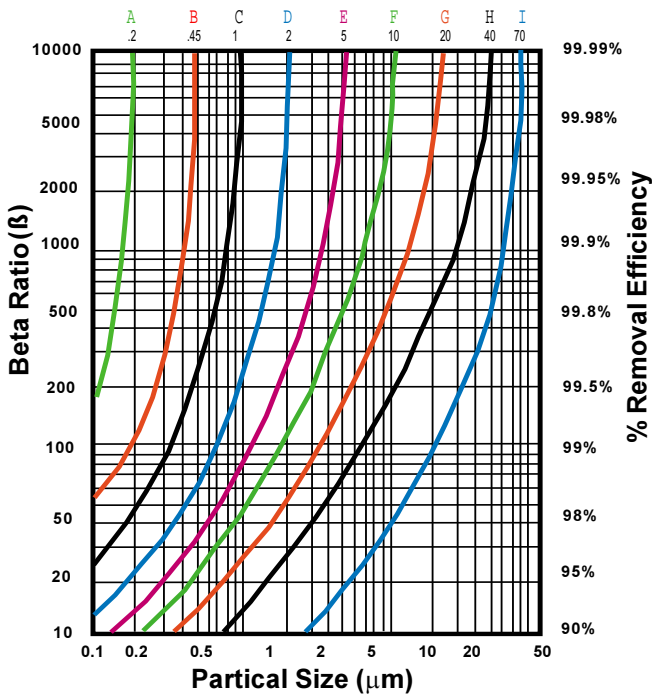
Test Conditions

Liquid Service: Particle removal efficiencies were determined by challenging cartridges with aqueous dispersions of industry standard contaminants at a constant flow rate until a ΔP of 35 psi (2.4 bar) was reached. Removal efficiencies at 16 different particle sizes are measured over the entire life of the cartridge using an electronic particle counter. Performance validation of

sub-micron rated media is based on a variety of bacterial challenge tests. Consult the Process Filtration Division for specific test data.

Gas Service: Removal efficiencies for gas are determined using Mil-Std 282. This procedure challenges the media with thermally generated DOP (dioctylphthalate) smoke (0.3μm dispersion in air) at a flow rate of 3.2 cfm through a 10 in cartridge.

■ Abso-Mate Particle Removal Efficiency Over Life



A - PAB002 D - PAB020 G - PAB200
 B - PAB004 E - PAB050 H - PAB400
 C - PAB010 F - PAB100 J - PAB700

Beta Ratio (β) = $\frac{\text{Upstream Particle Count @ Specified Particle Size and Larger}}{\text{Downstream Particle Count @ Specified Particle Size and Larger}}$

Percent Removal Efficiency = $\left(\frac{\beta - 1}{\beta} \right) \times 100$

Performance determined per ASTM F-795-88. Single-Pass Test using AC test dust in water at a flow rate of 2.5 gpm per 10 in (9.5 lpm per 254 mm).

■ Abso-Mate Length Factors

Length (in)	Length Factor
9	1.0
10	1.0
19	2.0
20	2.0
29	3.0
30	3.0
40	4.0

■ Abso-Mate Cartridge Flow Factors (psid/gpm @ 1 cks)

Rating (μm)	Flow Factor
0.20	3.100
0.45	1.000
1	0.750
2	0.300
5	0.072
10	0.031
20	0.021
40	0.012
70	0.008

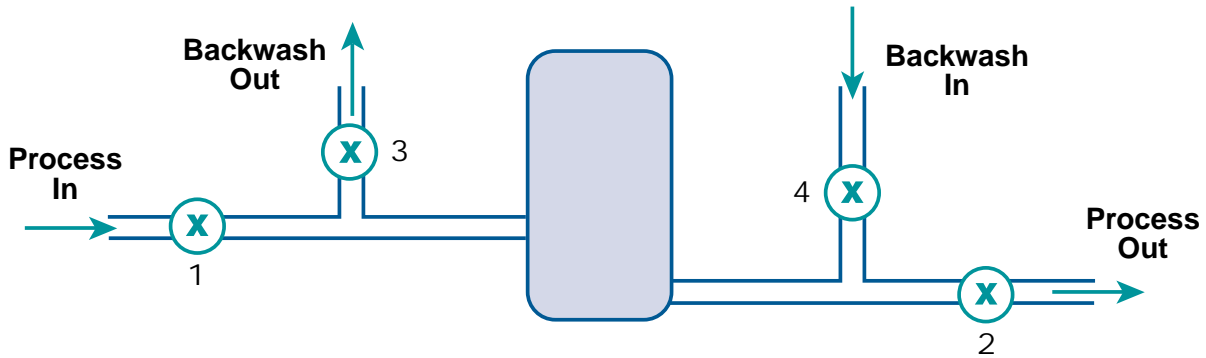
Flow Rate and Pressure Drop Formulas:

Flow Rate (gpm) = $\frac{\text{Clean } \Delta P \times \text{Length Factor}}{\text{Viscosity} \times \text{Flow Factor}}$

Clean ΔP = $\frac{\text{Flow Rate} \times \text{Viscosity} \times \text{Flow Factor}}{\text{Length Factor}}$

Notes:

1. Clean ΔP is PSI differential at start.
2. Viscosity is centistokes. Use Conversion Tables for other units.
3. Flow Factor is ΔP/GPM at 1 cks for 10 in (or single).
4. Length Factors convert flow or ΔP from 10 in (single length) to required cartridge length.



Backwash Schematic

Backwash Protocol

Since applications vary, rigid rules for backwash operation are impossible. Please use these guidelines:

- Initiate a backwash cycle when the pressure drop rises about 3-4 psid (0.2 to 0.3 bar) above the initial value (1-5 psid [0.1 to 0.4 bar] for most systems) or alternately on a timed cycle, e.g., daily.
- Stop the process flow by closing valves 1 and 2.
- Begin backwash flow by opening valves 3 and 4.
- Backwash pressure should be about 10 psi (0.7 bar) greater than the existing pressure drop.
- A momentary pressure surge is beneficial in breaking particles free.
- Backwash flow rate is critical. It should be 1 to 1-1/2 times the process flow rate. Allow sufficient time to flush the contaminant from the vessel.
- Close valves 3 and 4 and open valves 1 and 2 to resume normal filtration. Vent the vessel. Note the decrease in pressure drop.
- Continue backwash cycles until the pressure drop no longer decreases. Change cartridges at about 35 psid (2.4 bar).
- Note: Valves 3 and 4 could be attached to the vessel's dirty and clean drains, respectively.

Ordering Information

PAB004	—	10	F	—	A	—	DO
Rating (µm)		Nominal Length	Core		Gasket/O-Ring Options		End Cap Options
		(code) (in) (mm)	A = Polypropylene (PM core only)		E = EPR		DO = Double Open End (DOE)
002 - 0.2		9 9-5/8 244	F = Glass-Filled Polypropylene (PXD core only)		N = Buna-N		DX = DOE With Core Extender
004 - 0.45		10 10 249	N = Natural Polypropylene (All support components)		S = Silicone (SOE O-Ring only)		SC = 226 O-Ring/Cap
010 - 1		19 19-5/8 498			V = Viton* O-Ring		SF = 226 O-Ring/Fin
020 - 2		20 20 506			T = PFA Encapsulated Viton* (222,226 O-Ring only)		TC = 222 O-Ring/Cap
050 - 5		29 29-1/4 743			A = Polyethylene Foam Gasket (DOE Gasket only)		TF = 222 O-Ring/Fin
100 - 10		30 30 764					AR = 020 O-Ring/Recessed (Gelman)
200 - 20		40 40 1016					LR = 120 O-Ring/Recessed (Nuclepore; Gelman G Style)
400 - 40							LL = 120/120 (Filterite LMO and Nuclepore Polymeric Vessels; Gelman N Style)
700 - 70							PR = 213 O-Ring/Recessed (Ametek and Parker LT Polymeric Vessels; Gelman H Style)

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For pleated cartridge configurations and dimensions, see Bulletin A-700 in the Appendix.

Process Filtration Division

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