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 Recover
- Catalyst Recovery
- Waste Water

Features and Benefits

- Absolute ratings for consistent and reliable performance (99.98%; ß=5000).
- Backwashable media, reduces replacement maintenance and cartridges disposal costs. See page 4 for procedure.
- Abso-Mate cartridges are non-fibre 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.
- High purity materials meet FDA regulations for food contact, are non-toxic, non fibre releasing and have minimal extractibles.
- Fused construction and continuous lengths eliminate the needs for adhesives and allow for bubble point integrity testing.

Parker Filtration

Ultimate Pleated Cartridge Performance

Fulflo® Abso-Mate® Filter Cartridges offer high efficiency, high purity, high flow rate capacity 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 7.2ft²/10 in (0.7 m²/254mm).

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: 35psi (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 catalogue sheet C-2090. SOE fits standard housings with O-ring seals.
- Cartridge Outside Diameter: $2^{1}/_{2}$ in (63.5mm).
- Cartridge Inside diameter: DOE - $1^{1}/_{16}$ in (27mm). SOE - 1 in (25.4mm).

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-fibre 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 Procedure.
- 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		ß=5000 Absolute	ß=1000 99.9%	ß=100 99%	ß=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
		m bar – l/min – 254mm	DOP Efficiency	M 3/hr @ 0.07 bard
A	PAB002	1.900	99.999+	22
B	PAB004	1.000	99.999+	43
C	PAB010	0.750	99.999	17
D	PAB020	0.500	99.999	59
E	PAB050	0.133	99.900	214
F	PAB100	0.027	93.500	544
G	PAB200	0.020	80.000	615
H	PAB400	0.012	53.000	680
J	PAB700	0.008	18.000	680

† 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.).

Performance Profile

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

High Filtration Efficiency

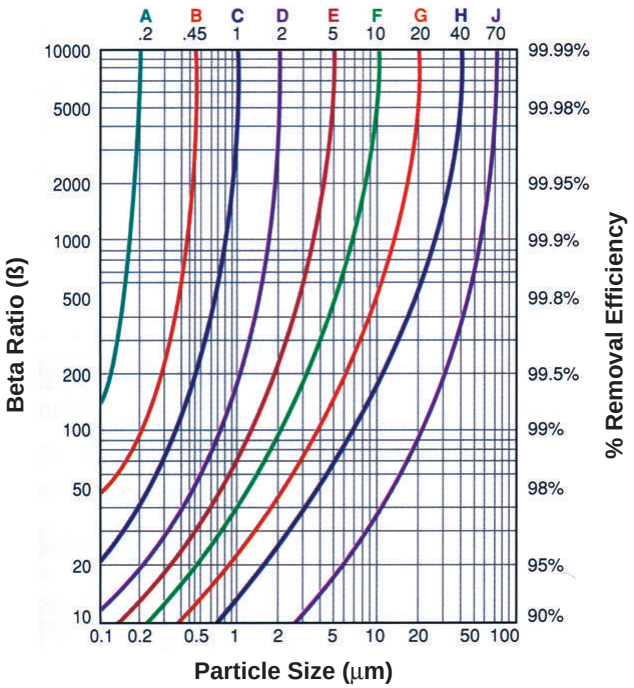
Filtration efficiency is affected by media pore size and fluid velocity. The removal efficiency is based on a design flow rate of 2.5 gpm per 10 in (9.5 lpm per 254mm) cartridge. Lower flow rates yield higher efficiencies and higher flow rates result in lower efficiencies.

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 was 3.2 cfm through a 254mm cartridge.

Abso-Mate Particle Removal Efficiency Over Life



A – PAB002
B – PAB002
C – PAB002
D – PAB002
E – PAB002
F – PAB002
G – PAB002
H – PAB002
J – PAB002

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

% Removal Efficiency = $\left[\frac{ß - 1}{ß}\right] \times 100$

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 254mm).

Abso-Mate Length Factors

Length (in)	Length (mm)	Length Factor
9	244	1.0
10	249	1.0
19	498	2.0
20	506	2.0
29	743	3.0
30	764	3.0
40	1016	4.0

Rating (µm)	Flow Factor
0.20	1.900
0.45	1.000
1	0.750
2	0.500
5	0.133
10	0.027
20	0.020
40	0.012
70	0.008

Flow Rate and Pressure Drop Formulas:

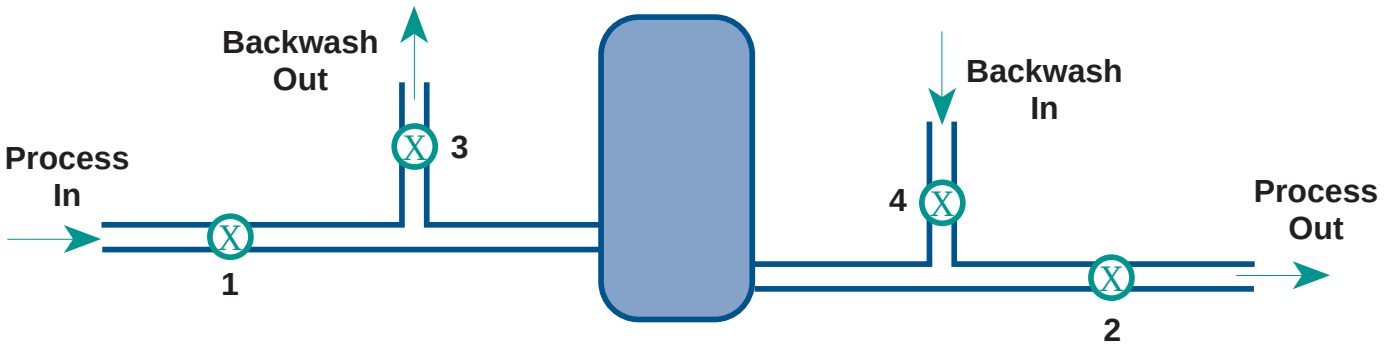
Flow Rate (l/min) = $\frac{\text{Clean } \Delta P \times \text{Length Factor}}{\text{Viscosity} \times \text{Flow Factor}}$

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

Notes:

1. **Clean ΔP** is m bar differential at start.
2. **Viscosity** is centistokes. Use Conversion Tables for other units.
3. **Flow Factor** is m bar at l/min at 1 cks for 254mm (or single).
4. **Length Factors** convert flow or ΔP from 254mm (single length) to required cartridge length.

Backwash Schemetic



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 housing's dirty and clean drains, respectively.

Ordering Information

PAB004 — **10** **F** **A** — **DO**

Rating (µm)

002 – 0.2
004 – 0.45
010 – 1
020 – 2
050 – 5
100 – 10
200 – 20
400 – 40
700 – 70

Nominal Length

(code)	(in)	(mm)
9	$9^5/_8$	244
10	10	249
19	$19^5/_8$	498
20	20	506
29	$29^1/_4$	743
30	30	764
40	40	1016

Core

A = Polypropylene (PM core only)
F = Glass Filled Polypropylene (PXD core only)
N = Natural Polypropylene (All support components)

Gasket/O-Ring Options

E = EPR
N = Buna-N
S = Silicone (SOE O-Ring only)
V = Viton*
T = Teflon* Encapsulated Viton* (222,226 O-Ring only)
A = Polyethylene Foam Gasket (DOE Gasket only)

End Cap Options

DO = Double Open End (DOE)
DX = DOE with Core Extender
SC = 226 O-Ring/Cap
SF = 226 O-Ring/Fin
TC = 222 O-Ring/Cap
TF = 222 O-Ring/Fin
AR = 020 O-Ring/Recessed (Gelman)
LR = 120 O-Ring/Recessed (Nuclepore; Gelman G Style)
LL = 120/120 (Filterite LMO and Nuclepore Polymeric Vessels; Gelman N Style)
PR = 213 O-Ring/Recessed (Ametek and Parker LT Polymeric Vessels; Gelman H Style)

Process Filtration Division

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