Pall Corporation

Profile® A/S Series Filter Elements

*Filtration. Separation. Solution.*SM

Pall® Profile® A/S Series Filter Elements

Description

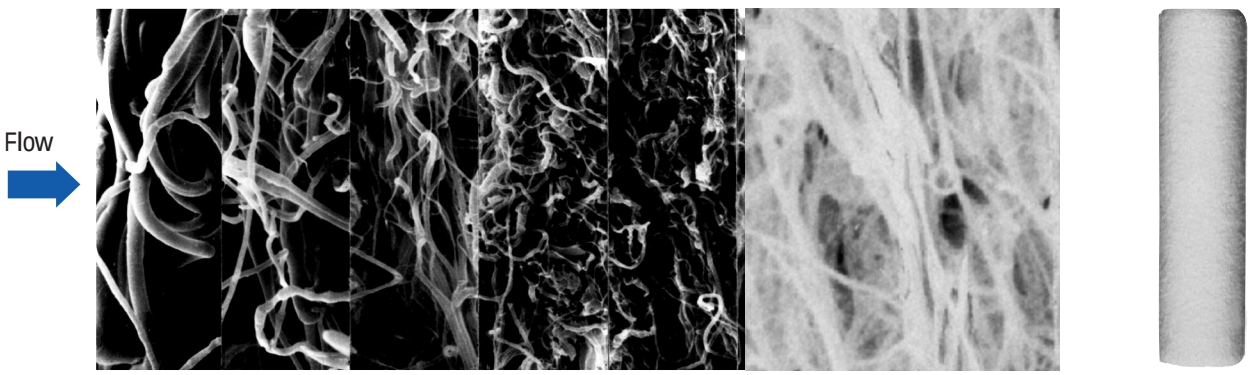
Pall Profile® A/S Series filters are constructed of an all polyphenylene sulfide (PPS) filter medium and are available in a variety of geometries and cores to match specific applications. Typical core construction includes 316L stainless steel or tin plated carbon steel. Contact your Pall representative for more information.

The elements have an absolute rated(1) downstream section, and a continuously profiled pore size upstream section, which increases service life many-fold. Note the photomicrograph below. The elements are available in a broad range of absolute removal ratings. Refer to Table 1.

The fibers in Profile A/S filters are continuous, for practical purposes. No binder resin or surfactants are used and the fibers are "bonded" by intertwining during the manufacturing process. Because of the inertness of the polyphenylene sulfide medium,

Standard Profile® A/S Filter Elements available in 10", 20", 30", and 40" lengths.

Profile A/S elements can be used with many fluids up to 400˚F (205˚C). Please refer to Table 2 for more details.



1. Continuously graded upstream section

2. Downstream section

Profile A/S Filter

The photomicrographs illustrate the construction of Profile A/S elements. 1. Continuously profiled pore size upstream section. 2. Absolute rated(1) constant pore downstream section. Note the continuously decreasing fiber diameter in the profiled upstream section and the constant fiber diameter in the downstream section.

Photomicrograph - Profile® Filter Technology

(1) See Table 1 for ratings.

Table 1.
Profile A/S Cartridge Grades and Their Characteristics

Cartridge Grade	Removal Ratings (Liquid Service) Rating[2] in µm at % Efficiency				Clean Pressure Drop (Liquid Service) Aqueous Pressure Drop[3]		Typical Aqueous Flow Per 10″ Filter[4]	
	90%	99%	99.9%	99.98%	PSI/GPM	MBAR/LPM	GPM	LPM
050	<1[5]	2.5	4.0	5.0	1.70	30.8	3-8	11-30
100	6	8	9	10	0.35	6.37	6-15	23-57
200	11	15	18	20	0.10	1.82	10-15	38-57
400	15	20	30	40	0.09	1.64	10-15	38-57
700	20	30	50	70[5]	0.03	0.55	10-15	38-57

(2) The test procedure used for liquid service rating is an adaptation of ISO 16889 modified for fluid process applications to determine the particle size above which particles are quantitatively removed.
(3) Pressure drop in PSI per GPM water for a single 10" module. Multiply this value by the required flow to determine the total aqueous pressure drop. Next, for fluids other than water, multiply by viscosity in centipoise. If this calculated pressure drop is excessive, then divide this value by the number of 10" modules required to reduce this pressure drop to an acceptable level.
(4) Determined on new and unused filters in laboratory tests at 20˚C.
(5) Extrapolated value.

The Profile A/S Series filter elements are aligned within Pall Profile II housings by installing the elements onto a tie-rod. The elements are then secured in place by a seal nut. When fully engaged, the tie-rod/seal nut assembly forms a knife edge sealing surface embedded into the filter medium at both the top and bottom of the element. The elements are secured in alternative housings by spring engaged sealing surfaces.

Applications

The Profile A/S filter has numerous applications in a broad range of industries that include chemical and petrochemical industries.
Typical applications include:

- Amine
- Hot Water
- Glycol
- Sulfolane
- Condensate
- Methylene Chloride
- Naphtha
- Potassium Hydroxide
- Oxo Alcohols

Features and Benefits versus Conventional Molded or String Wound Filters

Features	Advantages	Benefits
Polyphenylene sulfide medium	• Wide chemical and temperature compatibility	• Multiple applications within one plant
Absolute rated[1] medium	• Consistent, verifiable filtration due to fixed pore structure	• Reproducible product yields and reliable particle retention
Constant density medium with tapered pores	• Longer service life in some cases by factors of three times or greater • Excellent gel removal	• Lower filtration costs per year • Lower waste disposal costs per year • Improved product yields
Small diameter fibers in medium	• Longer service life	• Lower yearly filtration costs
	• Finer removal ratings	• Fewer filtration stages - lower filtration costs - less downtime • Elimination or reduction of recirculation to achieve product clarity • Improved product yields
No surfactants or binders	• Low extractables	• Consistent production yields and quality
Continuous fibers	• No media migration	• Improved reliability • Consistent production yields and quality

Features and Benefits versus Porous Metal Filters

Feature	Advantage	Benefit
Thicker filter medium	Enhanced gel removal	Higher product yields
Small diameter fibers in medium	Finer removal ratings than woven wire and wedgewire filters	Improved product yields
Higher void volume medium	Longer service life	Lower filtration costs

Table 2.
Profile A/S Filters Compatibility Data with Fluids at 200˚F (93˚C)

Depending on the fluid compatibility, Pall Profile A/S elements may be used at temperatures up to 400˚F (205˚C). Please contact Pall Corporation for guidance.

Chemical Classification	Examples	Rating
Inorganic Acids	Hydrochloric, Dilute Nitric, Dilute Sulfuric	NR
	Boric, Phosphoric	GR
Organic Acids	Acetic	GR
	Formic	T
Bases (Alkalis)	Sodium Hydroxide, Potassium Hydroxide, Amines, Quaternary Ammonium Hydroxide	GR
Salt Solutions	Aluminum Chloride, Sodium Sulfide, Sodium Nitrate	T
Brines	Sodium Chloride, Potassium Chloride, Sodium Bromide, Calcium Chloride	GR
	Aqueous Halogenated Solutions	NR
Oxidizers	Peroxides, Peracids	NR
Organic Solvents	Ethers, Esters, Amides, Ketones	GR
	Alcohols, Cellsolves, Glycols	GR
	Aromatics (Benzene, Toulenes, Xylenes)	T
	Petroleum Products (Gasoline, Kerosene)	GR
	Hydrocarbons (Hexane, Octane, Fats, Oils, Petroleum Ether)	GR
	Halogenated Hydrocarbons (Methylene Chloride, Perchloroethylene)	T
	Water	GR
	Air	GR
Recommended temperature for most organic fluids, unless evaluated on an individual basis		200˚F/93˚C
Maximum temperature limits for compatible fluids		400˚F/205˚C

GR = Generally Recommended **NR = Not Recommended** **T = Evaluate on an Individual Basis**

Disclaimer:
*The compatibility data represented in this chart is for general guidance only at the temperature noted. Because so many factors can affect the chemical resistance of a given product, you should pre-test under your own operating conditions observing applicable safety practices such as those given on the Material Safety Data Sheet for each chemical. If any doubt exists about specific applications, please contact Pall Corporation.

Operating Characteristics

The recommended maximum differential pressure for the standard Profile A/S Series filters is 30 psid / 2 bard up to 400˚F/(205˚C) and 40 psid / 2.8 bard up to 200˚F/(93˚C)

Sizes

The Profile A/S Series filter elements are 2½″ O.D. and are available in one-piece 9¾″, 10″, 20″, 30″, and 40″ length modules.

Housings for Profile A/S Elements

Pall offers a full line of filter housings. Please contact Pall directly or your Pall distributor for more information.

Part Numbers/Ordering Information

Table 3.
Standard Configurations of Profile A/S Elements

99.98% Removal Rating (µm)	Profile A/S Element Part Number
5	RLS Δ FPS050
10	RLS Δ FPS100
20	RLS Δ FPS200
40	RLS Δ FPS400
70	RLS Δ FPS700

Nominal Length (inches / mm)	Δ Code
9¾ / 248	09
10 / 254	1
20 / 508	2
30 / 762	3
40 / 1016	4

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Reorder Code. GDS103a