

# Advantage™ AF+ Filter Cartridges

■ PTFE Membrane

*Mega-Pure Membrane Series*

## Maximized Flow Rate With Next Generation, All Fluoropolymer Membrane Filter Cartridges

A unique PTFE membrane provides superior flow rate, surface area and efficiency maximizing the performance of the all fluoropolymer Advantage™ AF+ membrane filter cartridge. The Mega-Pure Advantage AF+ Series of filter cartridges meets or exceeds the requirements for the filtration of UHP liquids used in the fabrication of state-of-the-art microelectronic devices.

The Mega-Pure Advantage AF+ Membrane Series is available in 0.05µm, 0.1µm, 0.2µm, 0.45µm and 1µm pore sizes.

### Applications

- |                      |                            |
|----------------------|----------------------------|
| ■ UHP Water          | ■ Mixed Acids              |
| ■ Ozonated           | ■ Strippers                |
| ■ Cold               |                            |
| ■ Hot                | <b>Equipment</b>           |
|                      | ■ Point-of-Use Tools       |
| <b>UHP Chemicals</b> | ■ Chemical Delivery System |
| ■ Acids              | ■ Cleaning                 |
| ■ Solvents           | ■ Etching                  |
| ■ Photoresists       | ■ Photolithography         |
| ■ Alkalines          | ■ Wet Benches              |
| ■ Developers         |                            |



### Features and Benefits

#### Superior PTFE Membrane Yields Maximum Filtration Results

- Highest flow rate cartridge available for smallest footprint requirement.
- Rinsed to 18 megohm-cm resistivity with pulsed, ozonated, UHP water.
- Unique PTFE membrane ensures high flow rates and superior retention.
- Available prewetted for immediate use in process.
- Advantage AF+ cartridges are non-fiber releasing and superior in extractable levels.
- Engineered for high temperature resistance.

#### Parker's TQM System Assures Consistent Performance and Reliable Filtration

- Strict quality control measures include rigorous testing for rinse up, shedding, flow rate and extractable levels.
- Integrity-tested and testable *in situ*.
- Thermally welded, eliminating adhesive extractables.
- Biosafe in accordance with USP Class VI-121° Plastics Tests.
- Specifically designed to ensure cleanliness.
- All materials of construction are FDA listed as acceptable for potable and edible liquid contact according to CFR Title 21.

### Process Filtration Division



# Mega-Pure Membrane Series

## Specifications

### Materials of Construction:

- Membrane: hydrophobic PTFE
- Membrane Support/Drainage: PFA
- Core, Sleeve, Adaptors: PFA/PTFE alloy
- End Caps: PFA
- O-Ring Material: various
- Sealing Method: thermal welding

### Dimensions:

- Outside Diameter: 3.25 in (82.6 mm)
- Lengths: 4-30 in (10-76 cm)

### Surface Area (10 in cartridge):

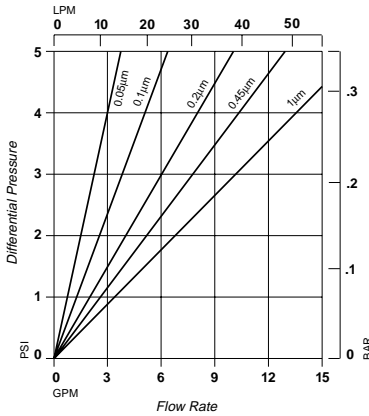
- Minimum 10.5 ft<sup>2</sup> (0.9 m<sup>2</sup>)

### Integrity Test:

- Bubble Point (Using N<sub>2</sub> and a membrane wet with 100% IPA at 73°F [23°C]):
  - 0.05µm: ≥ 50 psi (3.4 bar)
  - 0.1µm: ≥ 24 psi (1.7 bar)
  - 0.2µm: ≥ 16 psi (1.1 bar)
  - 0.45µm: ≥ 6 psi (0.4 bar)
  - 1µm: ≥ 3 psi (0.2 bar)

### PTFE Cartridges (4 in):

Flow rate vs. ΔP for a 1 cps liquid @ 73°F (23°C)\*\*



### Recommended Operating Conditions:

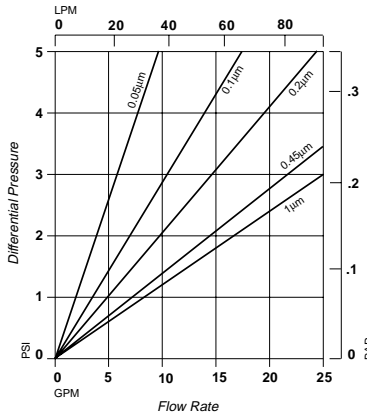
- Maximum Temperature: 375°F (191°C) at 20 ΔP (1.4 bar)
- Maximum Differential Pressure:
  - Forward: 70 psi (4.8 bar) at 77°F (25°C)
  - 30 psi (2.1 bar) at 315°F (157°C)
  - Reverse: 50 psi (3.4 bar) at 77°F (25°C)

## Quality Standard

- Each cartridge is flushed with pulsed UHP ozonated water and monitored downstream for TOC and particle count.
- The release criteria are no TOC contribution (ppb) and less than 4 particles/ml at the rating or greater for 15 minutes.
- Each lot of cartridges is evaluated for metallic ion contribution in 10% HNO<sub>3</sub> after a 24-hour static soak.
- Total metals contribution cannot exceed 25 ppb.

### PTFE Cartridges (10 in):

Flow rate vs. ΔP for a 1 cps liquid @ 73°F (23°C)\*\*



## Flow Advantages

- Advantage™ AF<sup>+</sup> cartridges offer 30% greater flow rate while decreasing processing time and increasing recirculation, fluid cleanliness, yields and capacity.
- Maintaining the current flow rate while lowering the differential pressure allows Advantage AF<sup>+</sup> cartridges to achieve longer life and lower particle counts.
- Maintaining the current flow rate and differential pressure with Advantage AF<sup>+</sup> cartridges allows the use of smaller filter housings with smaller footprint.
- Maintaining the current flow rate and differential pressure with lower micron-rated Advantage AF<sup>+</sup> cartridges improves yields and provides cleaner fluids.

### Flow Factors (4 in cartridge):

Pore Size (µm)	GPM/1 PSID	LPM/1 Bar	PSID/1 GPM	Bar/1 LPM
0.05	0.8	44	1.3	0.024
0.1	1.3	71	0.8	0.015
0.2	2.0	110	0.5	0.009
0.45	2.8	153	0.4	0.007
1	3.3	181	0.3	0.005

### Flow Factors (10 in cartridge):

Pore Size (µm)	GPM/1 PSID	LPM/1 Bar	PSID/1 GPM	Bar/1 LPM
0.05	2.0	110	0.50	0.009
0.1	3.3	181	0.30	0.005
0.2	5.0	274	0.20	0.004
0.45	7.1	389	0.14	0.003
1	8.3	455	0.12	0.003

## Ordering Information

AF	D	C	10	T	TC	W	
Cartridge	Code	Pore Size (µm)	Diameter (in)	Length (in)	O-Ring Material	End Cap Configuration	Special Preparation
AF = All Fluoro-polymer	D = 0.05 S = 0.1 R = 0.45 Q = 1	C = 3.25	04 = 4 10 = 10 20 = 20 30 = 30	D = CR E = EPR K = KR V = Viton* T = PFA/Viton* X = No O-Ring	TC = 222 O-Ring/Flat TF = 222 O-Ring/Fin	W = Prewetted With Ozonated UHP Water	

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

\*\* Consult factory for gas flow data.

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