

Microfluor® E Filter Cartridges



Enhanced Flow Design

Microfluor E filter cartridges have been specially designed to provide the highest flow rates and lowest hold-up volumes for ultra-high purity chemicals used in the electronics industry. Microfluor E filter cartridges are able to deliver superior flow characteristics, longer filter life, and a lower hold-up volume by utilizing CUNO's Advanced Pleat Technology™ (APT)¹ construction. Increasing flow, while maintaining filter efficiency, results in particle specifications being achieved in less time. This decrease in processing time lowers total filtration costs by reducing energy consumption, pump wear, and labor.

Constructed to Perform

The hydrophobic PTFE membrane in an all virgin polypropylene construction provides excellent chemical resistance, low hold-up volume, fast start-up times, increased filter life, and superior contaminant removal as compared to other PTFE membrane cartridges. Microfluor E filter cartridges are ideally suited for acids, bases, solvents, photoresists, DI water, glass substrates, and video display applications where superior flow rates and high efficiency contaminant removal is required.

Applications

Acids	Plating Solutions
Bases	O.L.E.D.s
Solvents	Glass Substrates
Photoresists	Video Displays
Anti-Reflective Coatings	CD / DVD

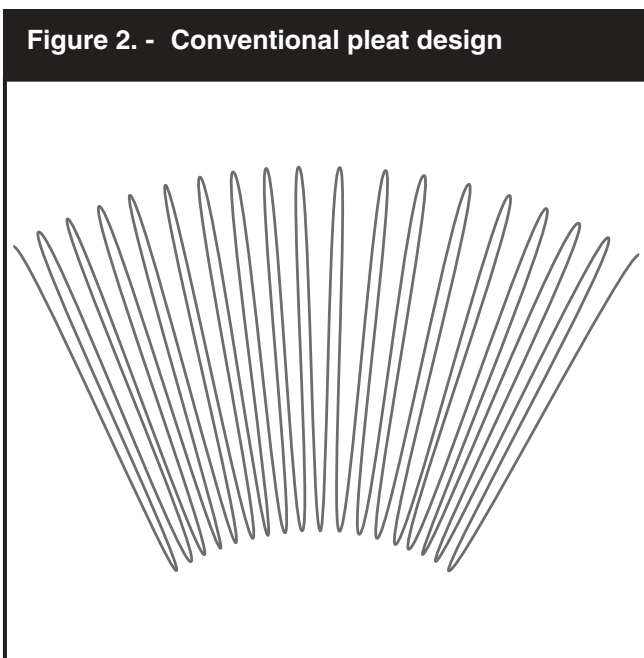
Feature	Benefit
<ul style="list-style-type: none"> PTFE and Polypropylene Materials of Construction 	<ul style="list-style-type: none"> Robust materials provide excellent resistance in aggressive chemicals and dynamic pressure applications
<ul style="list-style-type: none"> Advanced Pleat Technology™ Construction 	<ul style="list-style-type: none"> Increased flow rates provide faster bath clean-up, reduced energy consumption, and reduced pump wear Provides a low differential pressure to minimize bubble formation Increased throughput and filter lifetime Reduces the number of required filter elements
<ul style="list-style-type: none"> Compact Design 	<ul style="list-style-type: none"> Delivers higher flow rates than larger diameter competitive filters Low hold-up volume reduces the waste of expensive chemicals
<ul style="list-style-type: none"> Rinsed with 18 Megohm-cm DI Water 	<ul style="list-style-type: none"> Reduces system start-up time Excellent downstream cleanliness out of the box

(1) US Patent 6,315,130

Superior Gel and Particle Removal

Normally a small amount of gel contaminants can be found in DI water, photoresists, and chemicals. Their removal from these fluids is highly dependent on differential pressure across the filtration system. Since, these gels are deformable, they can extrude through a filter at high differential pressures. At low differential pressures, the forces that would deform gels are correspondingly lower and the gels are retained by the membrane media. CUNO maximizes filtration surface area, using APT construction, to ensure both a low inlet pressure to the pump, and low differential pressure - ideal for gel removal.

The lifetime of a pleated filter cartridge is often dictated by the accessible surface area. Conventional pleated filters may offer a large gross surface area, but when the media is packed into the cartridge, only part of the surface area is used resulting in both flow restrictions and limited contaminant holding capacity. The “blind” or unused area commonly occurs near the inside diameter (Figure 2) where the pleats are most tightly compressed. The Microfluor E filter cartridge is manufactured using a staggered and stepped configuration (Figure 3) which reduces the open space between the outside pleats. This novel technology maximizes capacity by increasing the open area which allows for greater particle loading at the inside diameter, while the shorter stepped pleats take advantage of existing open space closer to the outside diameter of the cartridge. The result is a fully used surface area that provides superior filter life.



Increased Filter Cartridge Flow Rates

The innovative construction of the Microfluor E results in a higher per cartridge flow rate at the same pressure drop as compared to competitive pleated and stacked disk type filters. This can reduce cost-of-ownership in the following three ways:

Less Frequent Filter Change-outs – For existing applications at a given flow rate, filter cartridges with more surface area per cartridge have a lower flux (flow per unit surface area) than those filters cartridges with less surface area. Since filter lifetime is inversely proportional to flux (lower flux = longer filter life) in most applications, Microfluor E filter cartridges provide longer life and require fewer filter cartridge change-outs.

Lower Filter Housing Costs – A filter cartridge that can deliver a higher flow rate at the same pressure drop when compared to competitive products will reduce filtration costs because fewer filters are required for the system. This in turn, allows for the use of smaller and less costly filter housings which reduce initial capital investment; filter change-out time, and hold-up volume for the life of the process.

Lower Waste of Expensive Chemicals – A filter cartridge that combines high flow rates and a low pressure drop with a reduced footprint as compared to competitive products will reduce hold-up volume and the waste of expensive chemicals.

Chart 1 provides the flow rate vs. pressure drop data for the 1.0 μm grade Microfluor E filter.

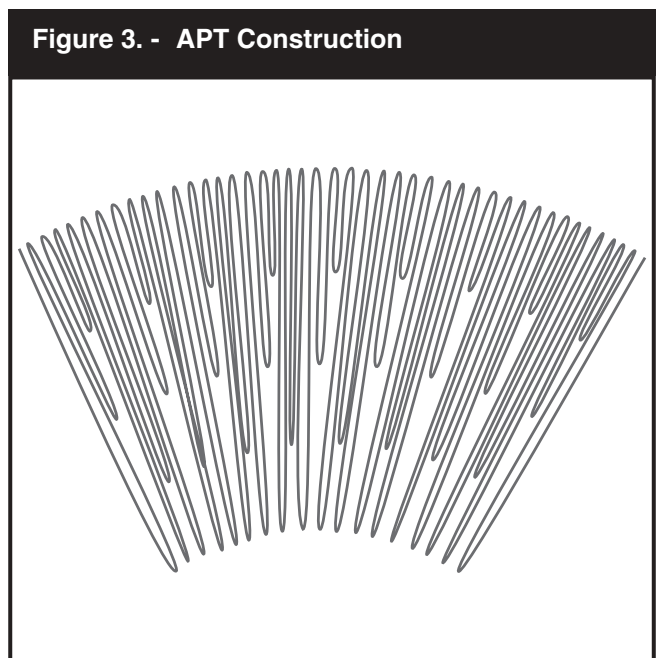
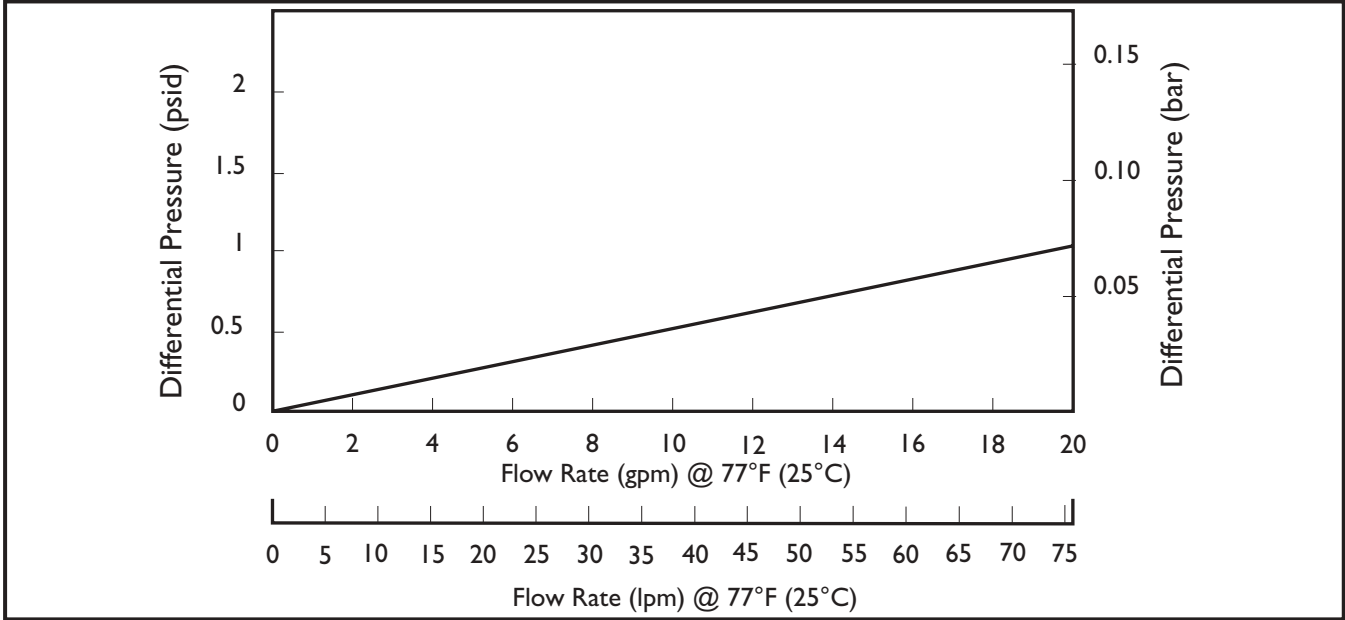
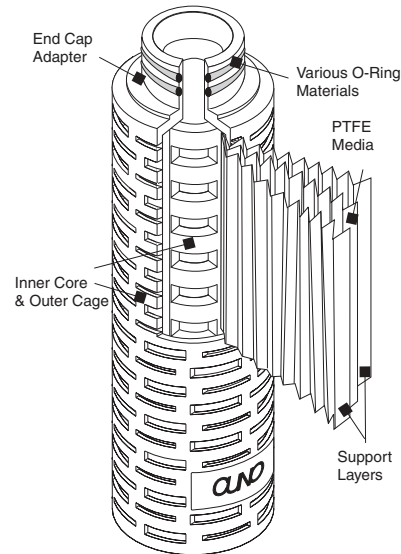


Chart 1. - 10" Cartridge Typical Water Flow Rates



Microfluor E Filter Cartridge Construction

Microfluor E filter cartridges are constructed of high efficiency hydrophobic PTFE membrane. The cage, core, end caps, and membrane support layers are made of virgin polypropylene and no adhesives, binders, or surfactants are used in the manufacturing process. Cartridges are manufactured and double bagged in a clean environment under an ISO certified quality system using the most advanced thermo-plastic welding techniques to ensure filter integrity and excellent downstream cleanliness. All Microfluor E filters are rinsed with 18 megohm-cm DI water and integrity tested to assure that your CUNO filter will perform quickly and consistently each and every time out of the box.



Specifications	
Membrane Material	Hydrophobic PTFE
Cage, Core, End Caps, and Membrane Support Layer	Virgin Polypropylene
Filtration Surface Area	9.2 ft ² (0.85 m ²)
Outside Diameter	2.75" (7 cm) nominal
Length	Nominal 5, 10, 20, 30, and 40 inches (Nominal 12.7, 25.4, 50.8, 76.2, and 101.6 cm)
Maximum Forward Differential Pressure	80 psid @ 77°F (5.5 bar @ 25°C) 25 psid @ 176°F (1.7 bar @ 80°C)
Maximum Operating Temperature	176° F (80°C)
Removal Ratings	1.0 µm
Filter Cartridge Rinse	18 Megohm-cm DI water
Filter Cartridge Integrity	100% Tested

Microfluo[®] E Filter Cartridge Ordering Guide

Cartridge	Removal Rating	Configuration	Length	End Modification	Gasket / O-Ring Material
MFE	100 – 1.0 µm	F	50 – 5" * 01 – 10" 02 – 20" 03 – 30" 04 – 40"	B – 226 O-Ring & Spear C – 222 O-Ring & Spear D – Double Open End (10") E – Double Open End (9 ¾") F – 222 O-Ring & Flat Cap J – 226 O-Ring & Flat Cap	A – Silicone B – Fluorocarbon C – EPR D – Nitrile H – Clear Silicone** K – Teflon [®] Encapsulated Viton (TEV)**

* Available in F end modification only.

** Available in B, C, F, and J end modifications only.

WARRANTY

Seller warrants its equipment against defects in workmanship and material for a period of 12 months from date of shipment from the factory under normal use and service and otherwise when such equipment is used in accordance with instructions furnished by Seller and for purposes disclosed in writing at the time of purchase, if any. Any unauthorized alteration or modification of the equipment by Buyer will void this warranty. Seller's liability under this warranty shall be limited to the replacement or repair, F.O.B. point of manufacture, of any defective equipment or part which, having been returned to the factory, transportation charges prepaid, has been inspected and determined by the Seller to be defective. THIS WARRANTY IS IN LIEU OF ANY OTHER WARRANTY, EITHER EXPRESSED OR IMPLIED, AS TO DESCRIPTION, QUALITY, MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE OR USE, OR ANY OTHER MATTER. Under no circumstances shall Seller be liable to Buyer or any third party for any loss of profits or other direct or indirect costs, expenses, losses or consequential damages arising out of or as a result of any defects in or failure of its products or any part or parts thereof or arising out of or as a result of parts or components incorporated in Seller's equipment but not supplied by the Seller.

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