

Fluorofil™ F100

PTFE Membrane Cartridges for Solvent Filtration

Fluorofil™ F100 cartridges are manufactured using a highly hydrophobic 1 micron PTFE membrane. The enhanced PTFE membrane offers exceptionally high liquid flow rates at low pressure differentials (see graph) making Fluorofil™ F100 cartridges ideally suited to solvent filtration.

For solvent and aggressive chemical filtration applications, Fluorofil™ F100 cartridges offer a wide range of chemical compatibility with high thermal stability. Suitable for the most demanding microfiltration applications, the cartridges can be used for the filtration of aggressive chemical solutions including acids, alkalis, solvents and etchants.



Applications

Fluorofil™ F100 PTFE membrane cartridges meet the demanding filtration requirements of Pharmaceutical, API and Fine Chemical manufacturers. They can be used for the fine filtration of aggressive chemical solutions including acids, alkalis, solvents and etchants.

- **Carbon fines removal**
For the removal of carbon fines typically used in Pharmaceutical intermediates.
- **Fine chemicals and solvents**
The removal of particles from processing chemicals and solvents, such as MEK, Ethyl Acetate, Pyridine, Tetrahydrofuran (THF).
- **Photoresists and developers**
The microfiltration of photoresists and developer solvents, susceptible to contamination and precipitation during manufacture, storage and processing.



Features and Benefits

- Fluorofil™ F100 cartridges**
 The PTFE membrane is recognised as the world leading PTFE membrane cartridge for solvent filtration. It is the membrane of choice in all **Porvair** Fluorofil™ F100 filter cartridges.
- Guaranteed particle retention in a liquid challenge**
 Fluorofil™ F100 cartridges are validated for particle removal in liquids by using the industry standard modified OSU F-2 single pass challenge test. The retention rating is correlated to the bubble point. Each module is individually tested to ensure it reaches the required bubble point value.
- Flow ΔP characteristics**
 The unique characteristics of the PTFE membrane, combined with the construction of the Fluorofil™ F100 filter cartridge, results in exceptionally high liquid flow rates at low pressure differentials.
- Cartridge integrity and low TOC levels**
 All Fluorofil™ F100 cartridges are integrity tested and supplied clean, having been flushed with pure water. When required they can be pulse flushed with 18M Ω .cm pyrogen-free ultra-clean water.
- Solvents and aggressive chemicals**
 The exceptional chemical resistance of PTFE allows Fluorofil™ F100 filter cartridges to be compatible with aggressive chemical solutions, including strong acids, alkalis, solvents and etchants.

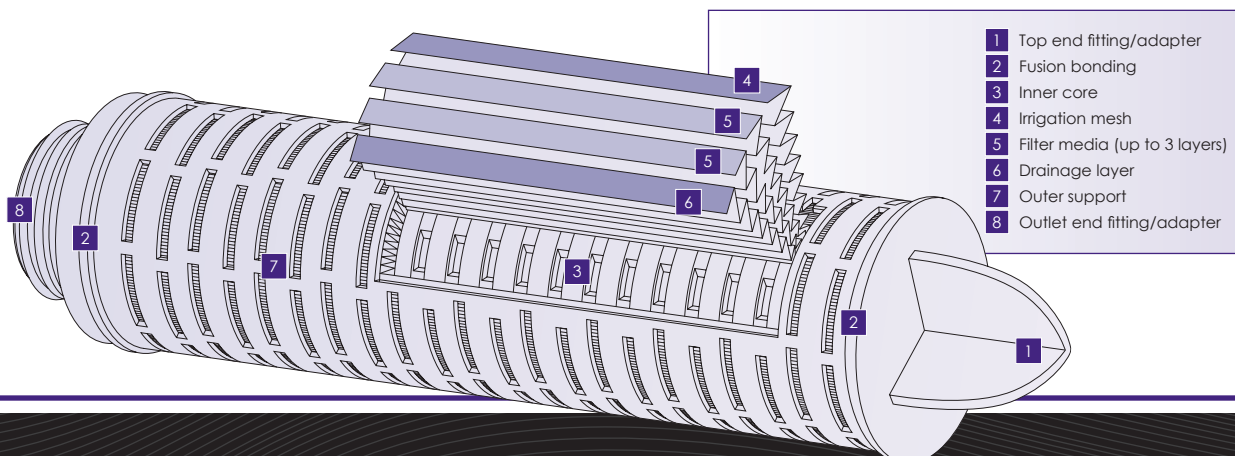
- Full traceability**
 All Fluorofil™ F100 cartridges are individually and batch identified with a unique serial number. Each Fluorofil™ F100 cartridge is supplied with a Certificate of Quality and an operating instruction leaflet.
- Controlled manufacturing environment**
 Fluorofil™ F100 cartridges are manufactured in an ISO Cleanroom environment by fully gowned staff, minimising the risk of contamination.

Cartridge Construction

Fluorofil™ F100 cartridges are manufactured from a multi-layer combination of irrigation mesh, filter membrane, membrane support and drainage material. Fluorofil™ F100 cartridges have optimal pleat geometry to maximise the available filtration area and to ensure an efficient flow through the cartridges.

An all thermal fusion bonded assembly process eliminates the use of resins and binders.

All components used in the construction of Fluorofil™ F100 cartridges are FDA approved to 21CFR and USP Class VI Toxicity Testing.



Specifications

Materials of Manufacture

Filter membrane:	PTFE
Membrane support:	Polypropylene
Irrigation mesh (support):	Polypropylene
Drainage layer:	Polypropylene
Inner core:	Polypropylene
Outer support:	Polypropylene
End fittings:	Polypropylene
Sealing:	Fusion bonding

Cartridge Dimensions (Nominal)

Diameter:	70mm (2.8")
Length:	1 module: 254mm (10")
	2 modules: 508mm (20")
	3 modules: 762mm (30")
	4 modules: 1016mm (40")

Effective Filtration Area

Absolute Micron Rating (in water)	Effective Filtration Area (each 254mm (10") module)
1.0µm (β5000, 99.98%)	0.68m ² (7.3ft ²)

Cartridge Treatment

Standard:	Cleaned and flushed, without further treatment.
Rinsed:	Ultra-clean, pulse flushed to give a system resistivity of 18MΩ.cm.

Gaskets and O-Rings

FEP encapsulated, Ethylene Propylene, Nitrile, Silicone or Viton®.

Maximum Differential Pressure (in water)

Normal flow direction at:	
20°C (68°F):	6.0bar (87psi)
80°C (176°F):	4.0bar (58psi)
100°C (212°F):	3.0bar (44psi)
Reverse flow direction at:	
20°C (68°F):	2.1bar (30psi)
80°C (176°F):	1.0bar (15psi)
100°C (212°F):	0.5bar (7psi)

Operating Temperature (in water)

Maximum continuous:	80°C (176°F)
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Extractables

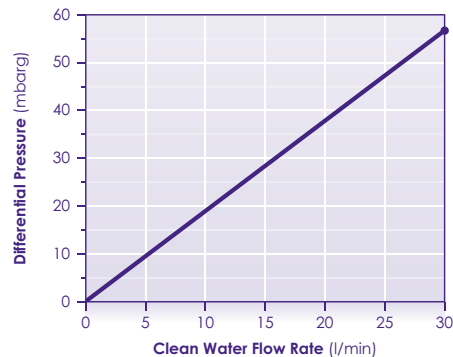
Minimum total extractables. Please refer to the Fluorofil™ F100 Validation Guide.

Integrity Testing

Each Fluorofil™ F100 module of every cartridge is individually integrity tested using the Reverse Bubble Point Test, which correlates to the particle retention rating determined by the modified OSU F-2 Single Pass Challenge Test. Non-destructive integrity testing, using the Reverse Bubble Point Test, can be performed by the end user. Procedural details are available from **Porvair**.

Clean Water Flow Rates

- Typical clean water flow rate:
A 254mm (10") Fluorofil™ F100 single cartridge with 1.0µm particle retention rating exhibits the flow-ΔP characteristics indicated below, for solutions with a viscosity of 1 centipoise.
- Other solutions:
For solutions with a viscosity of greater than 1 centipoise, multiply the indicated differential pressure by the viscosity in centipoise.



Additional Information

Range

Suitable for use in **Porvair** filter housings and as direct replacements for existing cartridges, Fluorofil™ F100 cartridges can be supplied with end fittings to suit most hardware installations without modification. They are available in single or multiple module units of 10, 20, 30 and 40 inches, with a particle retention rating of 1 micron.

Quality Assurance

Fluorofil™ F100 cartridges are manufactured in an ISO Cleanroom environment by staff fully gowned to minimise any risk of contamination during production. All cartridges are integrity tested and, if required, pulse flushed with 18MΩ.cm pyrogen-free ultra-pure water to give rapid resistivity recovery rates and low TOC levels. As a further safeguard, every cartridge is individually and batch identified with a unique serial number, allowing users to maintain their own process records.

Registered to ISO 9001, **Porvair Filtration Group** procedures are subject to high standards of quality assurance as demonstrated through its Drug Master File status.

Material Conformity and Validation

The bio-safety of all materials in the manufacture of Fluorofil™ F100 cartridges is assured by FDA approval and USP Class VI Toxicity Testing.

Fluorofil™ F100 cartridges have been tested and shown to retain 99.98% of particles when challenged with an ISO Fine Dust by the industry standard modified OSU F-2 Single Pass Test. To guarantee the particle retention performance of every cartridge, a correlation has been made between the particle challenge and integrity testing by Reverse Bubble Point. A comprehensive validation guide for Fluorofil™ F100 cartridges is available on request.

Chemical Compatibility

The Fluorofil™ F100 materials of construction are compatible with a wide range of aggressive solvents and chemicals, however care must be taken to select the appropriate seal material. A comprehensive chemical compatibility guide is available. Since operating conditions vary considerably between applications, verification by the end user is recommended.

Filter Housings

Please contact a **Porvair Filtration Group** representative for further information on our range of filter housings.



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