

ultra.chem PF-PP

Polypropylene Membrane Cartridge Filters



ultra.chem PF-PP cartridges are manufactured using a polypropylene membrane of uniform thickness and high voids, with a homogeneous structure and controlled pore sizes. Designed for the removal of submicron organic and inorganic particulate matter, the inherent structural stability of the membrane eliminates any risk of media migration and minimises the release of particles.

For solvent and aggressive chemical filtration applications, ultra.chem PF-PP cartridges offer a wide range of chemical compatibility. 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.

ultra.chem PF-PP cartridges can also be used for a wide range of sterile venting and gas filtration applications.

Applications

ultra.chem PF-PP polypropylene membrane cartridges meet the demanding filtration requirements of pharmaceutical, semiconductor and fine chemical manufacturers. They can be used for the fine filtration of aggressive chemical solutions including acids, alkalis, solvents and etchants. They are also suitable for a wide range of sterile venting and gas filtration applications, including the filtration of wet gases.

Typical applications include:

- Fine chemicals and solvents The removal of submicronic particles from processing chemicals and solvents.
- Photoresists and developers

The microfiltration of photoresists and developer solvents, susceptible to contamination and precipitation during manufacture, storage and processing.

• Pure water supply systems

For use in de-mineralised and de-ionised water systems, for the supply of ultra-pure water, for example in the semiconductor industry.

- Sterile process gases The supply of sterile gas for critical applications in the pharmaceutical, biotechnology, food and beverage markets.
- Sterile vents

The safe sterile venting of processing vessels in pharmaceutical, fermentation, and food and beverage processes.





Features and Benefits

ultra.chem PF-PP cartridges The all polypropylene cartridge construction makes it an

ideal choice for the filtration of aggressive chemicals.

• Guaranteed microbial ratings

ultra.chem PF-PP cartridges are validated for bacterial removal according to HIMA guidelines and ASTM F838-05, with a log reduction value >7.

• Flow ΔP characteristics

ultra.chem PF-PP filter cartridges provide high flow rates at low pressure differentials. These features result in lower energy consumption and fewer filter cartridges per system.

Steam sterilisation

ultra.chem PF-PP cartridges have been designed and validated to be repeatedly steam sterilised in-situ at temperatures of 125°C (257°F) for 100 cycles at 30 minutes per cycle.

Cartridge integrity and low TOC levels

All ultra.chem PF-PP cartridges are integrity tested and supplied clean, having been flushed with pure water. When required they can be pulse flushed with 18MΩ.cm pyrogen-free ultra-clean water.

• Solvents and aggressive chemicals

The exceptional chemical resistance of polypropylene allows ultra.chem PF-PP filter cartridges to be compatible with aggressive chemical solutions, including strong acids, alkalis, solvents and etchants.

• Full traceability

All ultra.chem PF-PP cartridges are individually and batch identified with a unique serial number. Each ultra.chem PF-PP cartridge is supplied with a Certificate of Quality and an operating instruction leaflet.

Controlled manufacturing environment

ultra.chem PF-PP cartridges are manufactured in an ISO Cleanroom environment by fully gowned staff, minimising the risk of contamination.

Cartridge Construction

ultra.chem PF-PP cartridges are manufactured from a multilayer combination of irrigation mesh, filter membrane, membrane support and drainage material.

ultra.chem PF-PP 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.

Manufactured as standard with injection moulded polypropylene inner and outer supports, ultra.chem PF-PP cartridges are designed with the strength necessary to withstand thermal stresses encountered during steam sterilisation and subsequent cooling. They can be steam sterilised and will retain total integrity following steaming at 125°C (257°F).

All components used in the construction of ultra.chem PF-PP cartridges are FDA approved to 21CFR and meet or exceed the latest EC Directives for Food Contact.





Specifications

Materials of Manufacture

Filter membrane:	Polypropylene
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:		70 mm (2.8")
Length:	1 module:	ultra.chem PF-PP Junior
	1 module:	254 mm (10")
	2 modules:	508 mm (20")
	3 modules:	762 mm (30")
	4 modules:	1016 mm (40")

Effective Filtration Area

Absolute Microbial	Effective Filtration Area
Rating	(each 254mm (10") module)
0.1 and 0.2µm	0.66m² (7.1ft²)

Cartridge Treatment

Standard: Cleaned and flushed, without further treat	ment.
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 Rinsed:
 Ultra-clean, pulse flushed to give a system

 resistivity of 18MΩ.cm.

Gaskets and O-Rings

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

Maximum Differential Pressure

Normal flow direction at:

20°C (68°F):	6.0 bar (87psi)
80°C (176°F):	4.0 bar (58psi)
100°C (212°F):	3.0 bar (44psi)
120°C (248°F):	2.0 bar (29psi)
125°C (257°F):	1.5 bar (22psi)
Reverse flow direction at:	
20°C (68°F):	2.1 bar (30psi)
80°C (176°F):	1.0 bar (15psi)
100°C (212°F):	0.5 bar (7psi)

Operating Temperature

Maximum continuous:

Sterilisation

In situ steam 100 x 30 minute cycles at 125°C (257°F)

80°C (176°F)

Extractables

Minimum total extractables. Please refer to the ultra.chem PF-PP Validation Guide.

Integrity Testing

Each ultra.chem PF-PP module of every cartridge is individually integrity tested using the Diffusive Flow Test, which correlates to the HIMA and ASTM F838-05 bacterial challenge tests. Non-destructive integrity tests, such as Diffusive Flow, Water Intrusion, Pressure Hold and Bubble Point, can be performed by customers. Procedural details are available on request.

Clean Water Flow Rates

- Typical clean water flow rate: A 254mm (10") ultra.chem PF-PP single cartridge 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.



Gas Flow Rates

 Typical clean air flow rate: A 254mm (10") ultra.chem PF-PP single cartridge exhibits the flow-ΔP characteristics indicated below.

