

ultra.aqua PF-BEV

Single Layer Polyethersulphone Membrane Cartridge Filters



ultra.aqua PF-BEV cartridges are based on a naturally hydrophilic polyethersulphone membrane with a mirrored asymmetric pore structure. When combined with quality all-polypropylene cartridge components and high integrity manufacturing techniques common to all ultrafilter process cartridge filters, the polyethersulphone membrane provides a high strength, long life cartridge.

ultra.aqua PF-BEV cartridges exploit the narrow pore size distribution and high void volume of the media to provide a choice of cartridges capable of meeting the requirements of most applications. Careful media selection ensures that ultra.aqua PF-BEV cartridges are suited to retention down to 0.2 micron ratings. ultra.aqua PF-BEV cartridges offer high flux rates and low differential pressures, a feature common to polyethersulphone membranes.

ultra.aqua PF-BEV cartridges benefit from the low non-specific protein binding characteristics of polyethersulphone membranes. They are also resistant to steam sterilisation and have excellent chemical compatibility characteristics. Furthermore, since they will not hydrolyse, ultra.aqua PF-BEV cartridges are ideal for use in ultra pure water supply systems (18MΩ.cm).

As a consequence ultra.aqua PF-BEV cartridges provide a combination of features and benefits not hitherto available from cartridges based on PVDF, nylon, mixed esters of cellulose or polysulphone membranes. They are suitable for applications ranging from bioburden reduction and the clarification of a wide range of process liquids and end products.

Applications

ultra.aqua PF-BEV cartridges are suitable for the sub-micronic filtration of a wide range of process liquids, in applications where the characteristics of a naturally hydrophilic membrane are required.

Typical applications include:

- **Pure water supply**
For use in de-mineralised and de-ionised water treatment systems for bioburden reduction in recirculating systems.
- **Biopharmaceuticals**
For the sub-micronic filtration of ingredients, intermediates, make-up waters and final products, including bioburden reduction and clarification.
- **Ophthalmic solutions**
Shelf life assured through the low adsorption of preservatives, such as Benzalkonium Chloride (BAK).
- **Electronics and semiconductors**
For the sub-micronic filtration of process water and chemicals, including solvents, developers and photoresists. Applications typically include central water plant treatment.
- **Fine chemicals**
For the bioburden reduction and clarification of a wide range of process chemicals.
- **Beverages**
For the bioburden reduction and clarification of various beverages, including the reduction of yeast and spoilage organisms. Low colour removal is an additional advantage.

Features and Benefits

- ultra.aqua PF-BEV cartridges**
 Careful media selection means that ultra.aqua PF-BEV cartridges are available to suit a wide range of process critical and general purpose applications.
- Removal ratings**
 ultra.aqua PF-BEV cartridges are available in 0.2, 0.45, 0.65 and 1.2 micron.
- Low protein binding**
 ultra.aqua PF-BEV cartridges have excellent low protein binding characteristics, typically 10 times lower than nylon, 2 times lower than polysulphone and similar to PVDF.
- Will not hydrolyse**
 Compared with other membranes such as nylon, the polyethersulphone membrane used in ultra.aqua PF-BEV cartridges is extremely resistant to hydrolysis. Capable of exposure in excess of 2 years, they are ideal for hot deionised water applications.
- Excellent chemical compatibility**
 Resistant to many process chemicals, ultra.aqua PF-BEV cartridges are suitable for use in a wide range of process applications.
- Suitable for steam sterilising**
 ultra.aqua cartridges incorporating a stainless steel support ring can be subjected to steam sterilisation at 125°C (257°F).
- Full traceability**
 All ultra.aqua PF-BEV cartridges are individually and batch identified with a unique serial number. Each ultra.aqua PF-BEV cartridge is supplied with a Certificate of Quality and an operating instruction leaflet.
- Controlled manufacturing environment**
 ultra.aqua PF-BEV cartridges are manufactured in an ISO Cleanroom environment by fully gowned staff, minimising the risk of contamination.

Cartridge Construction

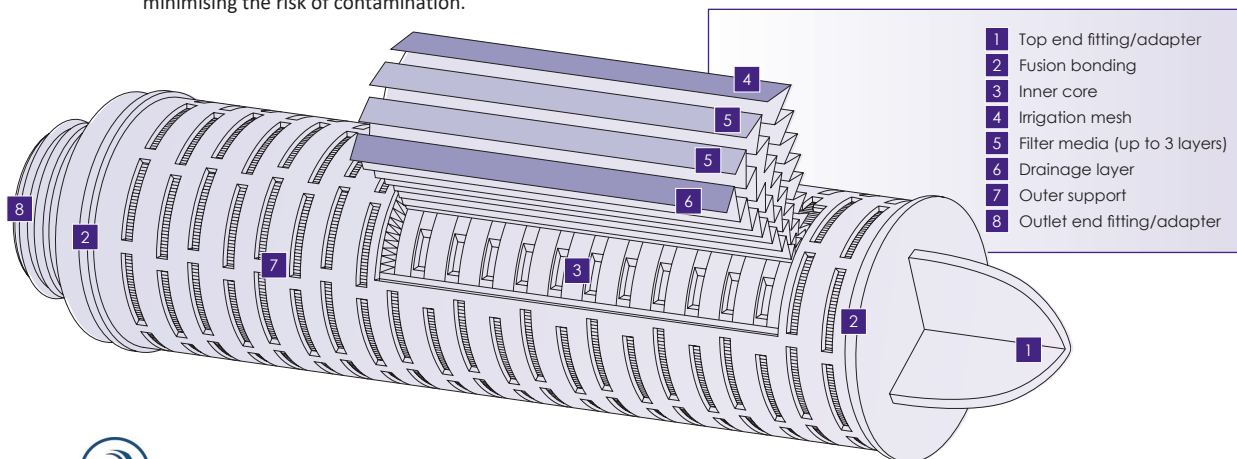
ultra.aqua PF-BEV cartridges are manufactured from a multi-layer combination of irrigation mesh, filter membrane, membrane support and drainage material.

ultra.aqua PF-BEV 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.aqua PF-BEV cartridges are designed with the strength necessary to withstand thermal stresses encountered during steam sterilisation and subsequent cooling.

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



Specifications

Materials of Manufacture

Filter membrane:	Polyethersulphone
Membrane support:	Polypropylene
Irrigation mesh (support):	Polypropylene
Drainage layer:	Polypropylene
Inner core:	Polypropylene
Outer support:	Polypropylene
End fittings:	Polypropylene
Support ring:	Stainless steel

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

Pore Size Rating	Effective Filtration Area (each 254mm (10") module)
0.2, 0.45, 0.65 and 1.2µm	0.69m ² (7.4ft ²)

Gaskets and O-Rings

FDA approved 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)
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:	60°C (140°F)
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Sterilisation

In situ steam 80 x 20 minute cycles at 125°C (257°F).
Hot water 100 x 20 minute cycles at 85-90°C (185-194°F).

Extractables

Minimum total extractables.

Clean Water Flow Rates

- Typical clean water flow rate:
A 254mm (10") ultra.aqua PF-BEV 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.

