

BorsoPES- Biological

Biological Grade Polyethersulphone Membrane Cartridge Filters



A range of microbially rated cartridge filters from Van Borselen Filters, featuring the latest developments in membrane technology, **BorsoPES- Biological** cartridges are based on a naturally hydrophilic polyethersulphone (PES) membrane with a mirrored asymmetric pore structure. When combined with quality all-polypropylene cartridge components and high integrity manufacturing techniques common to all Van Borselen cartridge filters, the polyethersulphone membrane provides a high strength, long life cartridge of consistently precise microbial retention.

BorsoPES- Biological 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 **BorsoPES- Biological** cartridges are also very suited to critical particle control down to 0.04 micron ratings. **BorsoPES- Biological** cartridges offer high flux rates and low differential pressures, a feature common to polyethersulphone membranes.

BorsoPES- Biological cartridges benefit from the low non-specific protein binding characteristics of polyethersulphone membranes.

They are also highly resistant to integrity failure caused by steam sterilisation and have excellent chemical compatibility characteristics.

Furthermore, since they will not hydrolyse, **BorsoPES- Biological** cartridges are ideal for use in ultra pure water supply systems (18MΩ.cm).

As a consequence **BorsoPES- Biological** 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 sterile filtration, bioburden reduction and the clarification of a wide range of process liquids and end products.



Features and Benefits:

- **Low protein binding**

BorsoPES-Biological 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**

BorsoPES-Biological cartridges are extremely resistant to hydrolysis. Capable of exposure in excess of 2 years, they are ideal for hot deionised water applications.

- **Suitable for steam sterilising**

BorsoPES-Biological cartridges incorporating a stainless steel support ring can be subjected to steam sterilisation at 125°C (257°F).

- **Full traceability**

All **BorsoPES-Biological** cartridges are individually and batch identified with a unique serial number. Each **BorsoPES-Biological** cartridge is supplied with a Certificate of Quality and an operating instruction leaflet.

- **Controlled manufacturing environment**

BorsoPES-Biological cartridges are manufactured in an ISOCleanroom environment by fully gowned staff, minimising the risk of contamination.





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

Diameter:	70mm (2.8")
Length:	254mm (10")
	508mm (20")
	762mm (30")
	1016mm (40")

Effective Filtration Area

Up to 0.69m² per 10".

Gaskets and O-Rings

FDA approved Ethylene Propylene, FEP encapsulated, Silicone, Viton® and Nitrile available.

Operating Temperature

Maximum continuous: 60°C (140°F)

Maximum Differential Pressure

Normal flow direction at:

20°C (68°F):	6.0 bar (87lb/in ²)
80°C (176°F):	4.0 bar (58lb/in ²)
100°C (212°F):	3.0 bar (43lb/in ²)
120°C (248°F):	2.0 bar (29lb/in ²)
125°C (248°F):	1.5 bar (22lb/in ²)

Reverse flow direction at:

20°C (68°F):	2.1 bar (30lb/in ²)
80°C (176°F):	1.0 bar (15lb/in ²)
100°C (212°F):	0.5 bar (7lb/in ²)

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. Please refer to the [BorsoPES-Biological Validation Guide](#).

Foodgrade approved

FDA 21 CFR 177.1520

FDA 21 CFR 177.2600

EC 10/2011

Cartridge Construction

[BorsoPES-Biological](#) cartridges are manufactured from a multilayer combination of irrigation mesh, filter membrane, membrane support and drainage material.

[BorsoPES-Biological](#) 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, [BorsoPES-Biological](#) 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 [BorsoPES-Biological](#) cartridges are FDA approved to 21CFR and meet or exceed the latest EC Directives for Food Contact.



Applications

BorsoPES-Biological 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.

- **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 and critical 'wet bench' point of use filtration.

- **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.

- **Pure water supply**

For use in ultrapure water treatment systems (including Water-For-Injection), as either a sterilisation filter or for bioburden reduction





Additional Information

Range

Van Borselen Filters Supplies a full range of filtration products: e.g.:
Filtercartridges (Meltblown/ Membranes/ Activated Carbon)
Filter housings, Filterbags, Lenticular Module Filters, Self Cleaning
Filters, Filter Sheets, Sieving Machines, Porous Sintered Metal,
Oil skimmers, Strainers and many more..

Material Conformity and Validation

The bio-safety of all materials used in the manufacture of **BorsoPES-Biological** cartridges is assured by FDA approval to Title 21CFR.177. and EC 10/2011

Chemical Compatibility

The **BorsoPES-Biological** materials of construction are compatible with a wide range of chemicals and solvents, however care must be taken to select the appropriate seal material. Advice on chemical compatibility is available. Since operating conditions vary considerably between applications, verification by the end user is recommended.

Quality control

Our factories are all located in Western Europe and are accredited to ISO 9001-2008.

All our filters are fully traceable and manufactured under clean room conditions.

Engineering capacities

One of our strengths is developing filter vessels for critical applications in the chemical industry.

We have a wide experience in supplying filter vessels, like Duplex (UNS S31803), Super-Duplex (UNS S32750/60), Titanium, RvS316L, CS (optionally with a coating or lining).

Our filter vessels comply with the necessary design codes (ASME VIII, EN13445, U-stamp and PD5500) and comply to ATEX and PED 97/23/EC standards. Both liquids and gasses PED classes I, II, III, IV, all modules



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