



**Van Borselen**  
FILTERS



## **BorsoPes Aqua**

Single Layer Polyestersulphone Membrane  
Cartridge Filters

# BorsoPes Aqua

## Single Layer Polyethersulphone Membrane Cartridge Filters

A range of cartridge filters from Van Borselen Filters, featuring the latest developments in membrane technology, BorsoPes Aqua 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 Van Borselen Filters, the polyethersulphone membrane provides a high strength, long life cartridge.

BorsoPes Aqua 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 Aqua cartridges are suited to retention down to 0.2 micron ratings. BorsoPes Aqua cartridges offer high flux rates and low differential pressures, a feature common to polyethersulphone membranes.

BorsoPes Aqua 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, BorsoPes Aqua cartridges are ideal for use in ultra pure water supply systems (18M $\Omega$ .cm).

As a consequence BorsoPes Aqua 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

BorsoPes Aqua 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 semiconductor

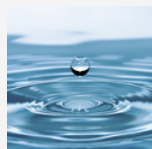
For the sub-micronic filtration of process water and chemicals, including solvents, developers and photoresists. Applications typically include central water plant treatment.

#### 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

- ✓ BorsoPes Aqua cartridges**  
Careful media selection means that BorsoPes Aqua cartridges are available to suit a wide range of process critical and general purpose applications.
- ✓ Removal ratings**  
BorsoPes Aqua cartridges are available in 0.2, 0.45, 0.65 and 1.2 micron.
- ✓ Low protein binding**  
BorsoPes Aqua 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 BorsoPes Aqua 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, BorsoPes Aqua cartridges are suitable for use in a wide range of process applications.
- ✓ Suitable for steam sterilising**  
BorsoPes Aqua cartridges incorporating a stainless steel support ring can be subjected to steam sterilisation at 125°C (257°F).
- ✓ Full traceability**  
All BorsoPes Aqua cartridges are individually and batch identified with a unique serial number. Each BorsoPes Aqua cartridge is supplied with a Certificate of Quality and an operating instruction leaflet.
- ✓ Controlled manufacturing environment**  
BorsoPes Aqua cartridges are manufactured in an ISO Cleanroom environment by fully gowned staff, minimising the risk of contamination.

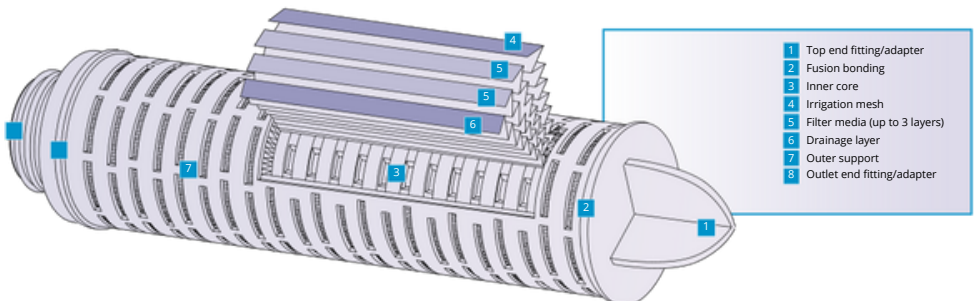
## Cartridge Construction

BorsoPes Aqua cartridges are manufactured from a multi-layer combination of irrigation mesh, filter membrane, membrane support and drainage material. BorsoPes Aqua 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 Aqua 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 BorsoPes Aqua cartridges are FDA approved to 21CFR and meet or exceed the latest EC Directives for Food Contact.



# Specification

## Materials of Manufacture

Filter membrane	:	Nylon 6,6
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	:127mm (5")
	1 module	:254mm (10"),
	2 modules	:508mm (20")
	3 modules	:762mm (30"),
	4 modules	:1016mm (40")

## Effective Filtration Area

Absolute Microbial Rating (in liquids)	Effective Filtration Area (each 254mm (10") module)
0.03, 0.1, 0.2 and 0.45µm	0.69m <sup>2</sup> (7.4ft <sup>2</sup> )

## Cartridge Treatment

Standard	: Cleaned and flushed with pyrogen-free water.
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)	:6.0bar (87psi)
80°C (176°F)	:4.0bar (58psi)
100°C (212°F)	:3.0bar (44psi)
120°C (248°F)	:2.0bar (29psi)

### 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

Maximum continuous :60°C (140°F)

## Sterilisation

*In situ* steam 30 x 25 minute cycles at 125°C (257°F).

## Extractables

Minimum total extractables. Please refer to the BorsoNylo Validation Guide.

## Integrity Testing

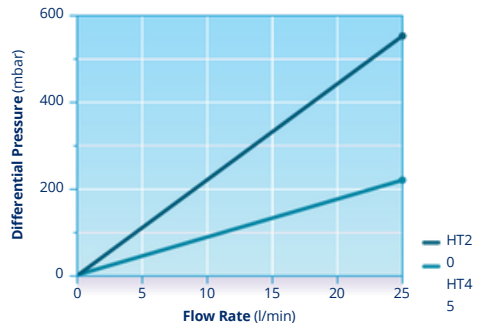
Each BorsoNylo module of every cartridge is individually integrity tested using the Diffusive Flow Test, which correlates to the HIMA and ASTM F838-05 bacterial challenge tests. Non-destructive integrity tests, such as Pressure Hold, Diffusive Flow and Bubble Point, can be performed by customers. Procedural details are available from Van Borselen Filters.

## Clean Water Flow Rates

Typical clean water flow rate: A 254mm (10") BorsoNylo 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.



## Additional Information

### Range

Suitable for use in Van Borselen Filters and as direct replacements for existing cartridges, BorsoPes Aqua 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, and in a choice of four removal ratings: 0.2, 0.45, 0.65 and 1.2 micron. Each cartridge is supplied with all necessary seals or O-rings to ensure chemical compatibility.

### Quality Assurance

BorsoPes Aqua cartridges are manufactured in an ISO Cleanroom environment by staff fully gowned to minimise any risk of contamination during production. 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, Van Borselen Filters 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 BorsoNylo cartridges is assured by FDA approval, USP Class VI and meets or exceeds the latest EC Directives for Food Contact.

### Chemical Compatibility

The bio-safety of all materials in the manufacture of BorsoPes Aqua cartridges is assured by FDA approval, USP Class VI and meets or exceeds the latest EC Directives for Food Contact.

### Filter Housings

Please contact a **Van Borselen Filters** representative for further information on our range of filter housings.

# VAN BORSELEN FILTERS



## ABOUT US

With over 100 years of experience, we have developed deep expertise in filtration and separation. Van Borselen Filters is located in Zoetermeer, where an enthusiastic team of filtration and separation specialists is dedicated to serving our clients.



**100 years of  
experience**



**Excellent  
service**



**High-standard  
products**



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