

# BorsoPleat-M

## Absolute Rated Pleated Glass Fibre Cartridge Filters



A range of absolute rated cartridge filters from Van Borselen Filters, featuring the latest developments in borosilicate glass fibre filter media technology, BorsoPleat-M cartridges are constructed from robust glass fibre and polypropylene filtration layers, offering removal ratings from 0.5 to 5 micron absolute.

BorsoPleat-M cartridges are suitable for absolute removal of unwanted particulates and for prefiltration to membrane filters.

The BorsoPleat-M cartridges incorporate a polypropylene prefiltration layer, combined with a high dirt capacity glass fibre media. This has the effect of longer service life, improved operating costs and smaller process footprint.

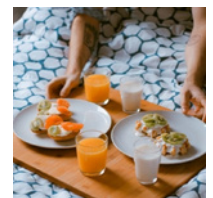
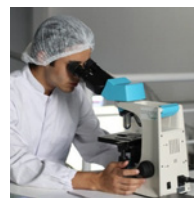
The BorsoPleat-M filter cartridges are also highly resistant to integrity failure caused by steam sterilisation and have excellent chemical compatibility characteristics.

They are suitable for applications ranging from bioburden reduction and the clarification of a wide range of process liquids and end products.

## Applications

BorsoPleat-M cartridges provide absolute filtration where reproducibility and consistency of performance are critical. Suitable for the filtration of aqueous and organic liquids, BorsoPleat-M cartridges can be used as prefilters or final filters in the following applications:

- **Foods and Beverages**  
The clarification of beers, wines and spirits to a clear and bright finish without affecting taste. It is an ideal prefilter to protect membranes used for cold sterilisation.
- **Process Water Systems**  
The filtration of process water installations for removal of general contamination and resin fines. The naturally occurring zeta-potential of glass fibre in aqueous solutions makes the BorsoPleat-M filter ideal for removing submicronic particles
- **Pharmaceuticals and Bioprocessing**  
The excellent dirt holding capacity of the BorsoPleat-M makes it an ideal choice for prefiltration of complex biological fluids (e.g. cell culture media).
- **Fine Chemicals**  
The filtration of high grade chemicals including solvents, photographic emulsions, inks and paints.
- **Cosmetics**  
The clarification of process water and intermediates for the finished product.



## Features and Benefits

- **BorsoPleat-M cartridges**

Selection of the latest and most advanced glass fibre media has resulted in a robust filter cartridge with high dirt holding capacity and excellent chemical compatibility.

- **Zeta potential**

BorsoPleat-M cartridges display a natural, positive electrostatic charge when used in aqueous solutions. This results in the enhanced removal of submicronic particles, smaller than the designated micron rating.

- **High filtration area**

BorsoPleat-M cartridges have a large surface area for low clean pressure drop.

- **Guaranteed removal ratings**

BorsoPleat-M cartridges are validated using the recognised industry standard modified OSU-F2 single pass test to Beta 5000 (99.98% efficiency).

- **Excellent chemical compatibility**

Resistant to many process chemicals, BorsoPleat-M cartridges are suitable for use in a wide range of process applications.

- **Suitable for steam and hot water sanitisation**

BorsoPleat-M cartridges are resistant to repeat steam sterilisation up to 130°C (266°F) and hot water cycles at up to 90°C (194°F).

- **Resistance to Cleaning-In-Place (CIP) regimes**

BorsoPleat-M cartridges are resistant to repeat hot caustic and cold acid cleaning cycles.

- **Full traceability**

All BorsoPleat-M cartridges are identified with a batch serial number. Each BorsoPleat-M cartridge is supplied with a Certificate of Quality and an operating instruction leaflet.

- **Controlled manufacturing environment**

BorsoPleat-M cartridges are manufactured in an ISO Cleanroom environment by fully gowned staff, minimising the risk of contamination.

## Cartridge Construction

BorsoPleat-M cartridges are constructed from polypropylene, borosilicate glass fibre and a FDA approved binder.

The meltblown polypropylene media provides a bonded matrix thus eliminating fibre migration.

The inherent structural stability of the BorsoPleat-M, prevents 'channelling' and avoids the risk of particle unloading even under impulse conditions. The multi-layer combination of filter media, irrigation mesh and drainage material carefully pleated and thermally bonded maximises the media area and ensures an efficient flow throughout the cartridge.

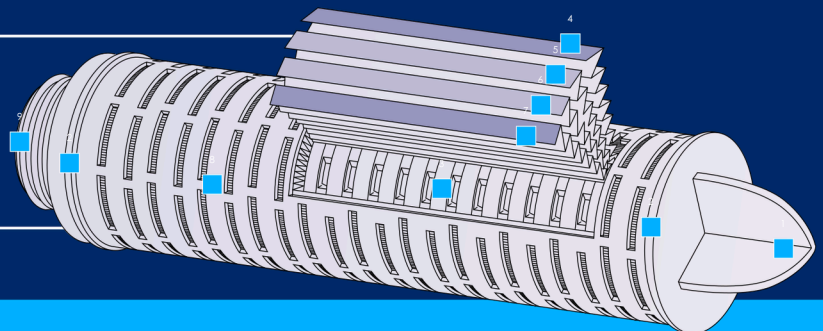
The BorsoPleat-M fusion bonded construction ensures cartridge integrity. No surfactants or bonding agents are used, minimising extractables.

Table 1 Particle Retention Rating

Code	PoreRating (microns)	AbsoluteRating 99.98% Beta 5000 (microns)	Nominal Rating 99.90% Beta 1000 (microns)	Nominal Rating 90.00% Beta 10 (microns)
BLM	0.5	0.5	0.25*	<0.15
BLM	0.8	0.8	0.25*	<0.2
BLM	1	1	0.3	<0.2
BLM	2	2	0.8	0.2*
BLM	5	5	1.5	<0.5

\*Extrapolated data.

1	Top end fitting/adapter	6	FinalMembraneLayer
2	Fusion bonding	7	Drainagelayer
3	Inner core	8	Outersupport
4	Irrigation mesh	9	Outlet end fitting/adapter
5	Prefiltration Membrane Layer		



# Specification

## Materials of Manufacture

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

## Cartridge Dimensions (Nominal)

Diameter : 70mm(2.8")

Length	: 1module(short)	: 125mm(5")
	1 module	: 254mm(10")
	2 module	: 508mm(20")
	3 module	: 762mm(30")
	4 module	: 1016mm (40")

## Effective Filtration Area

AbsoluteMicrobial Rating	Effective Filtration Area (each 254mm (10") module)
0.2, 0.45 and 0.65µm	0.48m <sup>2</sup> (5.2ft <sup>2</sup> )

## Cartridge Treatment

Standard : Clean without further treatment.  
Flushed : Flushed with pyrogen-free water.

## 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)	: 6.0bar(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 : 85-90°C(185-194°F)

## 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

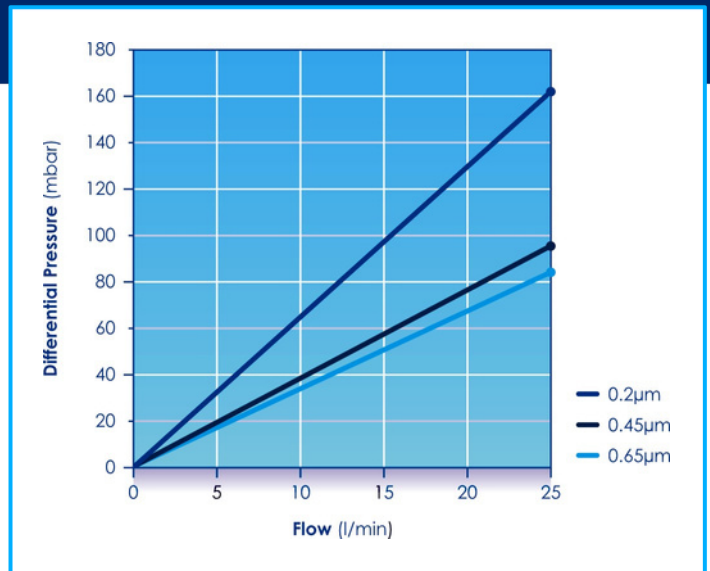
Minimum total extractables. Please refer to the BorsoPleat-M ValidationGuide.

## Clean Water Flow Rates

**Typical clean water flow rate:** A 254mm (10") BorsoPleat-M 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, BorsoPleat-M cartridges can be supplied with end fittings to suit most hardware installations without modification. They are available in single or multiple module units of 5, 10, 20, 30 and 40 inches, and in a choice of removal ratings from 0.5 to 5 micron. BorsoPleat-M Junior versions are also available. Each cartridge is supplied with all necessary seals or O-rings to ensure chemical compatibility.

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### Quality Assurance

BorsoPleat-M cartridges are manufactured in an ISO Cleanroom environment by staff fully gowned to minimise any risk of contamination during production. BorsoPleat-M cartridges are batch tested and flushed with pyrogen-free ultra-pure water. As a further safeguard, every cartridge is identified with a batch serial number, allowing users to maintain their own process records. Registered to ISO 900

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### Material Conformity and Validation

The bio-safety of all materials used in the manufacture of BorsoPleat-M cartridges is assured by FDA approval, USP Class VI and meets or exceeds the latest EC Directives for Food Contact. A comprehensive validation guide for BorsoPleat-M cartridges is available on request.

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### Chemical Compatibility

The BorsoPleat-M materials of construction are compatible with a wide range of chemicals and solvents, 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.

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### Filter Housings

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

