

## Microfil™

### Absolute Rated Pleated Glass Fibre Cartridge Filters

A range of absolute rated cartridge filters from Porvair Filtration Group, featuring the latest developments in borosilicate glass fibre filter media technology, Microfil™ cartridges are constructed from robust glass fibre and polypropylene filtration layers, offering removal ratings from 0.5 to 5 micron absolute.

Microfil™ cartridges are suitable for absolute removal of unwanted particulates and for prefiltration to membrane filters.

The Microfil™ 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 Microfil™ 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

Microfil™ cartridges provide absolute filtration where reproducibility and consistency of performance are critical. Suitable for the filtration of aqueous and organic liquids, Microfil™ 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 Microfil™ filter ideal for removing submicronic particles.
- **Pharmaceuticals and Bioprocessing**  
The excellent dirt holding capacity of the Microfil™ 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, reagents, photographic emulsions, inks and paints.
- **Cosmetics**  
The clarification of process water and intermediates for the finished product.



### Features and Benefits

- Microfil™ 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**  
 The Microfil™ 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**  
 Microfil™ cartridges have a large surface area for low clean pressure drop.
- Guaranteed removal ratings**  
 Microfil™ cartridges are validated using the recognised industry standard modified OSU-F2 single pass test to Beta 5000 (99.98% efficiency).
- Suitable for steam and hot water sanitisation**  
 Microfil™ 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**  
 Microfil™ cartridges are resistant to repeat hot caustic and cold acid cleaning cycles.
- Full traceability**  
 All Microfil™ cartridges are identified with a batch serial number. Each Microfil™ cartridge is supplied with a Certificate of Quality and an operating instruction leaflet.
- Controlled manufacturing environment**  
 Microfil™ cartridges are manufactured in an ISO Cleanroom environment by fully gowned staff, minimising the risk of contamination.

### Cartridge Construction

The Microfil™ cartridges are constructed from polypropylene, borosilicate glass fibre and a FDA approved binder.

The inherent structural stability of the Microfil™, prevents 'channelling' and avoids the risk of particle unloading even under impulse conditions.

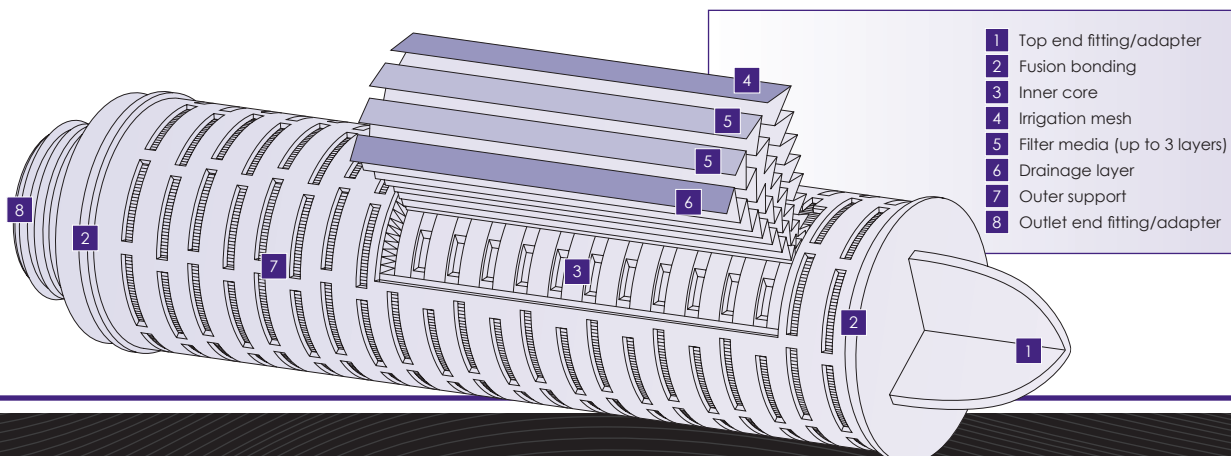
The multi-layer combination of filter media, irrigation mesh and drainage material carefully pleated and thermally bonded maximises the media area and ensures an efficient flow throughout the cartridge.

The Microfil™ fusion bonded construction ensures cartridge integrity. No surfactants or bonding agents are used, minimising extractables.

Table 1 Particle Retention Rating

Code	Pore Rating (microns)	Absolute Rating 99.98% Beta 5000 (microns)	Nominal Rating 99.90% Beta 1000 (microns)	Nominal Rating 90.00% Beta 10 (microns)
MP5	0.5	0.5	0.25*	<0.15
MP8	0.8	0.8	0.25*	<0.2
M01	1	1	0.3	<0.2
M02	2	2	0.8	0.2*
M05	5	5	1.5	<0.5

\* Extrapolated data.



# Specifications

## Materials of Manufacture

Filter media:	Glass fibre
Prefiltration layer:	Polypropylene
Support layers:	Polypropylene
Inner core:	Polypropylene
Outer support:	Polypropylene
End fittings:	Polypropylene
Support ring:	Stainless steel

## Cartridge Dimensions (Nominal)

Diameter:	70mm (2.8")
Length:	1 module (short): 125mm (5")
	1 module: 254mm (10"), 508mm (20")
	2 modules: 762mm (30"), 1016mm (40")

## Effective Filtration Area

Absolute Removal Rating	Effective Filtration Area (each 254mm (10") module)
0.5, 0.8, 1.0, 2.0 and 5.0µm	0.4m <sup>2</sup> (4.4ft <sup>2</sup> )

## Cartridge Treatment

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

## Gaskets and O-Rings

Ethylene Propylene, FEP encapsulated, Silicone, Viton®, Nitrile or Polypropylene felt.

## 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:	80°C (176°F)
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## Sterilisation

*In situ* steam 20 x 30 minute cycles at 130°C (266°F).  
Hot water 200 x 20 minute cycles at 85-90°C (185-194°F).

## Extractables

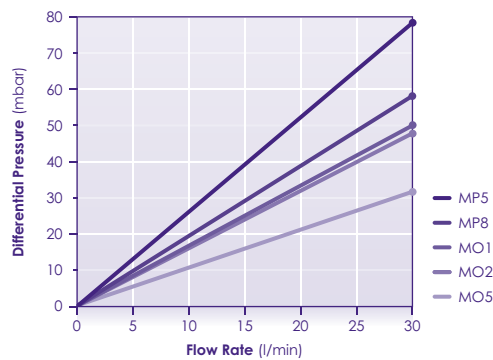
Minimum total extractables. Please refer to the Microfil™ Validation Guide.

## Integrity Testing

Microfil™ filter cartridges are batch tested for integrity using the Bubble Point Test. Procedural details are available from **Porvair**.

## Clean Water Flow Rates

- Typical clean water flow rate:  
A 254mm (10") Microfil™ single cartridge exhibits the flow- $\Delta$ P 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 **Porvair** filter housings and as direct replacements for existing cartridges, Microfil™ 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. Microfil™ Junior versions are also available. Each cartridge is supplied with all necessary seals or O-rings to ensure chemical compatibility.

### Quality Assurance

Microfil™ cartridges are manufactured in an ISO Cleanroom environment by staff fully gowned to minimise any risk of contamination during production. Microfil™ 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 9001, **Porvair Filtration Group** 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 used in the manufacture of Microfil™ 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 Microfil™ cartridges is available on request.

### Chemical Compatibility

The Microfil™ 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.

### Filter Housings

Please contact a **Porvair Filtration Group** representative for further information on our range of filter housings.

**porvair**  
filtration group

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