

## Microfil™ Junior

### Absolute Rated Pleated Glass Fibre Cartridge Filters for Small-Scale Applications

A range of absolute rated cartridge filters from Porvair Filtration Group, designed for retrofitting into existing Junior-style housings. Featuring the latest developments in borosilicate glass fibre filter media technology, Microfil™ Junior cartridges are constructed from robust glass fibre and polypropylene filtration layers, offering removal ratings from 0.5 to 5 micron absolute.

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

The Microfil™ Junior 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™ Junior 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.

Available in J-style with internal O-ring, S-style with moulded flange seal and L-style with 4-lug locking end cap with double external O-rings.



### Applications

Microfil™ Junior cartridges provide absolute filtration where reproducibility and consistency of performance are critical. The naturally occurring zeta-potential of glass fibre in aqueous solutions makes the Microfil™ Junior filter ideal for removing submicronic particles. These cartridges can be used as prefilters or final filters in the following applications:

- **Small-scale pharmaceuticals and bioprocessing**  
The excellent dirt holding capacity of the Microfil™ Junior makes it an ideal choice for prefiltration of complex biological fluids (e.g. cell culture media).
- **Pilot-scale studies**  
For the scale-up and optimisation of prefiltration in sterile filtration processes.
- **Batch processing**  
Suitable for prefiltration and clarification of small batches of process fluids.



## Features and Benefits

- Microfil™ Junior 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™ Junior 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™ Junior cartridges have a large surface area for low clean pressure drop.
- Guaranteed removal ratings**  
 Microfil™ Junior 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™ Junior J-style and L-style cartridges are resistant to repeat steam sterilisation up to 130°C (266°F) and hot water cycles at up to 90°C (194°F). S-style cartridges are designed for sterilisation by autoclave.
- Full traceability**  
 All Microfil™ Junior cartridges are identified with a batch serial number. Each Microfil™ Junior cartridge is supplied with a Certificate of Quality and an operating instruction leaflet.
- Controlled manufacturing environment**  
 Microfil™ Junior cartridges are manufactured in an ISO Cleanroom environment by fully gowned staff, minimising the risk of contamination.

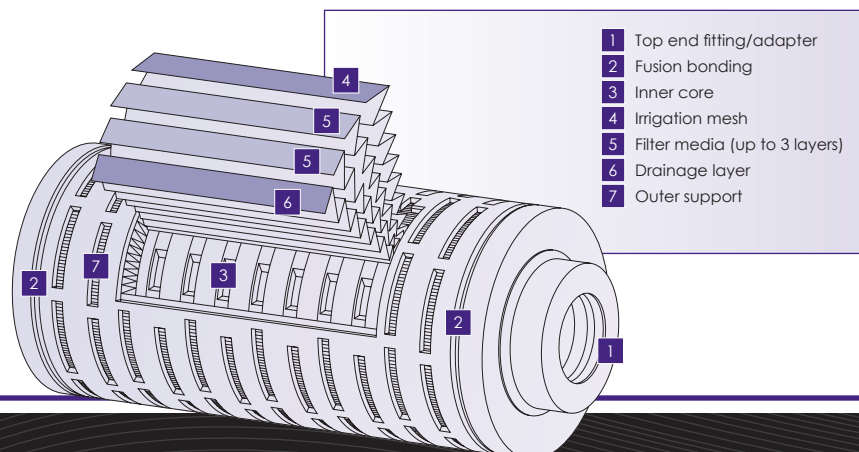
## Cartridge Construction

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

The inherent structural stability of the Microfil™ Junior, 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™ Junior fusion bonded construction ensures cartridge integrity. No surfactants or bonding agents are used, minimising extractables.



# 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:	56mm (2.2")
Length:	77.5mm (2.5") 136mm (5")

## Effective Filtration Area

Absolute Removal Rating	Effective Filtration Area (for 5" cartridge)
0.5, 0.8, 1.0, 2.0 and 5.0µm	0.15m <sup>2</sup> (1.6ft <sup>2</sup> )

## Cartridge Treatment

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

## Gaskets and O-Rings

J-style:	Silicone (other materials are available on request).
S-style:	Not supplied.
L-style:	Silicone (other materials are available on request).

## 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

J-style:	<i>In situ</i> steam 70 x 25 minute cycles at 130°C (266°F).
S-style:	Autoclave 100 x 25 minute cycles at 125°C (257°F).
L-style:	<i>In situ</i> steam 70 x 25 minute cycles at 130°C (266°F).

## Extractables

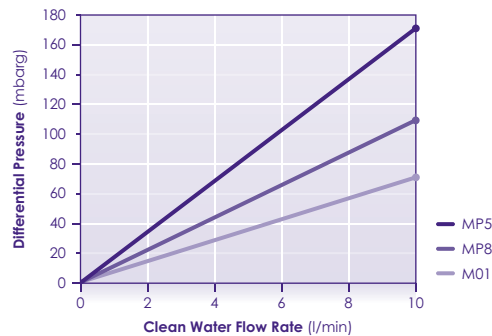
Minimum total extractables. Please refer to the Microfil™ Validation Guide.

## Integrity Testing

Microfil™ Junior 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 136mm (5") Microfil™ Junior 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.



### Range

Microfil™ Junior cartridges are designed for retrofitting into existing Junior-style housings as direct replacements for existing cartridges. Available in two formats of 2.5 and 5 inch lengths, and a choice of five microbial ratings: 0.5, 0.8, 1, 2 and 5 micron:

- J-style, a single open-ended element with a single internal o-ring seal on the downstream end cap.
- S-style, a single open-ended element incorporating an integral flange on the downstream end cap.
- L-style, a single open ended element with 4 locating lugs and double external 'o'-rings.

### Quality Assurance

Microfil™ Junior cartridges are manufactured in an ISO Cleanroom environment by staff fully gowned to minimise any risk of contamination during production. Microfil™ Junior 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™ Junior 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™ Junior cartridges is available on request.

### Chemical Compatibility

The Microfil™ Junior 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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