

Cryptofil™

A barrier to *Cryptosporidium*
and *Giardia*

Cryptofil™ filter cartridges are utilised for the control of *Cryptosporidium* oocysts in water used in the food, beverage and ultrapure water industries.

The Cryptofil™ cartridge has been developed after extensive research and has resulted in filter media with continuously graded fibre density. This yields progressively finer oocyst retention through the depth of the media.

This graded density depth filtration mechanism, combined with optimised pleated pack configuration and resultant high surface area, affords high flow capability and exceptional oocyst retention capacity.

Cryptosporidium oocysts removed from the water flow are captured within the media and are not subject to release by system fluctuations. The voids volume of Cryptofil™ combined with advanced cartridge construction results in a filter capable of retaining high concentrations of oocysts ensuring extended service life and reduced filtration costs.



Applications

Cryptofil™ cartridges provide absolute filtration where reproducibility and consistency of performance are critical. Cryptofil™ cartridges are recommended for the production of oocyst-free water in the following applications:

- **Mineral Water**
The safeguard of bottled water to prevent *Cryptosporidium* oocyst contamination.
- **Food Processing**
Process water used in the manufacture of food stuffs and decontamination of process equipment. Recommended for use in fresh food preparation, such as fruit and salad washing.
- **Embarkation Water Supply**
For the protection of potable onboard water systems in marine and portable water installations.
- **Leisure**
For the protection of potable water used in hotels and resorts. For the removal of *Cryptosporidium* oocysts in outbreak scenarios.



Features and Benefits

- Cryptofil™ cartridges**
 Extensive research and selection of the latest and most advanced polypropylene meltblown microfibre filter media, results in improved performance, leading to extended filter life at a given efficiency.
- Graded multi-layer media**
 The multi-layer media structure provides prefiltration of the process fluid prior to the absolute rated final layer. This combination provides economy of use and a smaller process footprint.
- High filtration area**
 Large surface area for low clean pressure drop.
- Guaranteed removal ratings**
 Cryptofil™ cartridges have been independently tested to ensure >log4 removal of *Cryptosporidium parvum* oocysts.
- Cartridge integrity and low TOC levels**
 Each Cryptofil™ module of every cartridge is individually integrity tested.
- Suitable for steam and hot water sanitisation**
 Cryptofil™ cartridges are resistant to repeat steam sterilisation up to 130°C (266°F) and hot water cycles at up to 90°C (194°F).
- Environmentally friendly**
 Cryptofil™ filters are environmentally friendly, all spent cartridges can be readily incinerated to trace ash.
- Full traceability**
 All Cryptofil™ cartridges are identified with a batch serial number. Each Cryptofil™ cartridge is supplied with a Certificate of Quality and an operating instruction leaflet.
- Controlled manufacturing environment**
 Cryptofil™ cartridges are manufactured in an ISO Cleanroom environment by fully gowned staff, minimising the risk of contamination.

Cartridge Construction

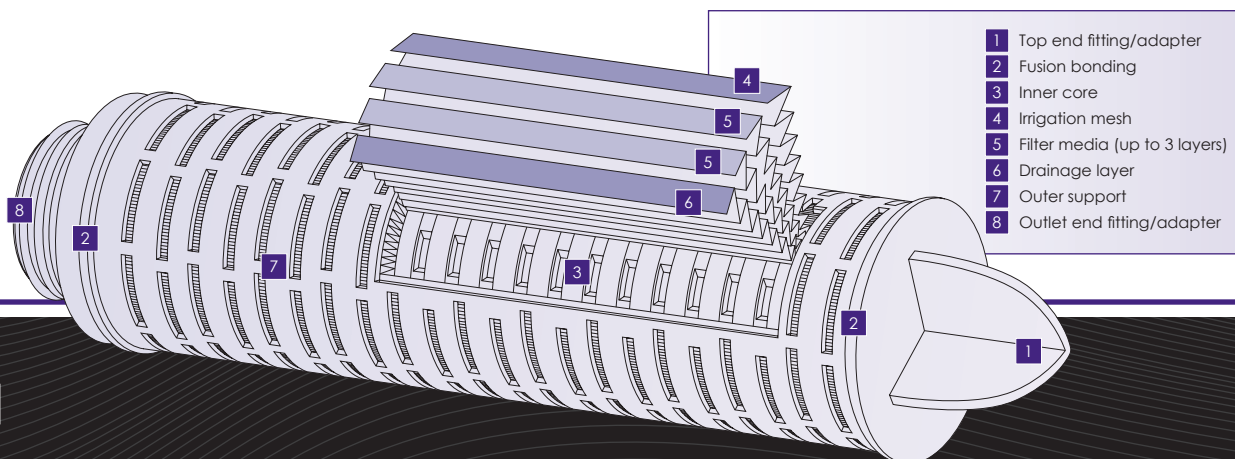
The high quality robust all polypropylene construction of Cryptofil™ cartridges, allows for excellent chemical compatibility with a wide range of fluids.

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

The inherent structural stability of the Cryptofil™, prevents 'channelling' and avoids the risk of *Cryptosporidium* oocysts 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 Cryptofil™ fusion bonded construction ensures cartridge integrity. No surfactants or bonding agents are used, minimising extractables.



Specifications

Materials of Manufacture

Filter media:	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: 254mm (10"), 508mm (20")
	2 modules: 762mm (30"), 1016mm (40")

Effective Filtration Area

Up to 0.6m² per 250mm module.

Cartridge Treatment

Standard:	Cleaned without further treatment.
Flushed:	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®, 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)
125°C (257°F):	1.5 bar (22psi)

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)

Sterilisation

In situ steam 60 x 30 minute cycles at 130°C (266°F).
Hot water 200 x 20 minute cycles at 80°C (176°F).

Extractables

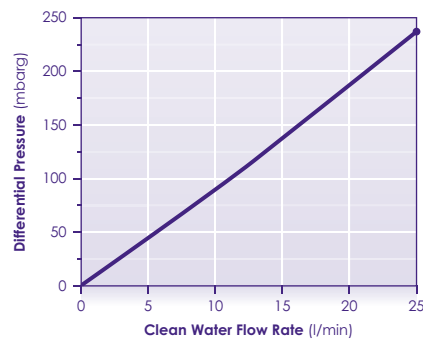
Minimum total extractables. Please refer to the Cryptofil™ Validation Guide.

Integrity Testing

Each Cryptofil™ module of every cartridge is individually integrity tested using the Bubble Point Test. Procedural details are available from **Porvair**.

Clean Water Flow Rates

- Typical clean water flow rate:
A 254mm (10") Cryptofil™ single cartridge exhibits the flow- Δ 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, Cryptofil™ 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. Each cartridge is supplied with all necessary seals or O-rings to ensure chemical compatibility.

Quality Assurance

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

Cryptofil™ cartridges have been independently tested and shown to retain *Cryptosporidium parvum* oocysts at >log4.

A comprehensive validation guide for Cryptofil™ cartridges is available on request.

Chemical Compatibility

The Cryptofil™ 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.

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