DELABIE

Controlling the bacteriological quality of water

BIOFIL

- Cartridge filters
- Shower head filters
- Spout filters

CONTROLLING WATERBORNE HEALTH RISKS

Water, essential for hygiene, can also be a source of infection if its quality is not controlled. The proliferation of bacteria (*Legionella* spp., *Pseudomonas aeruginosa,* etc.) in the water supply or in mixers and taps may cause serious infections, especially for vulnerable people.

Water systems in all buildings open to the public should be monitored for Legionella (e.g. hotels and holiday accommodation, campsites, detention centres, etc.) and not just healthcare facilities.

Indeed, European Directives state that the bacteriological water quality should be monitored in the water systems meanwhile the HSE Approved Code of Practice and Guidance (ACOP) document L8 states that duty holders should: identify and assess sources of risk of exposure to Legionella; put in place precautions to prevent or control that risk; and monitor these measures to ensure that they remain effective. This applies in all circumstances where the Health and Safety at Work Act 1974 applies.

The prevention of health risks associated with pathogenic bacteria in water systems should be a constant concern for public buildings and, in particular, Healthcare Facilities.

BIOFIL is a preventative or curative solution to secure the water quality at the point-of-use and protect the health of the user.

BIOFIL RANGE OF WATER FILTERS

A collection of single use water filters: BIOFIL cartridges, shower heads and spouts.

Each **BIOFIL** filter incorporates a hollow fibre membrane with a water filtration threshold of 0.2 micron absolute-rated. They deliver water free from microorganisms (bacteria, protozoa, fungi, particles in water systems, etc.), without changing its chemical composition.

They provide total protection against waterborne infection.

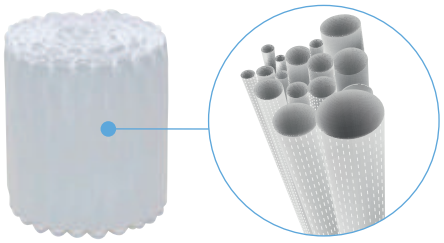
HOLLOW FIBRE: AN INNOVATIVE, TECHNICAL SOLUTION

There are two main types of membrane used in terminal microfiltration devices: flat membrane or hollow fibre membrane.

DELABIE uses the latest technology, hollow fibre membrane filtration, for its range of BIOFIL micro-filters.

This membrane technology, developed in the 1970s, is now recognised as the most effective water purification process. It includes applications up to ultrafiltration (0.001 micron) in numerous environments (domestic, medical, industrial, etc.).

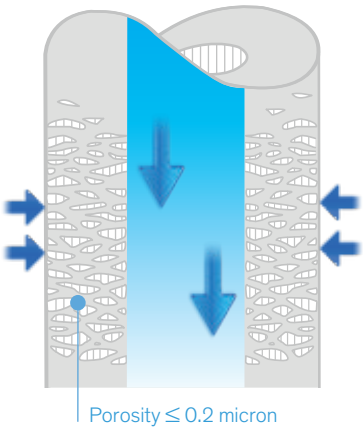
THE PRINCIPLE OF HOLLOW FIBRE FILTRATION



Hollow fibre filter

The BIOFIL filter is made up of a collection of polyethylene hollow fibres grouped together into a unit. The fibres are extremely fine and flexible, with an outer diameter of 0.6mm and a thickness of several tens of microns.

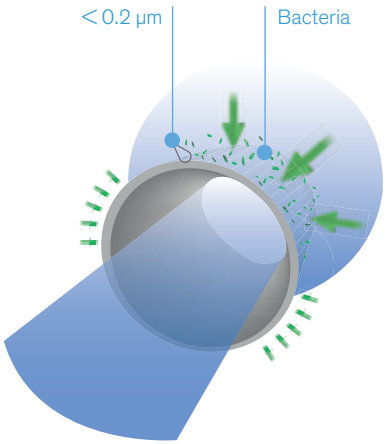
The membranes are hollow and shaped like a straw (tubular).



Microporous structure

The hollow fibre membranes have multiple pores which vary in size from 0.01 - 0.2 micron.
Each membrane consists of several surfaces with microporous structures (micro slits).

Bacteria and any particles in suspension that are larger than 0.2 micron are trapped by these structures and retained permanently on the external surface of the membrane.

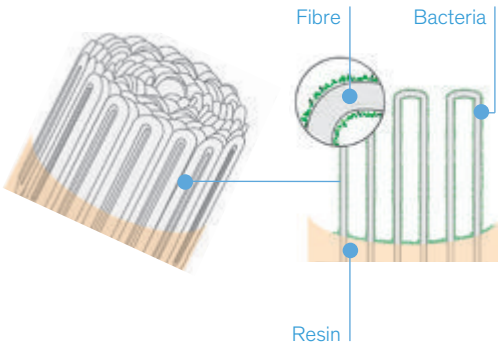


External / Internal frontal filtration

DELABIE uses a frontal filtration system. The water requiring treatment flows at right angles to the filter surface and passes through the membrane due to the pressure difference on either side of the membrane.

The water flows from the external to the internal surface of the fibre.

Bacteria and other microparticles that cannot pass through the gaps in the membrane structure are retained on the outer surface and therefore do not penetrate the membrane. This directional flow ensures that any fibre distortion does not increase the pore size when under pressure.



Filtration area / storage of bacteria

The hollow fibre membrane filtration surface area means that it is possible to filter a larger volume of water.

Consequently the storage capacity for bacteria and impurities trapped inside the filter is much greater.

PRODUCT ADVANTAGES

Filtration area is twice the size
of a flat membrane (1,400cm² versus approximately 500cm²)

- Filters a larger volume of water.
- **Fibre 0.2 micron absolute-rated:** maximum porosity with strictly controlled pore size.

Resistance to clogging

- Particles in suspension remain on the surface of the hollow fibre membrane which slows the clogging of the filter.
- The hollow fibre membrane has a longer lifespan.

Compact filters

Unlike other terminal filters, BIOFIL filters are smaller due to the compact nature of the fibre:

- Suitable for most mixers / taps.
- Suitable for mixers / taps with a low outlet height.
- Less risk of retro-contamination.
- Increased outlet height compared to other filters.

Spout filter: exclusive to DELABIE

Spout incorporating a hollow fibre membrane:

- Suitable for all mixers / taps with a BIOCLIP spout.
- No additional space required (outlet height maintained).
- No devices added to the end of the spout.
- The spout is no longer a potential source of contamination.

TOTAL CONTROL OF THE MANUFACTURING PROCESS

100% quality controlled

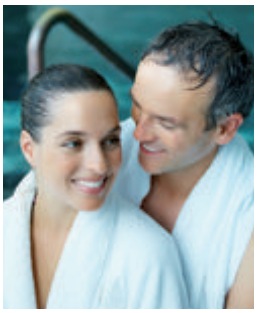
The fibre quality and porosity are continuously monitored during the manufacturing process for 100% of the fibres.

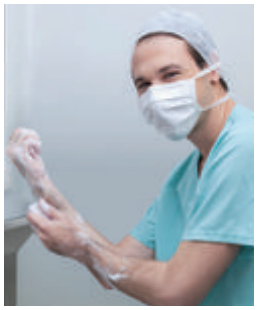
Product is 100% recyclable

DELABIE hollow fibre membrane is made from 100% polyethylene (PE) fibres and is therefore, like the rest of the product, 100% recyclable.

No additives or solvents are used during the manufacturing process.

APPLICATIONS





Non-sterile anti-bacterial BIOFIL filters

The non-sterile BIOFIL filters are suitable for public buildings, particularly healthcare facilities (in areas that do not require sterile filters) for:

- personal bathing
- hygienic hand washing
- hydrotherapy

Sterile anti-bacterial BIOFIL filters

The sterile BIOFIL filters are recommended in healthcare facilities and are particularly indispensable for:

- washing wounds
- rinsing invasive medical devices (e.g. endoscopes)

OPTIMISED TRACEABILITY FOR BIOFIL FILTERS

To control the health risks associated with water, the whole process from the manufacture of the components to the use of the finished product must be completely traceable.

Individual packet label

BIOFIL sterile filters have a unique batch number which can be easily traced back through the production process.

Double labelling on the filter

Each filter is supplied with 2 waterproof labels which identify the product and ensure traceability when the filter is changed.

Label 1 can be removed and transferred to the record log, ensuring traceability

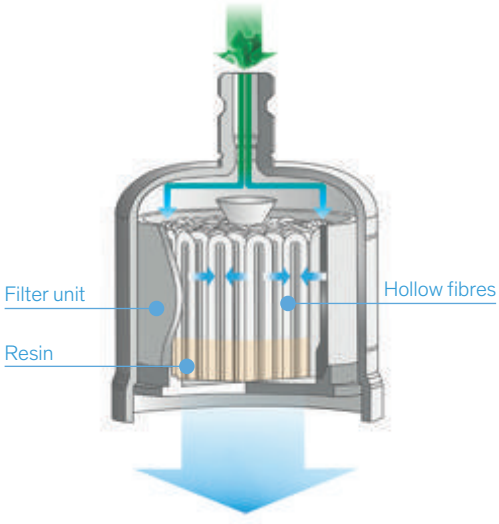
- Filter reference
- Enter dates for start and end of service by hand
- Batch number (sterile models only)
- Barcode

Label 2 remains on the filter

- Enter dates for start and end of service by hand
- Enter batch number by hand (sterile models only)

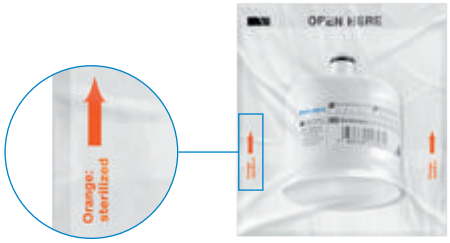
BIOFIL FILTER PERFORMANCE

Bacteriologically controlled water



Water passage through the filter

OTHER FEATURES



ISO 9001 DEKRA

Bacterial challenge

Bacterial retention test conforming to ASTM F838*.

The Rheinland TÜV institute, recognised as a CBTL (Certification Body and Testing Laboratory) by the IECEE for medical devices (the IEC System for Conformity Testing and Certification) submitted the BIOFIL filters to the bacterial challenge. It confirms the effective bacterial retention power of the filters used for the decontamination of liquids.
The test involves passing a dose of *Brevundimonas diminuta* bacteria (ATCC 19146) which is the smallest bacterial species, through the filter at a minimum concentration of 10^7 CFU / cm² on the filtration surface.

A filter is designated a decontaminant if no colonies are counted in the filtered water.

When subjected to this test, all BIOFIL filters delivered an effluent free from bacteria, so they have a sterilising grade of 0.2 micron absolute-rated.

** Standard Test Method for Determining Retention of Membrane Filters Utilised for Liquid Filtration.*

BIOFIL Model	No. of colonies / surface upstream (CFU / cm²)	*Brevundimonas diminuta* bacterial challenge downstream *(CFU)***	No. of bacteria at the filter outlet
Cartridge	1×10^7	1.4×10^{10}	0
Shower head	1×10^7	1.4×10^{10}	0
Spout	1×10^7	1.2×10^{10}	0

*** The filters demonstrated their efficacy in filtering a large concentration of bacteria under pressure.*

Sterilisation complies with the European standard EN ISO 11137

After manufacture the BIOFIL filters are sterilised using gamma rays to ensure that they are sterile when delivered.

Each individual packet has a **visual marker showing that it has been sterilised.**

- After gamma sterilisation, BIOFIL filters have a shelf life of 3 years. The product expiry date is marked on each individual packet.

Certificate of Sanitary Compliance

All BIOFIL filters conform to the CPDW directive and the Order of 29 May 1997, as amended, and the French Ministry of Health Circular DGS/SD7A2002 no. 571 of 25 November 2002.

Certified ISO 9001: 2008

LIFESPAN AND DURABILITY OF BIOFIL FILTERS

Maximum period of use

Non-sterile anti-bacterial filters and sterile anti-bacterial filters (all germs: *Legionella spp., Pseudomonas aeruginosa, etc.*) can be used for up to **62 days** after initial installation.

After this time, DELABIE recommends changing the filter to avoid any risk of retro-contamination from the bacteria concentrated in the filter.

Note: The amount of impurities in the water will vary between water systems. Filters will therefore become clogged at different rates. If the filter becomes clogged before the provisional replacement date of the filter, it must be changed. If clogging is an issue, DELABIE recommends pre-filtering the water upstream at different levels of the system to catch excessive amounts of sand and scale. Bacterial proliferation is significantly reduced in an installation where the water is pre-filtered, and the lifespan of all equipment is greatly increased.

The installation guide provides information about how to install the filters to avoid any contamination of the product. The filters are for single use, intermittent use does not extend the life of the filter.

Compatible with and resistant to different curative treatments

BIOFIL filters will withstand the frequent thermal and chemical shocks that are often undertaken in public buildings, especially healthcare facilities.

During chemical or thermal shocks, the impurities that are released will be trapped in the filter and reduce its lifespan. DELABIE therefore recommends changing the filter after any treatment.

- **Resistance to thermal shocks:**

  Temperatures of 70°C for a cumulative period of 30 minutes during its lifetime.

- **Resistance to chemical shocks:**

  Chlorine levels up to 100 ppm at a flow rate of 0.6 lpm for 30 minutes.

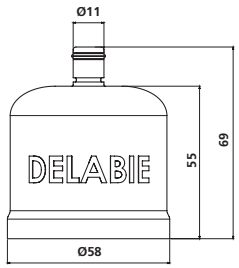
BIOFIL CARTRIDGE

Single use cartridge filter, sterilising grade 0.2µm absolute-rated. Provides immediate protection against waterborne nosocomial infections.

- Hydrophilic polyethylene hollow fibres.
- Filtration area: 1,400cm².
- Filtration flow rate: 12 lpm* at 3 bar at the filter outlet (filter only, excludes any flow rate restrictor / regulator in the shower / mixer outlet).
- Maximum upstream pressure at point-of-use: 5 bar.
- Maximum lifespan: 62 days after installation.
- Compatible with and resistant to chemical and thermal shocks:
  Thermal shocks: temperatures of 70°C for a cumulative period of 30 minutes during its lifetime.
  Chemical shocks: Chlorine levels up to 100 ppm at a flow rate of 0.6 lpm for 30 minutes.

**Average flow rate during the product lifespan.*

20050A.10P/30050A.10P



20050P.10P/30050P.10P

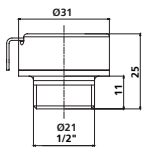
10 sterile anti-bacterial cartridge filters	
Inlet without O-ring (Cartridge A)	**20050A.10P**
Inlet with O-ring (Cartridge P)	**20050P.10P**

10 non-sterile anti-bacterial cartridge filters	
Inlet without O-ring (Cartridge A)	**30050A.10P**
Inlet with O-ring (Cartridge P)	**30050P.10P**

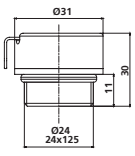
• **Option**: Push-fit connectors (see below)

Push-fit connectors suitable for all mixers / taps

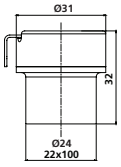
Cartridge filters should be installed using push-fit connectors. They are quick and easy to install.



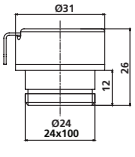
820023



820025



820022/820122



820024/820124

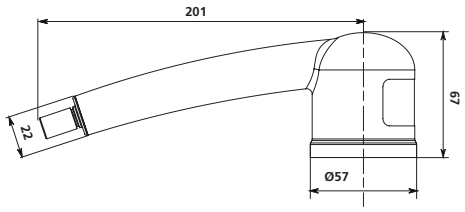
Push-fit connector for BIOFIL cartridge A	
F22/100	**820022**
M24/100	**820024**
M½"	**820023**
M24/125	**820025**
Push-fit connector for BIOFIL cartridge P	
F22/100	**820122**
M24/100	**820124**

BIOFIL SHOWER HEAD

Single use shower head filter, sterilising grade 0.2µm absolute-rated. Provides immediate protection against waterborne nosocomial infections.

- Hydrophilic polyethylene hollow fibres.
- Filtration area: 1,400cm².
- Filtration flow rate: 12 lpm* at 3 bar at the shower head outlet (filter only, excludes any flow rate restrictor / regulator in the shower / mixer outlet).
- Maximum upstream pressure at point-of-use: 5 bar.
- Maximum lifespan: 62 days after installation.
- Compatible with and resistant to chemical and thermal shocks:
  Thermal shocks: temperatures of 70°C for a cumulative period of 30 minutes during its lifetime.
  Chemical shocks: Chlorine levels up to 100 ppm at a flow rate of 0.6 lpm for 30 minutes.

**Average flow rate during the product lifespan.*



20060.10P/30060.10P

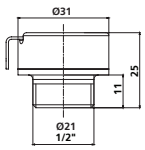
10 sterile anti-bacterial shower head filters	**20060.10P**
10 non-sterile anti-bacterial shower head filters	**30060.10P**

• **Option**: Push-fit connector (see below)

Push-fit connector suitable for shower heads

Shower head filters should be installed using push-fit connectors.

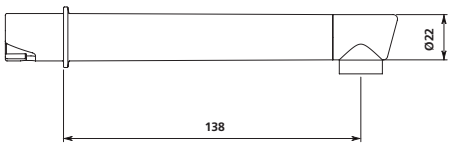
- Rapid connection to shower hose, no need for tools.
- No need to shut-off the water supply.



820023

Push-fit connector for M½" shower head	**820023**

BIOFIL SPOUT



20040.10P/30040.10P

Single use spout filter, sterilising grade 0.2µm absolute-rated. Can be installed instead of BIOCLIP spouts. Provides immediate protection against waterborne nosocomial infections.

- Hydrophilic polyethylene hollow fibres.
- Filtration area: 1,200cm².
- Filtration flow rate: 6 lpm* at 3 bar with a star-shaped flow straightener (filter only, excludes any flow rate restrictor / regulator in the mixer / tap outlet).
- Maximum upstream pressure at point-of-use: 5 bar.
- Maximum lifespan: 62 days after installation.
- Compatible with and resistant to chemical and thermal shocks:
  Thermal shocks: temperatures of 70°C for a cumulative period of 30 minutes during its lifetime.
  Chemical shocks: Chlorine levels up to 100 ppm at a flow rate of 0.6 lpm for 30 minutes.

**Average flow rate during the product lifespan.*

10 sterile anti-bacterial spout filters	**20040.10P**
10 non-sterile anti-bacterial spout filters	**30040.10P**

Mixers with removable spouts: the stainless steel spout may be substituted with a disposable spout or BIOFIL filter spout.

SECURITHERM with BIOCLIP spout

Wall-mounted single control thermostatic mixer with removable spout

- Anti-scalding failsafe: immediate shut-off if cold water supply fails.
- Securitouch thermal insulation prevents burns.
- No non-return valves on the inlets.
- Body and spout with smooth interiors and low water volume.
- Flow rate limited to 7 lpm at 3 bar.
- Supplied with in-line STOP/PURGE connectors.

With stainless steel spout	
150mm centre-to-centre	**H9611P**
200mm centre-to-centre	**H9614P**

Electronic mixer with BIOCLIP spout

With removable, swivel spout

- Independent IP65 electronic control unit.
- 230/12V mains supply with transformer.
- Flow rate limited to 7 lpm at 3 bar.
- Body and spout with smooth interiors.
- Adjustable duty flush (pre-set at ~60 seconds every 24 hours after last use).
- Shockproof infrared presence detection sensor.

With stainless steel spout	
H. 160mm L. 185mm, 15mm CF	**20870T115**
H. 300mm L. 185mm, 15mm CF	**20870T315**

Mixer with BIOCLIP swivel spout

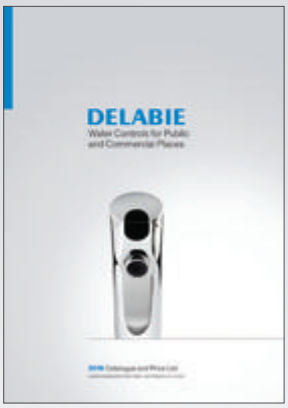
Mechanical mixer with removable spout, smooth interior

- High, removable swivel spout.
- Pre-set maximum temperature limiter.
- Flow rate limited to 5 lpm at 3 bar.
- Body and spout with smooth interiors.
- Hygiene control lever L. 215mm requires no manual contact.

With stainless steel spout	
H. 160mm L. 180mm	**2870T1**
H. 300mm L. 180mm	**2870T3**

AVAILABLE CATALOGUES:

DOC.609UK: Water Controls for Public and Commercial Places
DOC.950UK: Accessibility and Independence - Hygienic Accessories for Public and Commercial Places
DOC.900UK: Water Controls for Healthcare Facilities and Retirement Homes
DOC.750UK: Stainless Steel Sanitary Ware



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