

Home of Biological Filter Media



**Warden Biomedia**



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## Warden Biomedia

Warden Biomedia specialises in the research and development of random filter media for aeration and biological treatment plants. With the philosophy of increased surface area, the eco-friendly biological filter media are manufactured with specific design features to increase the efficiency of the effluent treatment process.

At Warden Biomedia, we design, manufacture and supply Random Biological Filter Media to improve aerobic treatment across the full range of applications – from the largest municipal sewage treatment plant down to a garden fishpond.

In a choice of spherical and tube formats, to suit the application, the random filter media provide excellent ventilation to speed-up the aerobic reaction, and also have high voidage to prevent blocking (and the resulting slowing-down) of the wastewater treatment process that might occur.

With purpose-designed features, the media in the Warden Biomedia filter range are an excellent alternative to traditional mineral-based media and are ideal for improved performance in new wastewater treatment plants. In addition they are perfect for overcoming problems in established trickling filter beds. Biological filter media of the relevant dimensions can replace all or part of the mineral-based media to improve system efficiency where it has become impaired by overloading.

Selecting the right media for the application has never been an easy task. With our extensive experience, we can help clients select the accurate filter media for each application, ensuring the most appropriate and cost-effective solution to meet their needs.

## Features:

The choice of spherical and tube formats, offers performance advantages not found in other random biological media

- Our range of biomedica can be used as a direct replacement for gravel media, thus increasing both the degree of treatment and capacity of existing trickling filters
- Our media greatly increase the contact time of the wastewater within the media, resulting in high efficiency with minimum recirculation
- Due to continuous redistribution of water flow, the media offer a very high resistance to clogging
- Settling effluent Total Suspended Solids (TSS) is much lower
- Spherical shape designs feature triangular fins which increase the total surface area and encourage the formation of the biological films of bacteria, protozoa and fungi which will eat and biologically break down the organic content
- The edges are serrated, this enables them to interlock in the filter bed giving excellent mechanical strength
- They assist to distribute wastewater thoroughly, enhancing mixing and contact between wastewater and bacteria
- They increase mean cell residence time thus increasing the efficiency of the wastewater treatment unit
- Light weight, easy installation
- The surface textures of our products offer a key which enables biomass or bacteria to adhere by special means, to lessen loss of media during installation procedures
- Made with eco-friendly recycled polypropylene material
- Compact, low maintenance
- Patented technologies
- R&D driven

## Advantages:

Warden's biological filter media are feasible for both industrial and municipal wastewater and are used for organic removal, nitrification and denitrification

- Low weight
- Large active surface area
- Compact
- Easy upgrade of existing plants
- Durable, long-life
- Minimal clogging
- Random filter media
- High BOD5 reduction (up to 90%) and nitrification
- Low capital, low installation, operating and maintenance costs
- Corrosion resistant components

## Applications:

Warden Biomedica has numerous applications in wastewater treatment. The shape of the media has a significant influence on application and must be considered along with specific surface area and void ratio. The surface area of media will be covered with biofilm. Attached growth bacteria will function cooperatively with suspended bacteria, thus its efficiency is higher when compared with other systems. Applications are as follows

- Upgrading existing gravel trickling filters
- BOD reduction in trickling filters
- Complete secondary treatment
- Trickling filters / solids contact (TF/SC)
- Roughing of pre-treatment
- Nitrification
- Denitrification
- Organic removal
- Detoxification





# Biofil

With a surface area of 135m<sup>2</sup>/m<sup>3</sup> Biofil has a spherical design, suitable for applications where larger or greater voidage is required.



## Technical Information

Material	Polypropylene*
Specific Gravity	0.94 ± 0.02
Dimensions	95 x 65 mm
Surface Area	135 m <sup>2</sup> / m <sup>3</sup>
Voidage	95%
Weight (dry)	45 kg / m <sup>3</sup>
Weight (operational)	up to 477 kg / m <sup>3</sup>
Consolidation	5 - 10%
Flow Direction	Non specific

\*Recycled Polypropylene



With purpose-designed features Biofil, in the Warden Biomedia filter range, are an excellent alternative to traditional mineral-based media and are ideal for improved performance in new wastewater treatment plants.

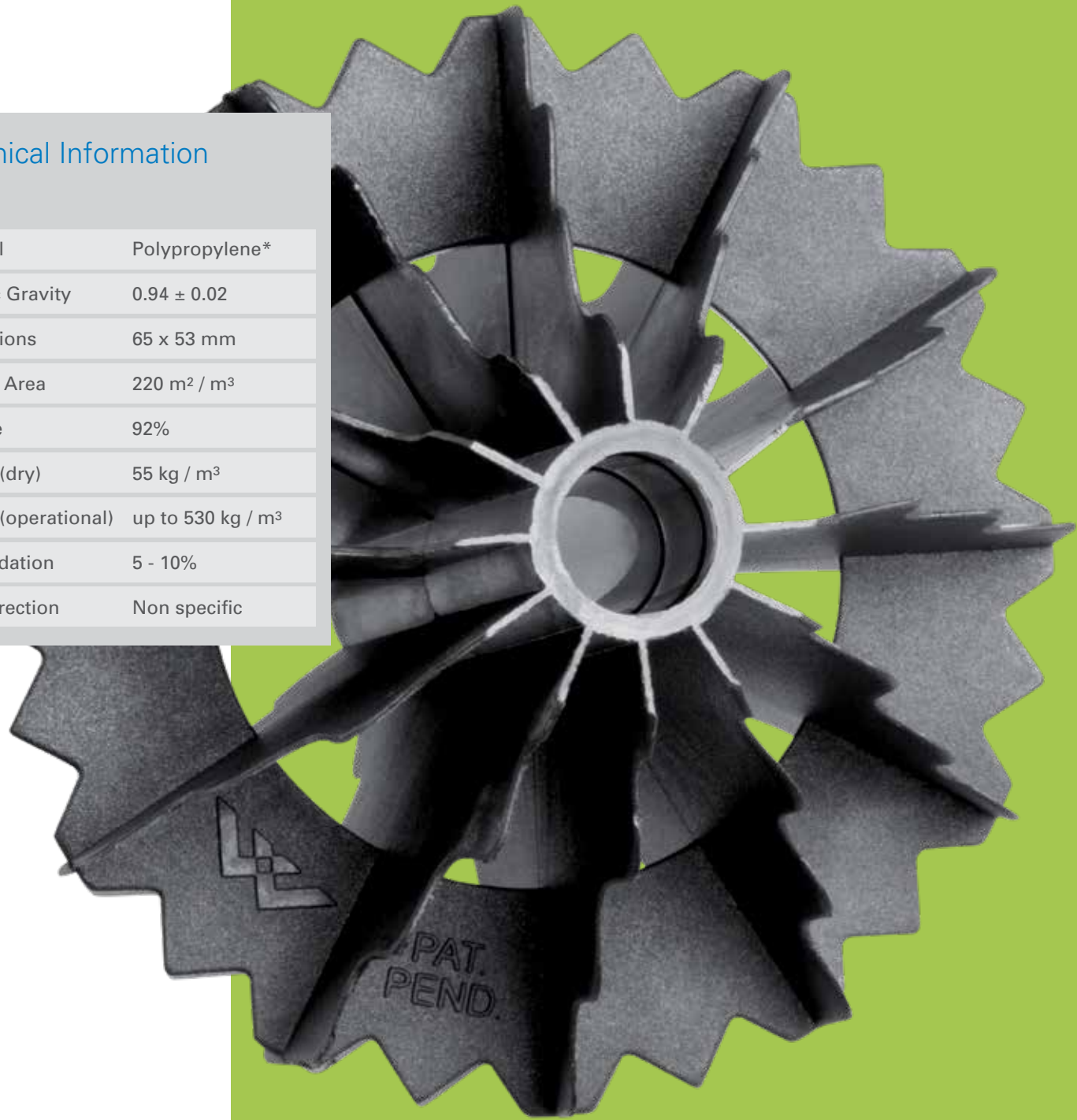
## Suitable Applications

Biofil is ideal for trickling filter beds in large scale industrial and municipal wastewater treatment plants, and is suitable for the

- Printing industry
- Dairy product producers
- Large SAF units
- Municipal wastewater treatment plants
- Industrial wastewater treatment plants

Technical Information	
Material	Polypropylene*
Specific Gravity	0.94 ± 0.02
Dimensions	65 x 53 mm
Surface Area	220 m <sup>2</sup> / m <sup>3</sup>
Voidage	92%
Weight (dry)	55 kg / m <sup>3</sup>
Weight (operational)	up to 530 kg / m <sup>3</sup>
Consolidation	5 - 10%
Flow Direction	Non specific

\* Recycled Polypropylene



With purpose-designed features Bioball, in the Warden Biomedia filter range, are an excellent alternative to traditional mineral-based media and are ideal for improved performance in new wastewater treatment plants.

### Suitable Applications

They are ideal for trickling filter beds in large scale industrial and municipal wastewater treatment plants, and suitable for the

- Printing industry
- Dairy product producers
- Large SAF units
- New housing developments
- Municipal wastewater treatment plants
- Industrial wastewater treatment plants

# Bioball

Bioball has a spherical design and surface area of 220m<sup>2</sup>/m<sup>3</sup>. Bioball is a perfect solution when surface area is more important than voidage.





# Biomarble

With a spherical design and surface area of 310m<sup>2</sup>/m<sup>3</sup>, Biomarble has the highest surface area of the three spherical designs in the Biomedia filter range.



## Technical Information

Material	Polypropylene*
Specific Gravity	0.94 ± 0.02
Dimensions	46 x 36 mm
Surface Area	310 m <sup>2</sup> / m <sup>3</sup>
Voidage	90%
Weight (dry)	64 kg / m <sup>3</sup>
Weight (operational)	up to 583 kg / m <sup>3</sup>
Consolidation	5 - 10%
Flow Direction	Non specific

With purpose-designed features Biomarble, in the Warden Biomedia filter range, is an excellent alternative to traditional mineral-based media and is ideal for improved performance in new wastewater treatment plants.

## Suitable Applications

Biomarble caters for a wide range of biological wastewater treatment plants of different sizes serving

- New housing developments
- Commercial premises
- Single dwellings
- Small or large SAF units
- Municipal wastewater treatment plant
- Industrial wastewater treatment plant

\*Recycled Polypropylene

The Biopipe is designed to provide a large protected surface area for the biofilm and optimal conditions for the bacteria culture when the media are suspended in water. A durable, rugged and highly efficient media for moving bed biological reactors (MBBR) and integrated fixed film activated sludge (IFAS) systems.

Its innovative design creates a high percentage of protected surface area for micro-organisms to adhere. In turn, this increases the overall biomass concentration and can reduce the tank volume required for wastewater treatment. Large openings allow for the wastewater to freely pass through the media which helps maintain a healthy and thin biofilm.

### Suitable Applications

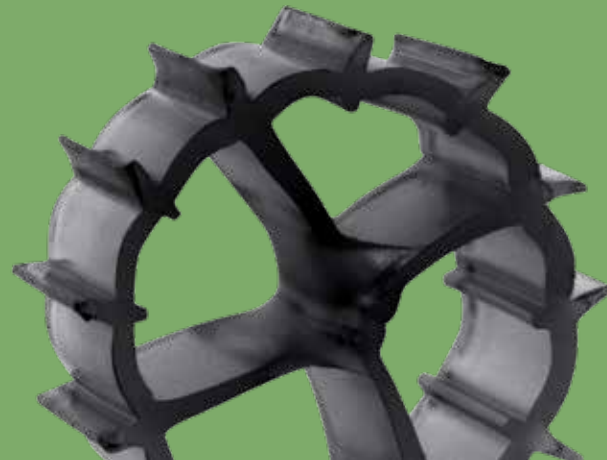
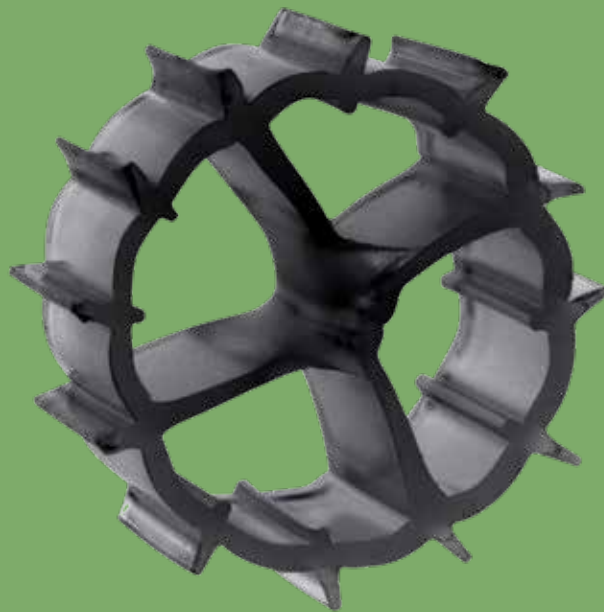
Biopipe is ideal for MBBR industrial and municipal treatment plants where higher surface area is typically important. It is also designed for use in aquatic applications ranging from garden fishponds to large tank.

- Private houses and small communities
- Service stations, restaurants and public houses
- Rural schools, hospitals, care homes for the elderly
- Camping sites, farms
- Organic industrial effluents
- Municipal wastewater treatment plant
- Industrial wastewater treatment plant

### Technical Information

Material	Polypropylene*
Specific Gravity	0.92 ± 0.02
Dimensions	21.5 mmø x 13 mm
Surface Area	600 m <sup>2</sup> / m <sup>3</sup>
Voidage	82.5%
Weight (dry)	133 kg / m <sup>3</sup>
Consolidation	5 - 10%
Flow Direction	Non specific

\*Recycled Polypropylene

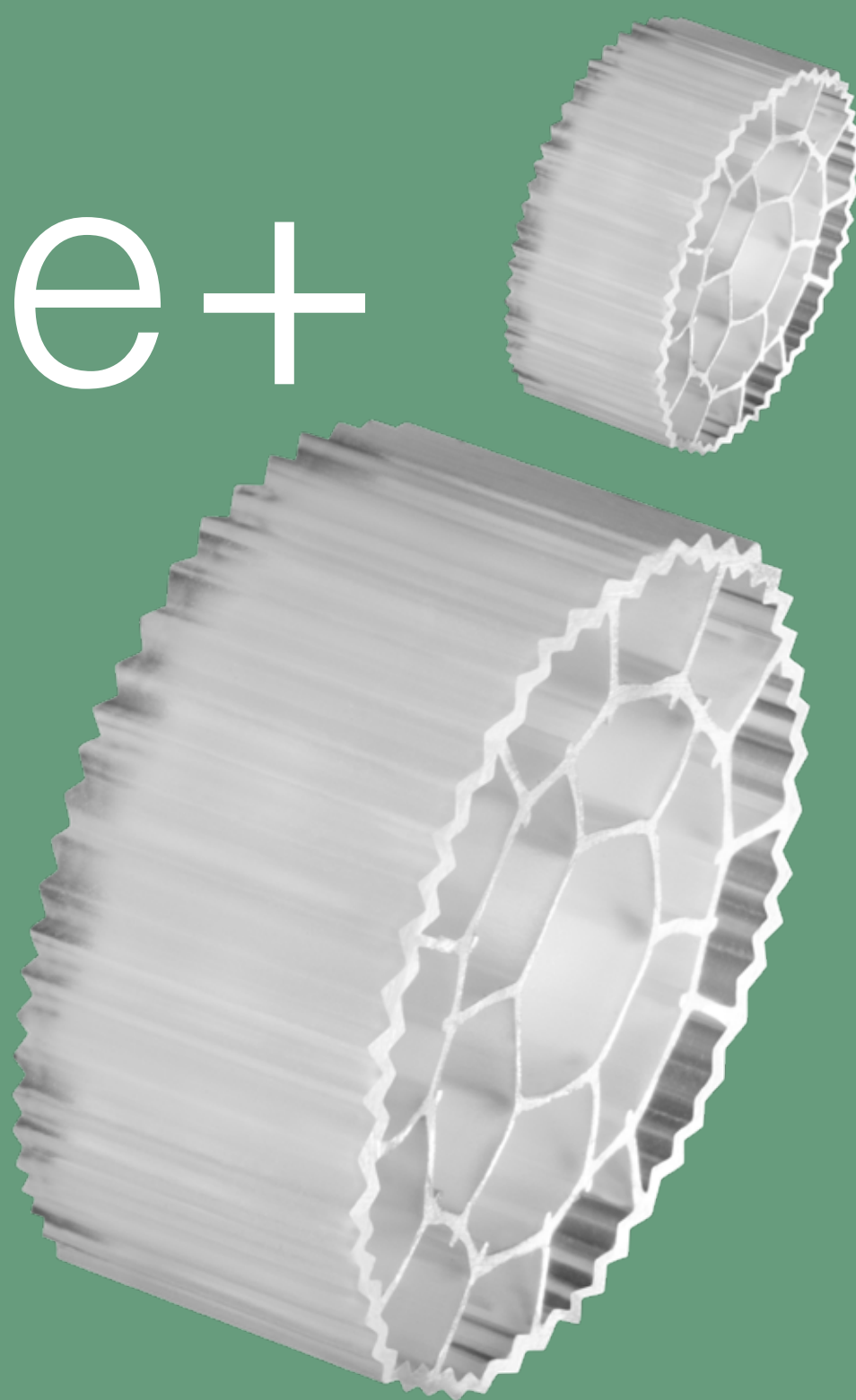


# Biopipe

Wheel shaped random filter media with internal and external fins and surface area of 600m<sup>2</sup>/m<sup>3</sup>.

# Biopipe+

Biopipe+ has a wheel shape with internal fins and large openings, offering a protected surface area of 500m<sup>2</sup>/m<sup>3</sup>.



## Technical Information

Material	Virgin PP
Specific Gravity	0.90
Dimensions	25 mmø x 10 mm
Protected Surface Area	500 m <sup>2</sup> / m <sup>3</sup>
Voidage	83%
Weight (dry)	114 kg / m <sup>3</sup>
Flow Direction	Non specific

## Technical Information

Material	Virgin HDPE
Specific Gravity	0.96
Dimensions	25 mmø x 10 mm
Protected Surface Area	500 m <sup>2</sup> / m <sup>3</sup>
Voidage	83%
Weight (dry)	120 kg / m <sup>3</sup>
Flow Direction	Non specific

The Biopipe+ is designed to provide a large protected surface area for the biofilm and optimal conditions for the bacteria culture when the media are suspended in water. A durable, rugged and highly efficient media for moving bed biological reactors (MBBR) and integrated fixed film activated sludge (IFAS) systems.

Its innovative design creates a high percentage of protected surface area for micro-organisms to adhere. In turn, this increases the overall biomass concentration and can reduce the tank volume required for wastewater treatment. Large openings allow for the wastewater to freely pass through the media which helps maintain a healthy and thin biofilm

## Suitable Applications

Biopipe+ caters for MBBR industrial and municipal treatment plants where extreme surface area is important. It is also suitable for use in aquatic applications ranging from garden fishponds to large tanks.

- Packaged wastewater treatment plant
- Municipal wastewater treatment plant
- Industrial wastewater treatment plant
- Aquaculture applications



Bioflo+ is designed to provide a large protected surface area for the biofilm and optimal conditions for the bacteria culture when the media are suspended in water. A durable, rugged and highly efficient media for moving bed biological reactors (MBBR), integrated fixed film activated sludge (IFAS) systems and Recirculating Aquaculture Systems (RAS).

Its innovative design creates a high percentage of protected surface area for micro-organisms to adhere. In turn, this increases the overall biomass concentration and can reduce tank volumes required for wastewater treatment, thereby reducing civil and excavation costs. Large openings allow for the wastewater to freely pass through the media which helps maintain a healthy and thin biofilm.

### Suitable Applications

Bioflo+ caters for MBBR industrial and municipal treatment plants where extreme surface area is important. It is also suitable for use in aquatic applications ranging from garden fishponds to large tanks.

- Municipal wastewater treatment plant
- Industrial wastewater treatment plant
- Recirculating Aquaculture Systems used in fish farming

#### Technical Information

Material	Virgin PP
Specific Gravity	0.90
Dimensions	16.75 mmø x 5 mm
Total Surface Area	1036 m <sup>2</sup> / m <sup>3</sup>
Protected Surface Area	800 m <sup>2</sup> / m <sup>3</sup>
Voidage	63%
Weight (dry)	170 kg / m <sup>3</sup>
Flow Direction	Non specific

#### Technical Information

Material	Virgin HDPE
Specific Gravity	0.96
Dimensions	16.75 mmø x 5 mm
Total Surface Area	1036 m <sup>2</sup> / m <sup>3</sup>
Protected Surface Area	800 m <sup>2</sup> / m <sup>3</sup>
Voidage	63%
Weight (dry)	180 kg / m <sup>3</sup>
Flow Direction	Non specific

# Bioflo+

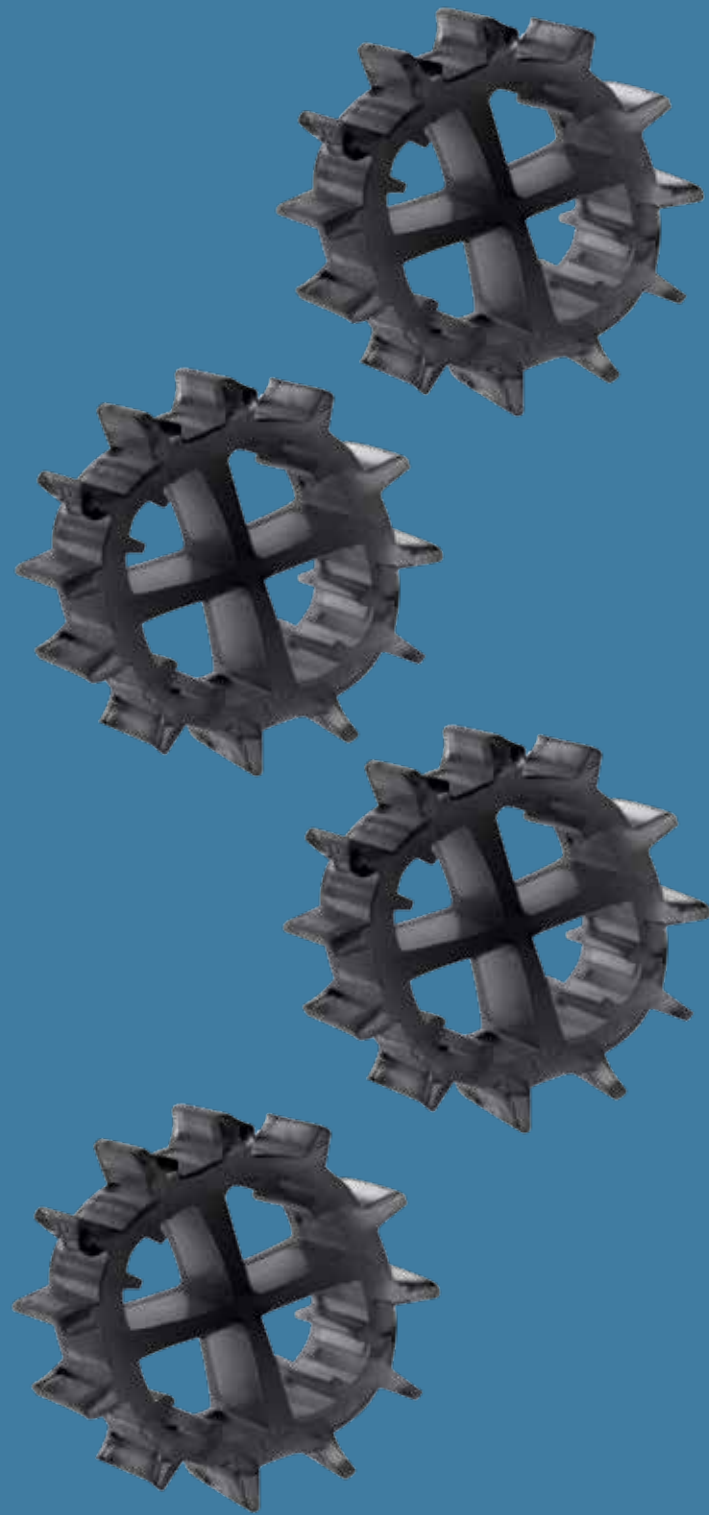
Bioflo+ has a wheel shape with internal fins and large openings, offering a protected surface area of 800m<sup>2</sup>/m<sup>3</sup>.





# Biotube

Spoke design biological filter media with internal and external fins and surface area of 1000m<sup>2</sup>/m<sup>3</sup>.



## Technical Information

Material	Polypropylene*
Specific Gravity	0.97
Dimensions	12 mmø x 8 mm
Surface Area	1000 m <sup>2</sup> / m <sup>3</sup>
Voidage	80%
Weight (dry)	180 kg / m <sup>3</sup>
Consolidation	5 - 10%
Flow Direction	Non specific

\*Recycled Polypropylene

The Biotube is designed to provide a large protected surface area for the biofilm and optimal conditions for the bacteria culture when the media are suspended in water. A durable, rugged and highly efficient media for moving bed biological reactors (MBBR) and integrated fixed film activated sludge (IFAS) systems.

Its innovative design creates a high percentage of protected surface area for microorganisms to adhere. In turn, this increases the overall biomass concentration and can reduce the tank volume required for wastewater treatment. Large openings allow for the wastewater to freely pass through the media which helps maintain a healthy and thin biofilm.

## Suitable Applications

Biotube caters for MBBR industrial and municipal treatment plants where extreme surface area is important. Like Biopipe it is also designed for use in aquatic applications ranging from garden fishponds to large tanks

- Private houses and small communities
- Service stations, restaurants and public houses
- Rural schools, hospitals, care homes for the elderly
- Camping sites, farms
- Organic industrial effluents
- Municipal wastewater treatment plant
- Industrial wastewater treatment plant





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