Home of Biological Filter Media

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.
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 BOD reduction (up to 90%) and nitrification
- Low capital, low installation, operating and maintenance costs
- Corrosion resistant components

Warden Biomedia 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
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

Biofil

With a surface area of 135m²/m³ Biofil has a spherical design, suitable for applications where larger or greater voidage is required.

**Technical Information**

- **Material**: Polypropylene*  
- **Specific Gravity**: 0.97  
- **Dimensions**: 95 x 65 mm  
- **Surface Area**: 135 m² / m³  
- **Voidage**: 95%  
- **Weight (dry)**: 45 kg / m³  
- **Weight (operational)**: up to 477 kg / m³  
- **Consolidation**: 5 - 10%  
- **Flow Direction**: Non specific
Bioball has a spherical design and surface area of 220$m^2$/m$^3$. Bioball is a perfect solution when surface area is more important than voidage.

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.

**Technical Information**

<table>
<thead>
<tr>
<th>Material</th>
<th>Polypropylene*</th>
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<tbody>
<tr>
<td>Specific Gravity</td>
<td>0.97</td>
</tr>
<tr>
<td>Dimensions</td>
<td>65 x 53 mm</td>
</tr>
<tr>
<td>Surface Area</td>
<td>220 m$^2$/m$^3$</td>
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<tr>
<td>Voidage</td>
<td>92%</td>
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<tr>
<td>Weight (dry)</td>
<td>55 kg/m$^3$</td>
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<tr>
<td>Weight (operational)</td>
<td>up to 530 kg/m$^3$</td>
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<td>Consolidation</td>
<td>5 - 10%</td>
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<tr>
<td>Flow Direction</td>
<td>Non specific</td>
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*Recycled Polypropylene

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
Biomarble

With a spherical design and surface area of 310m²/m³, Biomarble has the highest surface area of the three spherical designs in the Biomega filter range.

With purpose-designed features Biomarble, in the Warden Biomega 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
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

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<th>Material</th>
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<tbody>
<tr>
<td>Specific Gravity</td>
<td>0.97</td>
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<tr>
<td>Dimensions</td>
<td>21.5 mmø x 13 mm</td>
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<tr>
<td>Surface Area</td>
<td>600 m² / m³</td>
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<tr>
<td>Voidage</td>
<td>82.5%</td>
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<td>Weight (dry)</td>
<td>133 kg / m³</td>
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<td>Consolidation</td>
<td>5 - 10%</td>
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<tr>
<td>Flow Direction</td>
<td>Non specific</td>
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Biopipe
Wheel shaped random filter media with internal and external fins and surface area of 600m²/m³.
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.

Biopipe+ has a wheel shape with internal fins and large openings, offering a protected surface area of 500m²/m³.

### Technical Information

**Material**
- Virgin PP
- Virgin HDPE

**Specific Gravity**
- 0.90
- 0.96

**Dimensions**
- 25 mm ø x 10 mm
- 25 mm ø x 10 mm

**Protected Surface Area**
- 500 m² / m³
- 500 m² / m³

**Voidage**
- 83%
- 83%

**Weight (dry)**
- 114 kg / m³
- 120 kg / m³

**Flow Direction**
- Non specific
- Non specific

**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
Biotube

Spoke design biological filter media with internal and external fins and surface area of 1000m²/m³.

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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<tr>
<td>Specific Gravity</td>
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<td>Dimensions</td>
<td>12 mmø x 8 mm</td>
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<td>Surface Area</td>
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<td>Voidage</td>
<td>80%</td>
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<td>Weight (dry)</td>
<td>180 kg / m³</td>
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<td>Consolidation</td>
<td>5 - 10%</td>
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