Filterra™ Bioretention System
About Imbrium® Systems

Imbrium Systems is an engineered stormwater treatment company that designs and manufactures stormwater treatment solutions that protect water resources from harmful pollutants. By developing technologies to address the long-term impact of urban runoff, Imbrium ensures our clients’ projects are compliant with government water quality regulations.

Imbrium products are sold through our network of value-added partners. These partners provide the highest level of service at every stage of your project.

To find your local Filterra representative please visit [www.imbriumsystems.com/localrep](http://www.imbriumsystems.com/localrep).

Learn About Filterra™

Go online to [www.imbriumsystems.com/filterra](http://www.imbriumsystems.com/filterra) and watch our video to learn about the Filterra system, including:

- Components of the Filterra system
- How Filterra removes pollutants such as TSS, phosphorus, nitrogen, metals, oils, and grease
- How Filterra can be paired with other solutions to achieve Low Impact Development (LID) and green infrastructure goals
- How the Filterra system is maintained

[To view the Filterra animation, visit www.imbriumsystems.com/filterra](http://www.imbriumsystems.com/filterra).
Bioretention as a Stormwater Management Strategy

FILTRATION AND BIOLOGICAL TREATMENT IN ONE SYSTEM

Stormwater management applications such as Low Impact Development (LID) and Green Infrastructure (GI) have continued to gain more exposure in Canada and across the globe. Implementing LID and GI in urban environments is challenging, as they often require a large footprint. That doesn’t mean LID/GI is not possible, it just means the solution may take a more engineered form. Imbrium has a unique solution – the Filterra Bioretention System.

WHAT IS FILTERRA?

Filterra is an engineered biofiltration device with components that make it similar to bioretention in pollutant removal and application, but has been optimized for high volume/flow treatment in a compact system. Its small footprint allows Filterra to be used on highly developed sites such as landscaped areas, parking lots, and streetscapes. Filterra is adaptable and can be used alone or in combination with perforated pipes or chambers to optimize runoff reduction.

HOW FILTERRA WORKS

Stormwater runoff enters the Filterra system through a curb-inlet opening and flows through a specially designed filter media mixture contained in a landscaped modular container. The biofiltration media captures and immobilizes pollutants; some of these pollutants are then decomposed, volatilized and incorporated into the biomass of the Filterra system’s micro/macro fauna and flora. Stormwater runoff flows through the media and into an underdrain system at the bottom of the container, where the treated water is discharged.

Filterra enhances the appearance of your site while removing pollutants.

The Standard Offline Filterra system utilizes a downstream catch basin or curb inlet for bypass flows allowing for the shallowest profile (typical 1.3 m) and most flexible design of any of the Filterra configurations.
Filterra™ Features & Benefits

- Verified Performance – Multiple third-party field tests confirmed Filterra meets regulatory requirements with verified pollutant removal under TAPE, TARP, and NJCAT testing.
- Value – Filterra offers a cost effective stormwater treatment system featuring easy installation and simple maintenance.
- Aesthetics – Landscaping enhances the appearance of your site making it more attractive while removing pollutants.
- Flexible – Multiple sizes, shallow profile (1.3 m), and a variety of configurations available to meet site-specific needs.
- Versatile – Filterra is ideal for both new construction and urban retrofits, as well as:
  - Streetscapes
  - Urban settings
  - Parking lots
  - Roof drains
  - Highways
- Easy Installation – Delivered on-site, ready to lift and place.
- Activation – Performed by certified providers to ensure effective performance from the start.
- Maintenance – Simple and safe (no confined space access), and the first year of maintenance is included with the purchase of every system.
- LEED – Obtain up to 12 points for LEED Certification.
Additional Filterra™ Configurations

Filterra is offered in multiple configurations to meet site specific needs. These configurations make Filterra a versatile yet effective stormwater BMP with a low life-cycle cost.

FILTERRA - STREET TREE

The Filterra Street Tree accommodates trees larger than the standard small-medium-sized trees used in standard Filterra units. These larger trees can provide benefits to site landscape designs on canopy cover, tree count, or percentage of green area.

FILTERRA – RECESSED TOP

The Filterra Recessed Top allows for a seamless integration of Filterra into the landscape design with pavers, mulch, sod, or even architectural concrete.

FILTERRA INTERNAL BYPASS – PIPE

The Filterra Internal Bypass – Pipe treats stormwater runoff from rooftops or other sub-grade sources such as area drains. Higher flows bypass the biofiltration treatment system via an overflow/bypass pipe design.

Cold Climate Considerations

Bioretention systems such as Filterra rely on the vegetation to assist in pollutant removal. Winter road clearing efforts can wreak havoc on roadside landscaping and stormwater structures. For the best performance, Imbrium recommends the following:

- Use salt tolerant plants. Refer to Imbrium’s recommended plant list for Filterra systems.
- Consider using taller species with suitable system placement for increased visibility and identification during large snow events.
- Perform maintenance at the end of winter just prior to the growing season to remove mulch contaminated with winter sands and salts. Flush plant with water to wash out remaining salt.
Filterra™ Media – Proven Pollutant Removal

At the heart of the Filterra system is Filterra engineered biofiltration media; a specified gradation of washed aggregate and organic material homogeneously blended under strict quality controlled conditions. Using data from independent, third-party studies including the University of Virginia (TARP), Herrera Environmental Consultants (TAPE), Terraphase Engineering (NJCAT), North Carolina State University (TAPE & TARP) and Geosyntec Consultants, the filter media has been optimized to operate under high flow rates while maintaining pollutant removal performance. Filterra media is tested for hydraulic functionality, fertility, and particle size distribution to ensure uniform performance.

Filterra media also supports a vegetation component with suitable hardiness for the local region consisting of grasses, shrubs, or trees that assist with the adsorption of pollutants with biological uptake/storage and pollutant consumption by microbes within the plant root zone.

**MEASURED POLLUTANT REMOVAL PERFORMANCE**
(Ranges varying with particle size, pollutant loading and site conditions)

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Removal (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSS Removal</td>
<td>85%</td>
</tr>
<tr>
<td>Phosphorus Removal</td>
<td>70%</td>
</tr>
<tr>
<td>Nitrogen Removal</td>
<td>43%</td>
</tr>
<tr>
<td>Total Copper Removal</td>
<td>58%</td>
</tr>
<tr>
<td>Dissolved Copper Removal</td>
<td>46%</td>
</tr>
<tr>
<td>Total Zinc Removal</td>
<td>66%</td>
</tr>
<tr>
<td>Dissolved Zinc Removal</td>
<td>58%</td>
</tr>
<tr>
<td>Oil &amp; Grease</td>
<td>93%</td>
</tr>
</tbody>
</table>

Information on the pollutant removal efficiency of the filter media/plant media is based on third-party lab and field studies.

Filterra media has been optimized to operate under high flow rates while maintaining pollutant removal performance.
Filterra™ – Verified Performance

Based on more than 20 years of research and development, testing and field monitoring, Filterra’s performance has been recognized by some of the most significant regulatory agencies, including the states of Washington, Virginia, Maryland and New Jersey, the District of Columbia, the Texas Commission on Environmental Quality and the Atlanta (GA) Regional Commission. Highlights regarding these approvals include:

- Granted ESD (Environmental Site Design) status by the state of Maryland Department of the Environment (MDE).
- GULD-approved for ALL pollutants of concern with the state of Washington Department of Ecology (WA-Ecology) with (2) TAPE field tests.
- Third-party nationally recognized field/lab tests completed: (1) TARP, (2) TAPE, (1) NJCAT and (1) NC-DENR.

Filterra™ – In the Field

We make it easy! The Filterra system is delivered to the job site with all components except plant and mulch.

FILTERRA – INSTALLATION

- Bioretention system sealed from construction sediment.
- Contractor off-loads top and vault separately.
- Set vault to grade on 6 inches (150 mm) compacted #57, pipe up, backfill, set top.

FILTERRA – ACTIVATION

- Contractors: Do NOT remove throat plate nor tree grate covers.
- Vegetation selection guidance based on your climate zone.
- Imbrium-certified providers conduct on-site activation with installation of mulch and plant.

FILTERRA – MAINTENANCE

- The first year of maintenance is included with every system.
- Maintenance is low-cost, low-tech and simple:
  » Remove trash, sediment, and mulch.
  » Replace with a fresh layer of 3 inches (75 mm) of mulch.
  » Can be done by landscape contractor.
  » No confined space entry.
STORMCEPTOR SYSTEMS

Stormceptor® is a stormwater treatment device designed to remove total suspended solids (TSS), oils, heavy metals, and nutrients. With over 40,000 systems operating worldwide, Stormceptor delivers protection 24/7.

JELLYFISH FILTER

The Jellyfish® Filter is a stormwater treatment technology featuring pretreatment and membrane filtration in a compact stand-alone treatment system that removes a high level and a wide variety of stormwater pollutants.

SORBTIVE MEDIA

Sorbive® Media is an engineered media that adsorbs and retains large amounts of dissolved phosphorus. Sorbive Media provides up to 1,000 times more pollutant removal capability than conventional filtration media, and unlike other media, it does not leach pollutants.

LEARN MORE

- Access project profiles, photos, videos, and more online at www.imbriumsystems.com/filterra.

REQUEST DESIGN ASSISTANCE

- Call us at (888) 279-8826 or 301-279-8827 to talk to one of our engineers for technical support or design assistance.

START A PROJECT

- Submit your system requirements on our product Design Worksheet at www.imbriumsystems.com/pdw.

FIND A LOCAL REPRESENTATIVE

- Visit www.imbriumsystems.com/local rep for contact information for your local Imbrium representative.