**FACTS**
- 1 kg of Filtralite® Nature P filter media can accumulate up to 7 g of phosphorus.*
- Phosphorus removal capacity lasts for 15-20 years.**

*Results from saturation tests at MTT Agrifood Research Finland.
** Operational lifetime is affected by the total load phosphorus exposure.

## Onsite wastewater treatment – Designing

<table>
<thead>
<tr>
<th>POPULATION EQUIVALENT</th>
<th>AMOUNT OF FILTRALITE® NATURE P</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>40 m³</td>
</tr>
<tr>
<td>20</td>
<td>120 m³</td>
</tr>
<tr>
<td>40</td>
<td>210 m³</td>
</tr>
<tr>
<td>80</td>
<td>300 m³</td>
</tr>
<tr>
<td>200</td>
<td>800 m³</td>
</tr>
</tbody>
</table>

**Storm water retention and treatment – Designing**

A filter should be designed to meet municipal regulations towards the removal of phosphorus and heavy metals. The Filtralite Nature P installation should have a water detention capacity equal to 60 % of a 10-minute rain duration for a 6-month return period. Alternatively, 40–50 % of the water from a one-year return period with the same duration. The volume will then provide storage and detention capacity that reduces high intensity discharges of water. This will significantly contribute to cleaner and even runoff to receiving downstream channels. By increasing the size of the installation, it can be dimensioned for full water storage for a 10-minute rain duration between one and two-year return period.

<table>
<thead>
<tr>
<th>IMPERVIOUS SURFACE TO BE MANAGED</th>
<th>AMOUNT OF FILTRALITE NATURE® P</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5-1.5 ha</td>
<td>50 m³</td>
</tr>
<tr>
<td>1-5 ha</td>
<td>100 m³</td>
</tr>
<tr>
<td>5-15 ha</td>
<td>200 m³</td>
</tr>
<tr>
<td>30 ha</td>
<td>300 m³</td>
</tr>
<tr>
<td>50 ha</td>
<td>500 m³</td>
</tr>
</tbody>
</table>

*These values are based on project references, available on request.

## Reuse of phosphorus from saturated Filtralite® Nature P material

The Filtralite® Nature P material in the filter beds will need to be replaced when it is saturated with phosphorus. Phosphorus from saturated Filtralite® Nature P provides the same benefits to plant growth as artificial fertilizers. This was confirmed by trials carried out in 2005 by MTT Agrifood Research Finland. In order to reuse saturated filter material on agricultural land, the heavy metal and bacteria content need to be lower than the current regulatory limits.

## Facts

- **Filtralite** is a Leca® International brand

**Filtralite® is the brand for quality filter media for all water and air treatment applications:**
- **Filtralite® Pure** for drinking water solutions, both for physical filtration and biological treatment.
- **Filtralite® Clean** for wastewater treatment, both for biological process and tertiary filtration.
- **Filtralite® Nature** for onsite water remediation.
- **Filtralite® Air** is a premium filtering product that removes odour and results in clean air.

**More about Filtralite®...**

Filtralite® filter media is made by heating clay to around 1200°C, followed by crushing and sieving. Dry particle densities in the range from 500 to 1,800 kg/m³ and aggregate sizes from 0-30 mm can be used. Filtralite® is tailor-made for specific applications. In addition to its low density and high porosity, Filtralite® offers high abrasion and impact resistance.

**Contact information**

www.filtralite.com
Our purpose
Focus on the environment has increased the need for decentralized wastewater treatment for rural housing and storm water management.

What is Filtralite® Nature P?
Filtralite® Nature P is a fine grained filter material, made of expanded clay, with large surface area and a high capacity for phosphorus removal in water.

CASE STUDY
On site wastewater treatment
Haugslia – protecting the environment by removing phosphorus with wastewater filter beds.

In the Nordic countries, houses are sometimes scattered throughout the countryside. It is often very expensive to construct sewers running to central treatment plants due to the long distances involved. Good onsite treatment solutions for scattered sewage systems are needed to protect the surrounding environment.

In 2004, at Haugslia, in Voss municipality (Norway), HACO Hydrogeologi og avløpskompetanse has designed and built, for a cluster of 50 holiday homes, a small onsite treatment plant. The solution, which includes an aerobic pre-filter and a filter bed with Filtralite® Nature P, provides a robust treatment system. It requires little maintenance and no added chemicals. The main purpose of the filter bed is to remove phosphorus which combines with the Filtralite® Nature P material.

This type of small onsite treatment plant, including as a last step a filter bed with Filtralite® Nature P, achieves treatment efficiency as follows:

CASE STUDY
WEREC
A combined solution for managing storm water quality and volume
In collaboration with WEREC Water Ecosystem Recovery, we have developed a solution to manage storm water with effective removal of contaminants while providing storage capacity.

Filtralite® Nature P media is implemented into filter beds or cassettes, conditional to available space, and results in high degree of water treatment. After this period the filter material is simply replaced. The system can be designed to contribute to retention capacity, for example, with volumes of 1-2 year flows or even more.

Bitumen, oil and rubber residues are separated in a pre-filter, consisting of an organic filter media. The pre-filter also contributes to metallic separation.

In Örebro municipality (Sweden), a storm water filter according to the cassette principle was installed in 2017. The primary purpose of the installation was to separate oil pollution and phosphorus. Dimensioned flow rate is 10 l/s and the estimated life of filter material is 10 years.

The following table shows examples of various pollutants removed, measured on actual storm water over a period of 6 months:

**TYPICAL TREATMENT EFFICIENCY**

<table>
<thead>
<tr>
<th>Substance</th>
<th>Phosphorus</th>
<th>Phosphates</th>
<th>Chromium</th>
<th>Copper</th>
<th>Nickel</th>
<th>Lead</th>
<th>Zinc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduction</td>
<td>60-65%</td>
<td>55-65%</td>
<td>60-70%</td>
<td>60-70%</td>
<td>60-70%</td>
<td>75-85%</td>
<td>90-95%</td>
</tr>
</tbody>
</table>