

Operation & Maintenance Manual

Guidelines for optimizing the lifetime and function of Filtralite® biofilter:

- 1) Filtralite® media filter is an expanded aluminosilicate clay product with high porosity and specific surface.
- 2) Filtralite® biofilter medium should be backwashed periodically to avoid thickening of biofilm on the surface.
- 3) Recommended backwash frequency is approximately every 48-72 hours, depending on the water requirements.
- 4) Backwash frequency may also depend on inlet water quality and composition, which may increase or decrease need of backwashing.
- 5) Filtralite® biofilter medium is a durable material and easily resist more than 1000 hours of backwashing without significant deterioration or abrasion (valid for regular bed expansion up to 10-15%).
- 6) To avoid deterioration of the Filtralite® biofilter medium and its surface, do not use inlet water with high acidity.
- 7) To avoid malfunction of biofilm growth and media destruction, ensure proper grease removal from the raw water before the water is fed into the biofilter cells.
- 8) If use and operation of Filtralite® is in accordance with recommendations 1-6, the expected lifetime of Filtralite® biofilter medium is 20-25 years.
- 9) Due to the chemical composition of Filtralite®, mechanical deterioration of the ceramic material is very slow (see table for composition).
- 10) Loss of Filtralite® material when used for residential wastewater with low content of acids and chemicals is very low. Acid solubility < 5%. Friability loss < 5%.
- 11) Spare volume: Field experience indicates less than 2 % volume loss of material during normal operation. Volume loss may be more or less than 2 % depending on backwash frequency and other operational parameters.

SiO ₂	Al ₂ O ₃	FeO ₃	K ₂ O	CaO	Na ₂ O	C _{tot}
63%	17%	7%	4%	2%	2%	0,02%

For additional information and product data sheets, visit: <http://www.filtralite.com/>

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Methodology for retention of Filtralite® in filters

Consider two main factors to avoid loss of Filtralite® from filter beds:

1. Filter design
2. Backwash

1. Filter design

To reduce the risk of loss of Filtralite® material from the filters, it is important that the filters are designed with a freeboard, i.e. the height from the top of the filter bed to the outlet for the dirty backwash water. The freeboard should be about 1.5 metre. A high freeboard area lowers the risk of loss of material.

It is also important that the nozzles in the filter floor are completely levelled to ensure equally distributed air- and water-flow during backwash and equal air- and water-velocities across the whole filter.

2. Backwash

To obtain good backwash and avoid loss of Filtralite® material from the filter, it is recommended to backwash with air and water together. Typical air velocity is about 35 m/h (based on a sufficient freeboard as described in section 1 above). For recommended water velocity and expansion requirements; see *individual instructions for specific Filtralite® products*. It is recommended to end backwashing cycles using only water for backwashing (usually at ~30 % expansion).

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Filtralite® Storage Guideline

This is a guideline for the optimal performance and ease of handling of the filter material. All types of Filtralite® materials can be delivered in bulk. Bulk deliveries can be made to all parts of the world, either as road transport with trucks, or as sea- or river transport with vessels. Delivery in big bags can be done for all applications and all Filtralite® product qualities. The big bags can be transported on trucks, trains or vessels, or they can be stuffed into containers. Transport in containers is a good solution for smaller volumes and long sea transports.

Storage of the material

Filtralite® should be stored in big bags (especially material for drinking water filtration), preferably indoors, or covered with a temporary roof/tarpaulin. The material should never be placed directly on the ground to avoid contamination. Big bags should be kept out of direct sunlight (the bags are degradable) and the storage period should not exceed 6 months.

If properly handled, Filtralite® filter medium can in most cases be stored outdoors without decreasing product quality. If stored outdoors, it should be taken into consideration that water is adsorbed when exposed to rainfalls, which increases weight and transport expenses. During winter, any material stored outdoors can freeze into "blocks" that will take time to melt. Filtralite® P should never be stored outdoors, as rain will wash out parts of the material, which will lead to reduced efficiency of the media.

Blowing of the material

By using tank trucks with blowing equipment, the most Filtralite® materials can be pneumatically discharged directly into the filters. Filtralite® Nature, Filtralite® Pure NC 0,8-1,6 mm and Filtralite® NC 1,5-2,5 mm is not recommended to be pneumatically blown.

Pre-soaking of the material

Some Filtralite® materials require a period of pre-soaking, especially the NC-quality materials. Leca recommends minimum 2-7 days soaking of such materials before use. Some qualities might require longer time periods of soaking before the material is fully saturated, depending on the water quality.

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