

Round or crushed, always at hand!

LIAPERL® and **Aquaclay®** are produced from natural clay without any chemical additives, creating an inert carrier material for biofilm filtration characterized by great stability and high porosity. The particle density can be tailored to your requirements in a range of 600 kg / m³ to 1800 kg / m³, this corresponds to a bulk density of 300 to 950 kg / m³. The abrasion of the round carrier material is very low at 2%, acid resistance is high at ≤ 5 %. The round shape of the pellets positively influences the circulation in the reactor. A series of crushed fractions are at your disposal, round fractions can be crushed on request creating new characteristics adjusted to your wishes.



LIAPERL® and **Aquaclay®** are available in bulk or in big bags. All materials can be delivered ex works, CFR or DDU.

Commercial name	Particle density, dry	Grain shape	Applications
Aquaclay® F 2-4 C	600 ± 50 kg/m ³	crushed	Biofilm, filtration
Aquaclay® F 2-10 C	800 ± 50 kg/m ³	crushed	Biofilm, filtration
Aquaclay® F4-10R	1150 ± 50 kg/m ³	round	Biofilm, filtration
Aquaclay® F 10-20 R	700 ± 50 kg/m ³	round	Biofilm, filtration, air condition, odour treatment
Aquaclay® F 13-20 R	600 ± 50 kg/m ³	round	Biofilm, filtration, air condition, odour treatment
LIAPERL® F 2-10 R	1190 ± 50 kg/m ³	round	natural based wetland, Biofilm, air condition, odour treatment
LIAPERL® F 4-8 R	1080 ± 50 kg/m ³	round	Biofilm, natural based wetland, filtration
Aquaclay® F 4-10 R	1150 ± 50 kg/m ³	round	Biofilm, denitrification, filtration, odour treatment
Aquaclay® F 0-4 C	1450 ± 50 kg/m ³	crushed	Biofilm, filtration
LIAPERL® G 4-8 R	1280 ± 50 kg/m ³	round	Biofilm, denitrification, filtration, odour treatment
LIAPERL® H 4-8 R	1440 ± 50 kg/m ³	round	Biofilm, denitrification, filtration, odour treatment
LIAPERL® P 3-6 R	1350 ± 50 kg/m ³	round	Biofilm, denitrification, filtration, odour treatment
LIAPERL® L 2,5-5 R	1400 ± 50 kg/m ³	round	Biofilm, filtration
LIAPERL® L 2,5-6 C	1550 ± 50 kg/m ³	crushed	Biofilm, filtration
LIAPERL® L 2-5 C	1620 ± 100 kg/m ³	crushed	Biofilm, filtration
Filtroclean F 4-10 R	420 ± 50 kg/m ³	round	covering layer, industry
Filtroclean F 7-9 R	450 ± 50 kg/m ³	round	and agriculture



Our Service

- Highest quality standards in the production process
"Made in Germany". Constant quality is ensured through laboratory tests and on-going monitoring of production data.
- Continuous after sales service and support.
- Quick and smooth delivery, in silo truck or in big bags. Transport is possible by truck or by ship.
- Broken or round fractions, weight and grain size can be determined individually and can be produced according to your needs.

We look forward to hearing from you!

Ökotau GmbH
Georg-Büchner-Str. 5
65760 Eschborn - Germany

Tel.: +49 (0) 6173 9999 0
Fax: +49 (0) 6173 9999 50

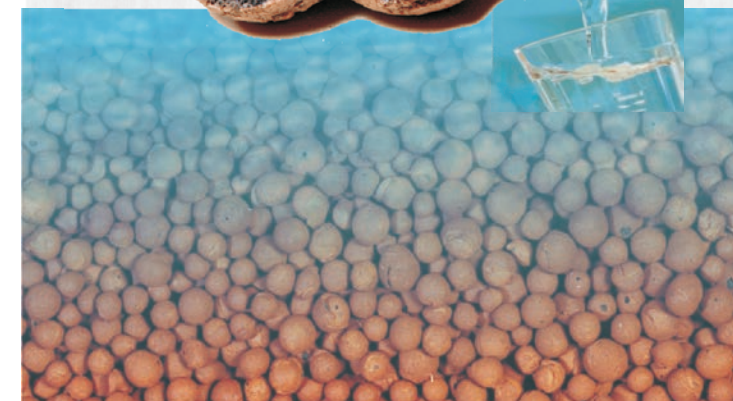
info@cleanswater.com
www.cleanswater.com

Cleanswater®
A division of Ökotau GmbH

Fresh air...
Clear water...

effective biological
water and
air purification

LIAPERL®
and
Aquaclay®



Municipal waste water treatment

Waste water plants using biological filtration have several decisive advantages in comparison to conventional methods such as the activated sludge procedure. In urban territories, where space is valuable or expansion is difficult, enormous costs for resettlement can be saved. Expensive investments in the acquisition of land are rendered unnecessary.

Microorganisms settle on the coarse surface and in the pores of the carrier material. Quickly, the biological filtration sets in with a short retention time in the filter and high effectiveness. The carrier materials **LIAPERL®** and **Aquaclay®** are used both in municipal and industrial waste water treatment. Bio film reactors have been used in the removal of nitrate from drinking water for years.

Drinking water treatment

Drinking water is one of the most important commodities for us all. Accordingly standards of quality and purity for drinking water are very strict. Our products are **certified** for use in the area of drinking water purification according to **DIN EN 12905**.

Cleanswater® filtermedia are suited to the use in various applications in the area of drinking water filtration. **Biofilters:** The defining principle of the biofiltration process is that bacteria settling on the surface of the filtration media break down organic compounds, hereby eliminating organic pollutants. **Contact filtration:** In comparison to anthracite, expanded clay media have been proven to be more effective especially with regard to sludge retention and the quality of the filtered water. **Multilayer-filter**

Materials of choice for drinking water filtration:

LIAPERL® L 2,5-5 R	1.400 ± 50 kg/m ³
LIAPERL® L 2,5-5,6 C	1.550 ± 50 kg/m ³
LIAPERL® L 2-5 C	1.620 ± 100 kg/m ³

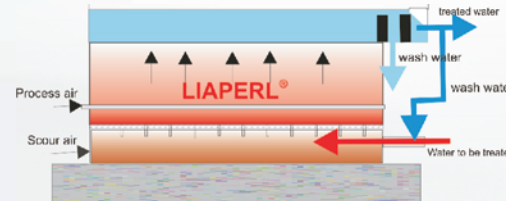
Reference: Wilaya de Mila - Algeria

filter material:	Biol. drinking water plant
density try:	LIAPERL® L 2,5-5 R
account:	1.400 ± 50 kg/m ³
delivery year:	2300 m ³
	2006

Purification of process waste water

The industry applications are found in the beverage and brewing industry, paper industry and refineries for the removal of sludge and so the reduction of CSB and phosphor.

For a recent project 550 m³ **LIAPERL®P** was delivered to an oil refinery in Greece. In the bio film reactor the water containing oil and phenol waste is cleaned.



Example: BIOFOR, Ondeo, Degrement

LIAPERL® and **Aquaclay®** work in the biological filter on 3 levels:

- mechanic removal of suspense
- biochemical reduction of organic waste using oxygen
- absorption of solved substances in the bio film and reduction of organic substances by micro-organisms using oxygen

Example of references **LIAPERL®**

Delivery date	Place of delivery	Countries	Volume in m ³	Product	Details
Oct 06	Lübeck	Germany	2200	Liaperl S	Sewage treatment plant
Aug 06	Sostanj	Slowenia	2200	Liaperl L / G	Sewage treatment plant
Aug 06	Wildon	Austria	38	Liaperl H	PE-recycling
Jul 06	Dachau	Germany	25	Liaperl H	Paper mill
Jun 06	Wilaya de Mila	Algeria	1100	Liaperl L	Drinking water treatment
Jun 06	Maisons Laffitte	France	5000	Liaperl H 4-8 R	Sewage treatment plant
March 06	Wilaya de Mila	Algeria	1100	Liaperl L 2,5-5 R	Drinking water treatment
Jan 06	Korinth	Greece	550	Liaperl P 3-6 R	Oil-refinery
Aug 05	La Chapelle St. Luc	France	34	Liaperl L 2,5-5 C	Crushed material
May 05	Ahlen	Germany	145	Liaperl Sp	Crushed material, 2,5 - 6 mm
May 05	Xiamen	China	4069	Liaperl P 4,5	Sewage treatment plant
Oct 04	Canillo	Andorra	169	Liaperl G 4-8 R	Sewage treatment plant
Oct 04	Canillo	Andorra	540	Liaperl L 2,5-5 R	Sewage treatment plant
Oct 04	Canillo	Andorra	169	Liaperl P 3-6 R	Sewage treatment plant

Biological purification of air

Highly polluted air from industrial production processes or mechanic-biological treatment of waste needs to be cleaned before it can be released into the atmosphere. The severity and type of pollution can vary. Through sorption the organic contaminants are released into the water and are converted primarily into CO₂ and H₂O by the micro-organisms that have settled on the bio filter.

With **LIAPERL®** and **Aquaclay®** the pollutants can be absorbed. These inert materials offer perfect conditions for the settling of micro-organisms. **LIAPERL®** and **Aquaclay®** in combination with natural materials such as mulch or coarse compost can considerably raise the cleaning potential of air filters.

Schematic picture of a trickle filter

Applications:
Tobacco industry
Lacquer industry
Flexoprint
Printing industry
Treatment plants
Compost treatment

Example:
fumigation of wood in India
Aquaclay®F13-20 R,
decomposition of NH₄ and phenol

