

# GARO®filtre

## COMPOSITION

GARO®filtre is a filter media made of glass granules, to be used in replacement of traditional sand in all types of sand filters. GARO®filtre inhibits biological development, also called biofilm, which is the origin of sand clogging and thus hydraulic loss increase in the filtration system.

- Recycled glass, and polished to prevent cutting edges



## TECHNICAL SPECIFICATIONS

Bulk specific gravity GARO®filtre, loose	1,4
GARO®filtre Bed porosity	40 %
Material loss in acid	0,33 %
Hardness	7 mohs
Fine particles proportion	< 0,02 %

	Sizing 0,7 – 1,3 mm (filtering layer)	Sizing 1 – 2,5 mm (filtering layer)	Sizing 2 – 5 mm (supporting layer)
T.E.N. (nominal effective size – theoretical aperture that 10 % of particles would pass)	0,80mm	1,30mm	2,7mm
C.U. (uniformity coefficient)	1,38	1,40	1,5

## PACKAGING

	Packaging mode	Packaging number	Pallet
Sizing 0,7 – 1,3 mm	Plastic bag 20kg	50	1 000 kg
Sizing 1 – 2,5 mm			
Sizing 2 – 5 mm			

Please contact us for other sizing or packaging (big-bag or bulk).



Bulk delivery operation by pulsing

# GARO® filtre

by GACHES CHIMIE

Média  
filtrant

MADE BY  
GACHES CHIMIE

COMPATIBLE WITH ALL  
TYPES OF SAND FILTERS



## GARO®FILTRE



INCREASED FILTRATION EFFICIENCY

+10 %  
to  
+50 %

DROP IN WATER CONSUMPTION FOR BACKWASH

-30 %  
to  
-60 %

DROP IN ELECTRIC CONSUMPTION

-20 %  
to  
-30 %

INCREASED OPERATIONAL LIFE FOR THE MEDIA

100 % RECYCLED 100 % RECYCLABLE

MANY  
REFERENCES

PUBLIC AND PRIVATE POOLS  
PROCESS OR DRINKING WATER PRODUCTION  
WASTEWATER TERTIARY TREATMENT  
IRRIGATION



Possibility of delivery in  
bulk by pulsated tanker





## EFFICIENCY

The angular shape of granules enhances the particles capture and this on the whole depth of the filter media.

Furthermore, GARO®filtre predominantly consists of green or brown glass granules, which are the source of the media catalytic properties. It is referred to as a « activated glass ». In this way filtration efficiency is improved from 10 to 50 %.

Filtration fineness obtained with swimming –pool water is 10-15 microns whereas 40 to 50 microns are obtained with sand alone. The cut-off grade on a process water decreased from 30 µm to 6µm replacing sand with GARO®filtre. Please contact us for further information.

Filtration rate and backwash mode are similar to those used with sand filters.

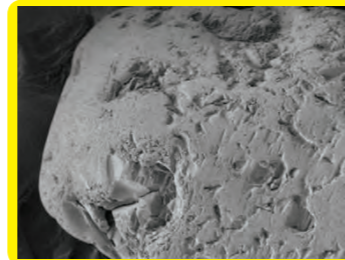
A filtration rate from 20 to 40 m³/h/m² is usually considered for swimming-pool water treatment. Whatever filtration rate is considered, using GARO®filtre will improve the filtration quality without having to use necessarily anthracite on public facilities.

Depending on the application, the increased filtration efficiency will be measured and expressed in turbidity and/or SDI.

Excavated from natural resources, sand offers the benefits of a low price, but it is a porous material with an irregular surface, which encourages bacterial growth within filters. This bacterial development also named biofilm clogs up the filter media and contributes to the creation of preferential paths, to pressure increase and in the end filter clogging.

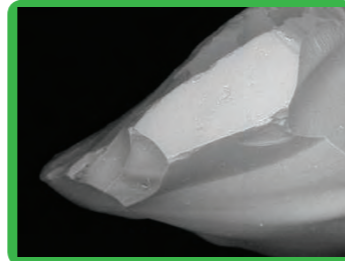
Conversely, biological activity is inhibited in a GARO®filtre bed due to the totally smooth surface of the material. This way GARO®filtre has shown its ability to resist to clogging, especially to algae in filter systems running with sea or surface water. Thus, filter efficiency remains constant during cycles, and backwashes are optimized in comparison to sand.

**SAND**



*Illustration of micro-cavities on a sand granule (TEN 0.8)*

**GARO®filtre**



*Illustration of the smooth surface on a GARO®filtre granule (TEN 0.8)*

**SAND**



*Illustration of biofilm formation on the surface of the sand filter media*

**GARO®filtre**



*In comparison to the GARO®filtre surface where retained particles are simply accumulated*

*These results were obtained on our demonstrator after a complete filtration cycle of 15 days and with the same operating conditions (filtration rate of 20 m /h).*

## SAVINGS

### DROP IN WATER CONSUMPTION FOR BACKWASH

**-30%  
to  
-60%**

Backwash duration can be reduced according to biological clogging absence combined with smooth and non porous surface of GARO®filtre.

Also, absence of bacterial development on the media surface reduces pressure drop so that backwashes frequency can be lowered.

**SAND**



*Return to the initial situation after a 9 min backwash for the sand filtration*

**GARO®filtre**



*Return to the initial situation after a 6 min backwash for the GARO®filtre filtration*

*These results were obtained on our demonstrator after a complete filtration cycle of 15 days and with the same operating conditions (filtration rate of 20 m /h).*

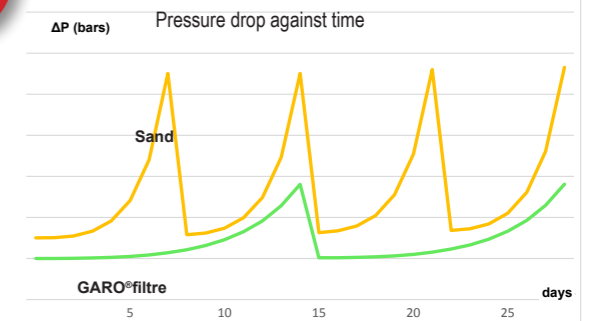
### DROP IN ELECTRIC CONSUMPTION

**-20%  
to  
-30%**

Initial pressure drop in the filter media is reduced because GARO®filtre is more permeable than sand.

Biofilm absence combined with filtration through the media height allows headloss reduction during filtration sequence.

Less pressure drop leads to less electric consumption for the pumping system (electric consumption is more optimized when pumps are equipped with frequency variation).



*These values are coming from public swimming-pools facilities using granular filter media for water treatment.*

### MEDIA EXTENDED LIFETIME / PREVENTIVE ACTION ON LIMESTONE

- Backwash reduction leads to a limitation of attrition between GARO®filtre granules. Indeed attrition contributes to erosion and consequently require replacement. GARO®filtre granules hardness is identical to sand hardness. As backwash duration for filters equipped with GARO®filtre is shorter than with sand filters, there is less attrition and thus GARO®filtre lifetime is extended in comparison to sand lifetime.

- Reduced risk of limestone deposit

In case of hard water (highly mineralized), the combination biofilm and limestone shortens prematurely the media lifetime since it promotes the sand clogging. GARO®filtre has a smooth, non porous surface and no biofilm =>glass granules delay the limestone deposit and grip => filter mass replacement is less frequent.