



# HSC WATER

## TECHNICAL DATA SHEET

### DESCRIPTION:

Crushed glass is gaining widespread acceptance over silica sand as the preferred water filtration medium for swimming pools and waste water treatment plants. Crushed glass has some unusual characteristics that lend themselves especially well to the filtration application.

Crushed glass is an amorphous (non crystalline) material with no grain boundaries or uneven surfaces to impede flow efficiency or to harbor sites for contaminant build-up. The surface of the angular- shaped glass particles, under a microscope, is as smooth as a larger glass surface. These smooth surfaces are less likely to support algae and fungal growth.

Glass has a uniquely polar surface caused by negatively charged hydroxyl ions that render the surface weakly attractive to positively charged contaminants. Positively charged iron and manganese particles, once attracted, are subsequently easily released with proper backwashing.

Glass is synthetically made, and has no soluble components like remnants of shales or carbonate rocks that may occur with silica sands. While silica sands must meet the 3% maximum weight loss in acid solubility testing, glass usually has a much lower value due to being pure glass. Acid solubility is a proxy test for durability of the particles, which manifests itself in attrition and generation of fines during service life as a filtration medium. The particle integrity of glass results in a more consistent and long lasting uniformity coefficient for the glass grains.

ASTM C88 is the magnesium sulfate soundness test that is another proxy for durability. Glass performs much better than most sands, and retains its grain size and uniformity coefficient after testing. The smooth surface and low attrition of particles into fines also results in better permeability for glass than silica sands. This helps prevent channeling and partial blockage of the filter over time, and results in substantially longer intervals between filter media replacement.

In general, comparing glass media with sand media is an uncertain science due to the wide differences between naturally occurring silica sands and the varying preparation techniques for glass sands. With silica sands, natural variations in geology affect the chemistry and angularity, and thus the overall effectiveness of sand as a filter medium. In contrast, all glass sands have a similar chemistry, being derived from bottle or plate glass. However, there are wide differences in process techniques that affect trace contaminants, fines, and uniformity depending on the process used to recover and process the glass for use as a filter media.

Glass Filter Media has worked with others to develop a revolutionary process for the preparation and sterilization of glass filtration media. First, a process to implode the glass feedstock with uniform external pressure instead of impact shattering creates a more uniform glass surface with improved permeability characteristics. The glass is sterilized using high heat to remove any organic contaminants.

## BENEFITS:

100 % recycled glass

100 % Efficiency filters down to a few microns.

20 % saving in fill your filters

15 % saving in backwashing than water and energy

4 times longer than other sands.

Does not hold bacteria and algae.

Does not cause calcification, agglomeration and petrification.

## TECHNICAL DATA Not for specification purposes.

### Chemical Composition

Amorphous silicate glass

SiO 74%; Na O 13%; CaO 10.5%; Al O 1.3%;

K O 0.3%; SO 0.2; MgO 0.2%; Fe<sub>2</sub>O<sub>3</sub> 0.04%; TiO<sub>2</sub> 0.01%

### Physical Properties

Effective sizes

Grade1 (0,5-1,2 mm), Grade2 (1,2-3,2mm),  
Grade3 (3,2-5 mm)

Coefficient of uniformity

1,45-1,80

Sphericity

0,45

Surface

Smooth, no grain boundaries

Shape

angular

Porosity

45-50%

Permeability

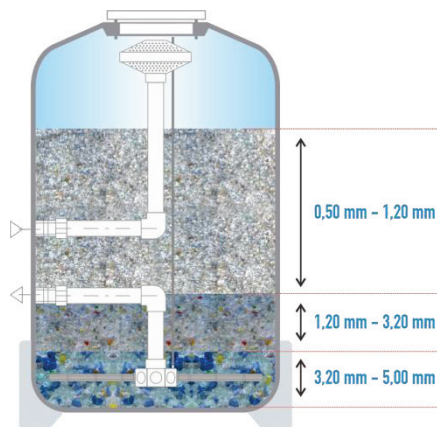
0,5x10<sup>-1</sup>cm/sec

Bulk density

72 lb/ft<sup>3</sup>

Specific gravity

2,55



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