



## Glass Water Filtration Media



Finely crushed recycled glass for pool, industrial, and environmental filtration that provides outstanding water clarity and quality - a direct replacement for sand in both freshwater and saltwater pools.

### 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.

Vitro Minerals 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 and kill any microorganisms. And, the unique implosion crushing allows for full removal of fines as the material is properly graded for size requirements of filtration medium. The difference can easily be tested. Put a handful of new media in a ziplok bag and shake it. Fines in the bottom of the bag from poorly prepared media will immediately be noticed.

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## Glass Requirements

Filter Size	Pounds
24"	225
30"	450
36"	675

## GLASS FILTER

Recycled glass medium improves water quality for

- ▲ Pools
- ▲ Wells
- ▲ Wastewater facilities
- ▲ Car washes

## Filtered Water | Glass vs Sand

### DESCRIPTION

- ▲ 25% less turbidity
- ▲ Reduces operating costs
- ▲ Retains the effectiveness of good chemicals
- ▲ Limits presence of fine particles in water
- ▲ 70% of all bacteria removed

## GLASS PARTICLES

Recycled glass particles are crushed and graded to optimum size, then sterilized at 500°F.

### Glass Particles vs Sand

- ▲ Lasts 3 times longer, minimum life 5 years
- ▲ Smooth surface will not allow moss / fungus growth
- ▲ Negative surface charge attracts iron and manganese
- ▲ No acid solubles to degrade particles
- ▲ Consistent size and durability promotes maximum flow
- ▲ Works with salt water
- ▲ No crystalline silica hazard
- ▲ Backwashes with 50% less water



## TECHNICAL DATA Not for specification purposes.

### Chemical Composition

Amorphous silicate glass  
 SiO<sub>2</sub> 74%; Na<sub>2</sub>O 13%; CaO 10.5%; Al<sub>2</sub>O<sub>3</sub> 1.3%; K<sub>2</sub>O 0.3%; SO<sub>3</sub> 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	0.6-1.4 mm (Grade 1) & 0.4-0.8 mm (Grade 2)
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

### Product Information / Customer Service:

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**Standard Package:** 50 lb multiwall bag; 2500 lb supersack.

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