

# Pulverized Recycled Glass

When glass bottles and jars enter the recycling system in Chittenden County, we grind them up to make material to be used as a substitute for sand and crushed gravel for paving and construction purposes. For example, Pike Industries in Williston, Vermont, uses glass pulverized to the consistency of sand as aggregate for asphalt paving projects. Building contractors use glass ground to a pellet-like consistency in place of crushed gravel as drainage backfill material for foundation drains, retaining walls, utility trenches, and base courses for concrete slabs. In fact, when we built the CSWD Materials Recovery Facility (MRF), we used the crushed glass to raise the ground under the floor slab by 2.5 feet.

When crushed recycled glass is used in place of raw materials, it reduces the need to extract those materials from the earth. It is not economically or environmentally feasible to separate glass by color (required for recycling into new glass products) and ship it to market. We have opted to manage the material locally in an environmentally sustainable fashion.

Crushed glass cannot be used in concrete. Alkali components of cement, plus the silica in the glass, plus water from the environment equal Alkali-Silica Reactivity (ASR), which will crack concrete over time. While the reaction can be mitigated using low alkali cement or other admixtures (such as lithium), we recommend that glass not be used in structural concrete where strength and serviceability are important.

If you are interested in more information on using crushed glass for construction purposes, see specifications on the back of this flyer, or feel free to contact:

Brian Wright, CSWD Project Manager  
802-872-8100 ext. 215  
bwright@cswd.net

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## Processed Glass Aggregate – Pulverized Recycled Glass

This material is made from recycled glass containers that have been pulverized to create a glass aggregate product. The process breaks the glass into aggregate sized pieces and agitates the mix to round off the sharp edges, resulting in two sizes of material: a 3/8" minus and a 1/8" minus. The glass material has less than 1% deleterious materials (paper labels, plastic caps, etc.) Since glass is inert, there is no cohesion between particles, so this material behaves like a very clean, well draining aggregate. It is very easy to work with and it flows easily around pipes and into trenches. This material is 100% recycled making it a greener alternative to crushed stone fill materials.

**Uses:** PGA material has been accepted for use in Vermont by Agency of Natural Resources and the Agency of Transportation. Uses for the building industry include:

- Drainage backfill material for foundation drains, French drains or drainage blankets.
- Free draining backfill behind retaining walls and for Utility Trenches.
- Embankment fill material and base courses for concrete slabs (i.e. under garage slabs)

**Gradation & Compaction Characteristics:** The 3/8" minus aggregate has a very uniform gradation. This material is so uniform that it's compaction density does not vary with water content.

The 1/8" minus has particle sizes more like a sand product and a somewhat wider range of gradation and more fine material. The compaction curves for this material resemble a sand material, with compaction varying with water content. Maximum compaction occurs at about 6% water content.

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