



## Best Practices in Glass Recycling

### *Landscaping Applications for Recycled Glass*

#### **Material: Recycled Glass**

**Issue:** *Crushed, graded recycled glass can be an attractive ground cover or plant mulch. Before designing glass into any landscape project, however, the designer should have a thorough understanding of how to specify the glass.*

**Best Practice:** The designer considering using crushed glass for landscaping should consider all of the issues below.

**Gradation** Usually the designer will not want glass to look like broken bottles. Because of the platy nature of glass, if the glass is much larger in maximum dimension than the thickness of a container or a window, many of the pieces will look like broken bottles. For example, containers and windows are usually 1/4-inch or less in thickness. Pieces larger than 1/4-inch will have a flat dimension over twice the thickness. Also, some pieces will show the curvature of the container. In addition, larger pieces will not have been processed by the type of “tumbling” processor described below, and are more likely to have sharp edges. Generally, 3/8-inch and finer glass should be used in landscape projects.

**Dust** The designer should consider the finest size desired in the landscape project. Glass pieces smaller than 100 mesh can become airborne dust, will slow down the drainage of water through the glass, and will wash to the bottom of the glass layer. The designer should consider whether the installation is in a location where wind may carry the glass dust into a public area. Although airborne glass dust has been shown to be no more dangerous than airborne sand (see the *Analysis of Glass Dusts* Best Practice), the public perception of glass dust may not be something the site managers want to deal with. Pieces of glass finer than 20 mesh will also make the glass area less reflective, if a shimmering look is desired. A glass processing system with proper dust control can remove glass fines without additional screening (see the *Dust Control Strategies for Glass Processing* Best Practice).

**Shape** All glass processors do not produce the same shape of product. In general, “single pass” impact crushers, where the glass is shattered with single impact of a hammer, tend to produce shardy material. Glass processors that have either multiple rows of hammers that beat the glass into cubical shapes or a centrifugal action that tumbles the broken glass on itself to produce an autogenous shape produce a more aesthetically appealing crushed glass.

**Cleanliness** Glass that has been processed as furnace-ready cullet for container manufacturing appears to be dirty. This is because residual moisture and sugars in the glass cause glass dust and ambient dirt to adhere to the glass surfaces. Glass can generally be rinsed off fairly easily. One method that has worked well is to put graded glass into a cement tumbler and flood it with water while the tumbler turns, overflowing water until it runs clean.

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**Contamination** Most of the contaminants in glass can be screened off in the sizing process. Glass used in landscaping applications, however, must be especially contaminant-free. Any loose paper labels or metal caps will stand out in a landscape environment. Processing to this quality may require a system including pre-crushing, drying, crushing, screening, and dust control. For an understanding of the type of system required to produce the level of contaminant removal needed, see the *Small-Scale Glass Processing Costs* Best Practice.

**Color** In general, the designer has three choices: clear, green, and amber. Blue glass is available, but it may be difficult to accumulate enough for a substantial installation. Clear window glass reduced to particles 1/8-inch and smaller can look white as snow. If only the sizes 1/8-inch to 1/4-inch are used, glass is more reflective. Glass that is 1/8-inch to 1/4-inch with water running or spraying over it shimmers like a million diamonds. The designer should integrate the color with the environment and think about the appearance of the site as the landscape matures. Glass that looked white initially may turn gray from dust in a dry urban environment or from plants shedding organic matter. The green of container glass may clash with some plant colors. Over time the native soils may migrate into glass, making it necessary to either renew the glass layer or turn the glass into the soil, using the glass as a natural aggregate. The designer needs to think long-term.

**Environmental Compatibility** It is common to see weeds growing in stockpiles of recycled glass. However, as a more formal test of whether there are any obvious compatibility problems between crushed glass and plant growth, a study was performed testing glass as a hydroponic growth medium <sup>(1)</sup>. No statistical difference was seen between basil plants grown in glass and those grown in a conventional hydroponic medium. Glass without fines will drain quickly. However, water retention may be a desirable characteristic. Glass particles will track on shoes in the same manner as brick pieces or rock chips.

**Cost** Green or mixed-color recycled glass is available for free or at minimal cost in most parts of the United States. However, processing the glass to landscaping quality can cost from \$20 to \$50 per ton. There are some specialty glass processors who make a clean enough product to be used in landscape applications (for example, call TriVitro, Seattle, Washington, 206-301-0181). In some cities there are specialty aggregate processors who can process glass to custom specifications. It may also be possible to obtain glass from a container plant beneficiator and clean it on-site for acceptability.

**Implementation:** Designers should always see what they're buying and, if possible, build models or small pilot projects to judge the appearance of glass in the proper context.

**Benefits:** Glass can be a beautiful and functional landscaping material if the issues described above are considered.

**Application Sites** Landscape design offices.

**Contact:** For more information about this Best Practice, contact CWC, (206) 443-7746, e-mail [info@cbc.org](mailto:info@cbc.org).

### References:

*Glass as a Hydroponic Rooting Medium*, Clean Washington Center Report GL-96-2, 1996.

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