



Focus on Recycled Glass

from Ecology's Solid Waste and Financial Assistance Program, Statewide Resources Section

What happens to recycled glass?

Remanufacture

When glass jars and bottles are recycled, they are first crushed into small fragments called cullet. The remains of labels are removed from the cullet, usually by a vacuum method. The cullet is then mixed in some proportion with the raw materials of glass: sand, limestone, and soda ash. The greater the proportion of recycled glass cullet, the less energy it takes to melt the whole batch. Once the material has fully melted, it will be used to produce new glass bottles and jars.

Contamination

It is easy to remove small amounts of metal or plastic, as well as paper labels, during the processing of glass. However, trying to recycle other sorts of glass (such as window glass, mirrors, light bulbs, drinking glasses, "Pyrex," or ceramics) with jars and bottles will do more harm than good. These glass products are formulated differently from jars and bottles, and will melt at different temperatures. Some contain additional materials that cannot be removed by the recycling processes. Car windows, for instance, often contain plastic. Some glass contains lead, and this should not go into glass that will contain food. Throwing something other than jars and bottles into a glass recycling bin could turn the entire contents into garbage. This is hardly the desired result of our recycling efforts.

Color Sorting Is Important

There is no viable method for removing color from glass. Clear glass cannot be made from used brown or green bottles and jars. If cullet made from these three colors mixed together is used, the new glass will come out gray. Food and beverage manufacturers are not very interested in using this color to package their products, so glass recycling companies can not sell much gray glass. Buyers for green or brown glass are not always easy to find, either. Clear glass offers the best market, but even its value will not pay for the labor that would be necessary to sort it out from a mountain of glass. This is why recycling programs often ask us to keep the various colors of jars and bottles separate.

Curbside collection programs in many cities take all colors of glass mixed together. In fact, some even pick up metal, paper, and plastic in the same bin as glass. Such programs are able to do this because they use a "materials recovery facility" (MRF, pronounced "murf"). Such facilities use combinations of mechanical and manual sorting procedures to separate various materials for recycling. Plastic and cans are easy to separate mechanically from glass and from each other. Separating glass—especially broken glass—from paper is more difficult. The most practical method available to separate different colors of jars and bottles is manual sorting. This is an expensive operation, and will not work well if unrecyclable items are added to the material that needs to be sorted.

The management of the MRF would have to hire more staff to remove such items from the recyclable glass (and pay a garbage company to haul it away), or glass manufacturers would not be willing to buy shipments of cullet from the MRF.



Despite the sorting abilities of a MRF, mechanical sorting and the pace at which manual sorting must be done unavoidably results in some broken glass. This usually collects on the floor of the facility. No business can afford the staff time that would be required to sort these glass fragments by color.

Other Uses for Recycled Glass

As more and more communities begin glass collection programs, additional uses are being developed for recycled glass. Ground glass is sometimes used in asphalt mixes for pavement. It can be melted down and used to make fiberglass insulation, or crushed down to dust or granules for use as an abrasive (in sandblasting, for instance). Another use is to inject air into the molten glass, making a glass foam that can be molded into panels or bricks for construction. For most of these uses, color separation would not be necessary. However, current demand for glass in such manufacturing endeavors is not very strong and is easily met by the current supply of mixed color cullet.

If mixed cullet exceeds the amount that can be used, some of it can be stockpiled. Additional excess will have nowhere to go but a landfill. Unless we start building our houses out of glass bricks, we will still need to sort our jars and bottles by color to recycle them in the most useful manner.

For more information

Contact: Solid Waste & Financial Assistance Program
 Department of Ecology
 P. O. Box 47600
 Olympia, WA 98504-7600
 1-800-RECYCLE