



## OVERVIEW

Container glass consists of single use jars and bottles one would find at a grocery store. Container glass can be reused at home or recycled indefinitely into new containers when collection infrastructure is available. Glass can also be used to produce recycled content insulation. Recycled glass can be re-used in landscaping and construction projects, as well as a silica substitute in cement. There are many higher uses of glass in art and custom tabletops.

Glass can be challenging to recycle. Broken glass can be unsafe to collect and glass is the heaviest of common household recyclables. Most household recyclables are compact-able, allowing for materials to be compacted or baled for efficient shipping during the recycling process. Glass can be crushed for more efficient storage and shipping, but cannot be baled. Different collection systems are required.



While most recyclable items are consolidated or baled to the highest value market, glass can be used locally as an aggregate for landscaping or construction. Glass can be shipped in open containers seen hauling gravel, in boxes on standard tractor-trailers, or by heavy-duty rail cars. Minimizing the amount of time glass is handled in collection, shipping and processing is important.

## DEFINITIONS

**Quality control** is essential for effective glass recycling. There are many different types of glass. For the purpose of community recycling programs serving households and restaurants, glass means

**“container glass,”** jars and bottles that are usually used one time and would generally be “non-durable” goods that could be purchased at a grocery store. Metal rings and lids can be recycled with metal collection. Most container glass programs do not require the metal rings to be removed. Other types of glass recycling seldom exist as community programs, but may exist at points of sale. For example, a windshield shop may have an in-house recycling program for their customers.

*Windshield glass, ceramic and clear cups and plates, thermal glass in headlights & glass light bulbs should not be recycled with container glass.*

## POLICY

The 2011 Legislature passed **House Bill 594** to require that recycled materials (including glass) be used in new highway construction when the cost is lower or equal to new materials. The Montana Department of Transportation has since used glass in some of its projects. Challenges faced include obtaining enough material and the cost of the material itself—generally due to the distance from recycling centers to work sites. Incorporating the glass mix into the contractors’ operations should greatly reduce cost, but will require more coordination with recyclers.

## ■ REUSE:

Bayern Brewing Company in Missoula is [re-using micro-brew bottles](#) to package their product. Customers can use a Bayern EcoPack to return empty beer bottles (plain, brown glass bottles) and receive a refund. Some beverage bottles cannot be reused due to varying specifications, such as screw-top lids and embossed logos. Bayern has partnered with several other Montana breweries and curbside recyclers to increase collection and reuse of bottles.

## ■ NEW BOTTLES:

Glass can be recycled into new bottles and jars indefinitely. Items such as window glass, plates and other durable ceramics will contaminate effective container glass collection programs. A facility in Golden, Colorado accepts well-sorted container glass jars and bottles. A few loads of glass have recently been shipped there as a pilot project with Montana Department of Environmental Quality (DEQ). A specialized trailer to reduce unloading costs may increase the value of the glass at the point of delivery. The use of rail may be more efficient, but would probably require multiple cities along the line to utilize the same outlet. Crushed glass can be shipped in gaylord boxes, especially on freight routes with empty trailers leaving Montana (see “shipping”).



## ■ CEMENT:

Ash Grove Cement in Montana City takes collected glass from the City of Helena. Their permitted capacity is 250 tons per year. The City of Helena has stockpiled glass to be pulverized when this limit has been reached or the plant has been closed for maintenance. Recycle Montana is currently exploring ways to increase the per ton limit.

## ■ INSULATION:

Earth First Aid in Billings has been collecting container glass during curbside collections and sending it to Momentum Recycling in Salt Lake City, where it becomes fiberglass insulation.

**Pulverized Glass Cullet** is an aggregate that has gone through a tumbling process to remove edges. It can be as large as ¼ inch or ground to sand. The cullet can be used in landscaping, pipe lining, trail, road and other public works projects. Headwaters Recycling used a mobile pulverizer designed to allow communities to stockpile their glass without the overhead cost of equipment. Their operation showed that the glass should be stored on a cement slab or glass cullet to keep dirt and gravel out of the machine (contaminants can affect quality of product and wear on machine). It is also important to separate the processed and unprocessed material. Reducing labor and handling costs is a goal of similar projects. The City of Livingston has a stationary processor and it has been taking glass from other communities.

Four Corners Recycling, located outside of Belgrade processes glass collected at Target in Bozeman. Four Corners unloads the bin next to a glass crusher on a surface of compacted glass. A skid-steer is used to load the glass. The crushed glass fills gaylord boxes on pallets. The boxes are then moved by a forklift and can be loaded onto standard tractor-trailers. The glass is shipped to Utah to be used as material in insulation. Four Corners is able to take advantage of discounted freight due to otherwise empty trucks along the route. Especially during the winter, trailers are sometimes loaded with bricks to provide weight for safety on slick roads and windy conditions. The gaylord boxes of glass weigh 3,000 pounds each and can also fill this role, stabilizing the weight. As of May 2014, Full-Circle was shipping three tractor-trailers a month. The crushed glass is run through magnets in Utah to pull metal lids and rings out of the material. Momentum Recycling in Salt Lake City purchases and cleans the glass (including removing metals) to sell as a variety of industrial raw materials (<http://www.momentumrecycling.com/>).



**Hazards – Sharps & Noise:** Sharps from broken glass can be a hazard for anyone handling the material and may create a cleanup issue if dropped. The weight of glass makes it difficult to empty personal recycling bins into larger collection bins. While a heavy-duty plastic bag may be able to hold glass, a sharp edge from broken glass can readily puncture the bag.

Individuals or employees handling glass have to be mindful of sharps if the glass has been broken, the weight of containers of glass, the associated noise and the hazard posed by dropped glass on any surface. Hand, ear and eye protection should always be used when handling glass for recycling. Additionally, a dustpan and broom should be available at any collection center for glass.

**Bins:** Bins used for glass recycling should be small enough to be lifted when full or sized for mechanical collection. Restaurants and bars provide a great opportunity for recycling. They have a high volume of recyclable glass, trained staff, inventory requirements and can reap the safety benefits of having smaller bins with clean glass that does not need to be hauled as far or often as trash. This also lightens the trash hauled by employees.

**Spokane, WA:** Waste Management's single-stream recycling center takes mixed recyclables. The facility charges, or pays less, per ton for materials that include glass. This recent article region.



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## Recycle Montana

Our mission is to strive to be the leading statewide voice of recycling and an ongoing resource to advise, support and educate Montanans on waste reduction opportunities. Recycle Montana works to increase recycling in Montana through education and building coalitions between communities, schools and recyclers. Visit [www.RecycleMontana.org](http://www.RecycleMontana.org) for more information.



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