

Waste & Recycling

Part 3a – Material Fact Sheets

Glass Bottles and Jars



What is glass made from?

Glass is made from common raw materials – limestone, sand and soda ash. Soda ash is sodium carbonate, a natural grey/white powder; limestone and sand are also natural and common materials. Each is taken out from the ground from quarries, which involves heavy excavating and transport machinery, so it is energy-intensive.

Quarries change the natural landscape and disturb local people through noise when extracting the product and trucks transport the rock or sand, so people do not like having quarries close to them (NIMBY= Not in My Back Yard), even though readily using the products.

Thousands of tonnes of glass are thrown away yearly, but glass is fully recyclable and can be recycled indefinitely. In the case of bottles and jars, up to 80% of the total glass-making mixture can be reclaimed scrap glass, called "cullet".

What Happens to Glass?

In a typical District, glass bottles are sent for recycling in three ways.

- 1) Via the public recycling bins or 'bottle banks'.**
- 2) Through the District's transfer stations.**
- 3) Via household recycling kerbside collections.**

Example from Hurunui. Glass is transported to Amberley transfer station; from here it is collected by empty trucks returning from Kate Valley landfill and back-loaded to Christchurch for crushing, for re-use in road surfacing throughout Canterbury. Using otherwise empty trucks returning from Kate Valley landfill to transport glass helps reduce the total number of trucks travelling on SH1.



Photo: Open-top container of glass is ready for back-loading to Christchurch for crushing and use in road surfacing.

Each container holds between six and nine tonnes, depending whether the glass is crushed.

Between 2009 and 2013, over 3,500 tonnes of glass bottles from Hurunui were recycled this way. That is over 500 bin loads.

Glass Recycling Facts

- Recycling glass reduces the amount of soda ash required in glass making by 40%.
- Recycling one glass bottle saves enough energy to power a computer for 25 minutes or a 100-watt light bulb for an hour.
- Recycling one glass bottle creates 20% less air pollution and 50% less water pollution than making a new bottle from raw materials.
- Recycling two glass bottles saves enough energy to boil a jug/kettle for 5 minutes.
- Glass placed into landfill will never decompose and will still be there in thousands of years, as can be seen by ancient glass objects in museums. If not re-filled or recycled (which would be preferable), it is more useful crushed and re-used as up to 7% of the surface seal layer within roads, than taking space in a landfill!

What about Re-Use?

- Glass jars with lids make small storage containers, while bottles can be used as vases. Cut down and polished bottle bases can become tumblers, drink mats or be used in decorative garden walls, set into concrete.

Recycling glass

Glass bottles have a number of valuable uses apart from an additive in road resurfacing, including:

- Remanufacture into bottles and jars. <https://recycleglass.co.nz/o-i-new-zealand/>
- Swimming pool or spa filtration.
- Sandblasting.
- For creating and maintaining surfaces on golf courses and sports pitches, cemeteries, and as decorative mulch.

What to Remember when Recycling Glass

- Caps and lids need to be removed as these should not be crushed with the glass as they contaminate it.
- Always rinse bottles or jars before recycling them.
- Keep other recyclables and waste separate if possible.
- Always be careful when handling glass; try not to drop it - to avoid cuts!
- Deposit glass in kerbside bin collection if available, or at your nearest recycling bank or transfer station; for safety it must not go into kerbside plastic bags where such bags are used for recycling.

Class Challenges

1. Undertake research to find out if and how crushed glass is being used locally? The list of possible uses above provides an indication of where to start investigating.
2. Conduct a survey of the school and its grounds to see if crushed glass could be used anywhere? Perhaps the school's caretaker would have some suggestions?
3. Have a class discussion to determine how glass jars could be re-used e.g. for home food produce such as pickles or jams. Bring in examples. For safe practice in making preserves to sell as fundraisers see <https://www.mpi.govt.nz/food-safety/food-act-2014/fundraising-and-community-events/>
4. Collect unwanted jars and decorate them to sell as a school fundraiser. Translucent colours make jars into outdoor lanterns, using small electric or candle night-lights.
5. Interview grandparents to find how they recycled or re-used glass when they were younger, before plastics were so common? Collect examples of older glass containers to show changes over time.
6. What advantages does glass have over plastic containers (and vice-versa)?

Further Resources

- OI glass Auckland factory website <http://recycleglass.co.nz/glass-recycling/>
- USA example <https://www.youtube.com/watch?v=Ep245b5SwsK>
- See a Recycle for Wales cartoon film on recycling glass containers, at <https://www.youtube.com/watch?v=hoT9JLWxSoc> .
- Visit an informative and easy to use website on all aspects of glass recycling: <http://www.glassrecycle.co.uk/Why-Recycle/>