

# Glass



## How are glass bottles made?

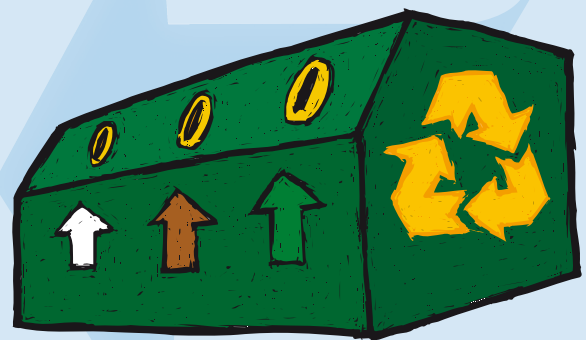
- The ingredients for making glass are soda ash, sand and limestone
- These are mixed together and put in a furnace. The furnace is run on gas and is heated to 160°C. The furnaces run non-stop for 15 years
- The ingredients melt and mix together to make hot glowing soft material. The continuous flow is cut by automatic shears to make 'gobs'. These are hot blobs of molten glass
- The gobs are then shot down into the forming machine, where the glass is moulded. A machine blows air down on to the glass forcing it into the base of the mould where there is a plug which pushes into the soft glass forming the top of the bottle (so the bottle is upside down). Next air is blown into the gob from the plug so that it blows up (like a balloon) to fit the mould producing a partly shaped bottle is known as a 'parison'. This is passed to another 'blow mould' where air is blown into the glass to make it hollow in the middle
- These are now jars and bottles, they are put on a 'dead plate', where cool air is blown over them
- Once they have cooled they are taken out of the mould and put on a conveyor belt. They are then coated twice. This helps strengthen the glass and also stop the glass from being scratched easily when the bottles are being filled



- The bottles then travel to the 'Lehr' which is a long oven that heats the bottles up to 550°C and helps strengthen bottles that have been weakened by the rapid heating and cooling

## Glass recycling

- Glass is now regularly collected in many kerbside schemes
- Glass banks have been available for glass recycling since 1977, there are now approximately 50,000 banks in the UK<sup>2</sup>. For information on recycling banks and collections in your local area check the [www.recyclenow.org.uk](http://www.recyclenow.org.uk) website



- Glass is taken to the glass manufacturing plant where:
- The contaminants have to be removed before the glass can be recycled; contaminants are other materials that shouldn't be in with the glass. This is done either by people picking the objects out as they pass by on a conveyor belt or by using hi-tech equipment which uses magnets, x-rays, lasers, vacuums and crushers
- The glass is then cleaned



- The crushed glass, which is known as cullet is now ready to go in with the other raw materials to be manufactured into new glass bottles and jars
- For every tonne of glass recycled 1.2 tonnes of raw materials that would otherwise be quarried are saved <sup>2</sup>

## Glass facts

- Glass was being used in Egypt in 12,000 BC to make decorative beads <sup>3</sup>
- A family will use about 330 glass bottles and jars each year <sup>3</sup>
- The colour of glass is made by the amount of iron in the mixture and colouring agents
- A glass furnace runs 24 hours a day, seven days a week and can produce up to 300 tonnes of glass per day <sup>2</sup>
- 1.4 million tonnes of glass are landfilled each year which is about 4.2 billion bottles and jars that could have been recycled <sup>2</sup>
- Glass can be recycled an infinite number of times with no loss of quality
- 890,000 tonnes of glass was recycled in 2003 <sup>1</sup> that is about 2.7 billion bottles and jars
- Glass jars can also make useful storage jars
- Why not use glass milk bottles from your milkman? These are reused about 20 times before being recycled
- Recycling one bottle will save enough energy to power a television for 1 ½ hours <sup>4</sup>
- Blue glass can be put in with the green glass at recycling sites



## Weblinks

- [www.berryman-uk.co.uk](http://www.berryman-uk.co.uk)
  - Berrymans
  - Facts & figures
- [www.britglass.co.uk](http://www.britglass.co.uk)
  - British Glass
  - Education
  - Poster
  - Glassforever Roadshow
  - Glass Recycling Code
  - Glass Factsheets
- [www.wasteonline.org.uk/resources/InformationSheets/glass.htm](http://www.wasteonline.org.uk/resources/InformationSheets/glass.htm)
  - Wastewatch
  - Glass Recycling page
- [www.glassforever.co.uk](http://www.glassforever.co.uk)
  - Sponsored by Rockware
  - Education Centre
  - Downloads
  - Games
  - Worksheets
- [www.rockware.co.uk](http://www.rockware.co.uk)
  - Benefits
  - The manufacturing cycle, shows how the gobs are blown to make bottles and jars
  - Facts
  - Recycling Code
  - Games
  - Manufacturing
- [www.recyclingglass.co.uk](http://www.recyclingglass.co.uk)
  - Facts
  - Games
  - Teachers notes

## References

- <sup>1</sup> [www.rockware.co.uk/index/manufacturing.html](http://www.rockware.co.uk/index/manufacturing.html)
- <sup>2</sup> [www.recycle-more.co.uk](http://www.recycle-more.co.uk)
- <sup>3</sup> [www.britglass.co.uk](http://www.britglass.co.uk)
- <sup>4</sup> [www.berryman-uk.co.uk](http://www.berryman-uk.co.uk)