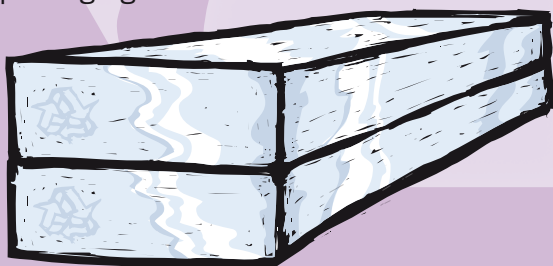


# Aluminium



## How is aluminium made?

- Aluminium makes up 8% of the Earth's crust and is the third most abundant element <sup>1</sup>
- Aluminium is removed from the ground through opencast strip mining. In its natural state aluminium is mixed with rocks and is called bauxite. Bauxite is found mainly in Australia, West Africa and the West Indies <sup>1</sup>
- Aluminium is separated from the rocks using a special chemical solution, the resultant material being aluminium oxide
- Aluminium oxide is turned into aluminium using electrolysis. Aluminium oxide has a melting point of over 2000°C, in order to heat it to this temperature would require a lot of energy. To combat this expense the aluminium oxide is dissolved in molten cryolite at 1000°C. Cryolite is another ore of aluminium with a lower melting temperature. By applying an electric current the aluminium is attracted to the bottom of the tank <sup>2</sup>
- The aluminium is then poured off into ingots that look like bars of silver
- The ingots can then be rolled into sheets, which can be used to make a range of products including drink cans, foil and packaging containers

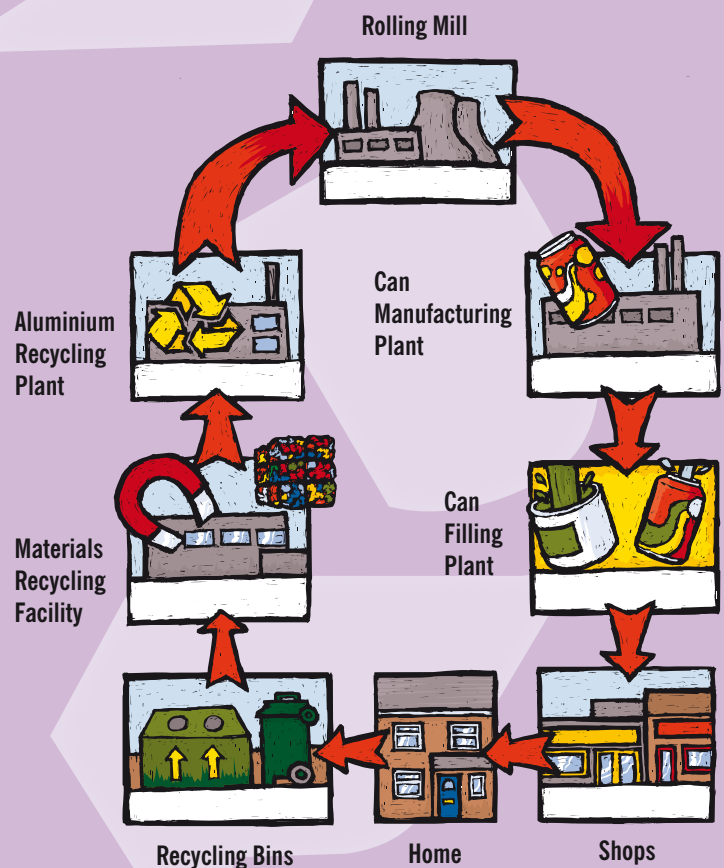
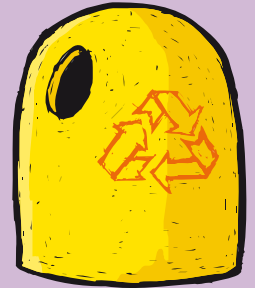


## How to identify aluminium cans

- Very shiny silver bases to cans
- Lightweight
- They do not stick to a magnet
- They do not rust
- They sometimes have an 'ALU' sign

## Recycling aluminium

- Can banks accept aluminium cans for recycling. For information on recycling banks and collections in your local area check the [www.recyclenow.org.uk](http://www.recyclenow.org.uk) website
- Clean aluminium foil can also be recycled at foil banks



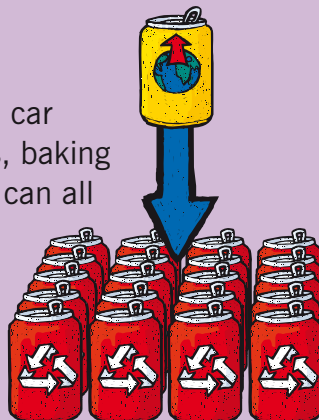
From Leicestershire the cans are transported to a can recycling plant where:

- The cans are shredded into pieces about the size of a two pence piece
- They are then passed through a magnetic drum separator which removes any steel that may have been mixed in with the aluminium
- The lacquer coating from the cans is removed in a decoater. This is done by blowing air at 500°C. The hot air is recycled in the separator which helps save energy

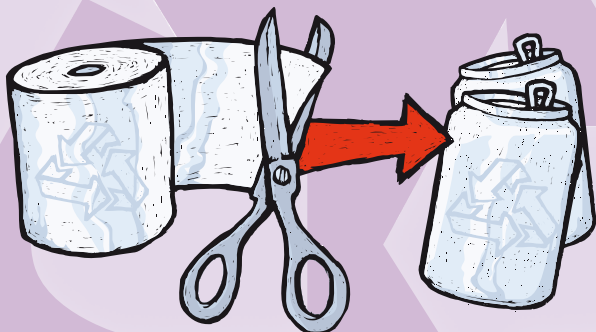
- The aluminium is fed into a 90 tonne furnace that melts it
- The furnace is tilted and the liquid aluminium is poured into casts. As the metal is poured it is cooled by water jets, but takes about 3 hours to set properly
- The finished ingots are then transported to a mill where they are rolled into sheets
- The aluminium sheets are transported to the can manufacturers where they are used to make the can bodies once again

## Aluminium facts

- Recycled aluminium foil is used in car engine parts<sup>1</sup>. Foil milk bottle tops, baking and freezing trays and kitchen foil can all be recycled if they are clean
- Recycling 1kg of aluminium saves 6kg of bauxite and 4kg of chemical products<sup>3</sup>
- The average household uses 3.2kg of aluminium each year, this translates to 208 cans<sup>4</sup>



- Aluminium is not magnetic
- Making one aluminium can from raw materials uses the same amount of energy that it takes to recycle 20<sup>4</sup>
- Each ingot made in the aluminium recycling process at Alcan's plant in Warrington is made up of 1.5 million cans and weighs 26 tonnes
- In 2001 five billion aluminium cans were consumed in the UK and 42% of these were recycled<sup>3</sup>
- In 2000 Switzerland and Finland recycled 91% of their aluminium cans<sup>3</sup>



## Weblinks

- [www.alupro.org.uk](http://www.alupro.org.uk)
  - UK Aluminium Packaging Organisation
  - Education Pages, Recycling Process Information, Making Aluminium Packaging.
- [www.wasteonline.org.uk/resources/InformationSheets/Aluminium.htm](http://www.wasteonline.org.uk/resources/InformationSheets/Aluminium.htm)
  - WasteWatch
  - Aluminium information page
- [www.recycle-more.co.uk](http://www.recycle-more.co.uk)
  - Recycle More website
  - Gives information on all aspects of recycling
- [www.canmakers.co.uk](http://www.canmakers.co.uk)
  - Representing the UK manufacturers of beer and carbonated drinks cans
  - History of the can
  - How cans are made
  - How cans are filled
- [www.thinkcans.com](http://www.thinkcans.com)
  - Cash for cans – information about can collection centres
  - Videos showing the aluminium recycling process
  - About Alcan
  - Recycling Games

## References

- <sup>1</sup> [www.alupro.org.uk](http://www.alupro.org.uk)
- <sup>2</sup> [www.learn.co.uk](http://www.learn.co.uk)
- <sup>3</sup> [www.wasteonline.org.uk](http://www.wasteonline.org.uk)
- <sup>4</sup> [www.recycle-more.co.uk](http://www.recycle-more.co.uk)