

About this lesson

This cross-curricular lesson uses the example of aluminium to explore how recycling enables new uses for used packaging materials.

Students watch a short video to discover how recycling enables aluminium to be used repeatedly to create new products. They explore how products made of aluminium are all around them and how, by recycling, they can avoid the environmental impact of mining and processing new aluminium. Students research different uses for aluminium and then use a template to create a poster encouraging their peers or families to recycle aluminium, showing an aluminium product saying what it would like to be when it is recycled and reinforcing the importance of recycling.

TIMING

Allow a double lesson for delivery (90 minutes), plus time for any optional extension activities such as writing a persuasive letter to promote recycling.

LEARNING OUTCOMES

By the end of the lesson, students will be able to:

- Name some ways aluminium is used in the world around them.
- Explain how recycling can reduce the environmental impact of using aluminium.
- Share their ideas and promote recycling in a poster or other creative work.

RESOURCES

- Aluminium recycling video
- Poster template document (best for younger or less able students)
- Plain paper (for older or more able students to design their own poster)
- Coloured pens and pencils

Review the lesson delivery ideas below and adapt the plan to suit your students and resources, including the time you have available. You may wish to substitute or add one of the extension ideas at the end of the lesson plan instead of, or in addition to, asking students to create posters. The lesson supports geography and – depending on your approach – can also support English, art and design, science and/or ICT.

Why not use the lesson to promote to a whole key stage or as a whole school poster competition, to encourage students to recycle more at school and at home?

Students will need internet access to research the uses of aluminium. If it is not possible to provide internet access for all students, you could ask a small group to research the uses of aluminium and report back to the class.

Web links on uses of aluminium:

- http://www.riotintoalcan.com/ENG/ourproducts/1542_aluminium_and_its_uses.asp
- <http://www.rsc.org/periodic-table/element/13/aluminium>
- <http://www.hydro.com/en/About-aluminium/Why-aluminium/How-we-use-aluminium/>
- <https://en.wikipedia.org/wiki/Aluminium#Applications>

You may also require additional resources to deliver your own creative approach (see the extension ideas at the end of the lesson plan).

STARTER (5 MINS)

Ask students to get into pairs or threes and answer these three questions in their groups:

- What is aluminium?
- Where does aluminium come from?
- What do we use aluminium for?

Aluminium life cycle

KS2 lesson plan

Give students a few minutes to discuss their ideas then ask groups to report back to the class. Establish that:

- Aluminium is a metal.
- Aluminium comes from the ground (aluminium ore is mined and then processed to create the metal).
- Aluminium is used all around us, including for cooking foil and foil trays, drinks cans, and aerosols.

MAIN ACTIVITIES (70 MINS)

Ask students to think of what they and their families do with used aluminium cans, foil or other packaging:

Do they just throw it in the bin, for it to become waste?

Or do they store it, for it to go somewhere else instead?

Establish that we're all encouraged to recycle aluminium, for example, by having a separate bag, box or bin at home for collecting recyclable materials, and that recycling means turning materials we've used and don't need any more into new products other people can use. If we do not recycle, these used materials can become landfill and we need more raw materials to make new aluminium, instead.

Briefly discuss some other materials that we're all encouraged to recycle (examples include paper and card, plastics, glass and even food waste, which can be composted and used again to fertilise crops or generate electricity).

Watch the video, which explores how aluminium can be recycled so it can be used repeatedly for new products.

You may find it helpful to use these discussion questions during or after the video:

- What aluminium products do you see being recycled?
- Where can you put aluminium products for recycling?
- What does the recycling logo look like?
- What can you do if there isn't a recycling point nearby?
- What happens to aluminium that has been sent for recycling?
- What was the recycled aluminium made into?
- How many times can aluminium be recycled?

Ask students to get into pairs or threes. Remind students that we are all encouraged to recycle – but why? Ask each pair or group to think of three reasons why recycling is good for the environment. (Older and more able students could link their reasons to simple stages in aluminium production: mining and processing the ore, manufacturing products, and used materials being sent to landfill. How does recycling more aluminium reduce the environmental impact of each stage, for example, through less mining, less processing and less landfill.

Share ideas. Reasons to recycle include:

- We need to extract fewer raw materials from the ground, which can help protect habitats and wildlife.
- Recycling can use much less energy than mining and processing raw materials.
- Because it uses less energy, recycling can reduce our contribution to climate change and global warming.
- It reduces waste, so less landfill space is required.
- It can result in much less pollution.
- It can create local jobs.

Remind students that the characters in the video become excited at the thought of becoming something new once they have been recycled. Explain that you would like students to help others recycle more aluminium by creating posters they can display in school or at home.

Hand out a copy of the poster template to each student, or plain paper for students who will design their own poster from scratch. Explain that to complete their poster template, students need to find out some different uses of aluminium and choose what their character wants to become when they are recycled. (Students designing their own posters can use a different approach if they wish, for example, presenting reasons to recycle.)

Ask students to spend a few minutes researching uses of aluminium on the internet ("uses of aluminium" is a straightforward but effective search term to use for this, or use the web links in the 'resources' section above). If it is not possible to provide internet access for all students, you could ask a small group to research the uses of aluminium and report back to the class while the others discuss reasons to recycle.

Aluminium life cycle

KS2 lesson plan

Ask students to write down what they find out. Share ideas as a class. Uses of aluminium include:

- Drinks cans (this is the most recognised use of recycled aluminium and aluminium in packaging)
- Aerosols e.g. deodorants, hair mousse
- Food containers (not crisp packets or most food wraps – these are plastic film)
- Bike frames and wheels
- Car engines and bodies
- Alloy car wheels
- Aircraft frames and bodies
- Building cladding and frames
- Beer kegs for pubs
- Wires for electricity transmission
- Cooking pots and pans
- Foil layers in food packaging, like fruit juice cartons
- The metal layer in CDs and DVDs
- Tent poles
- Golf clubs and tennis rackets
- Scooters, inline skates, greenhouse frames, window frames, caravans, solar panels....

Give students time to complete their posters, drawing and describing in the main box what their character would like to become after they have been recycled. Students can write their own recycling slogan in the box at the bottom, which could include a reason to recycle that students identified.

PLENARY (15 MINS)

Invite students to share their posters. Discuss where students could display their posters so they can have the maximum impact. Ask them to share how creating these posters has encouraged them to think more about why recycling is important.

Ask students to recall the important reasons to recycle they identified earlier in the lesson, or share the reason they included in their poster. Briefly share ideas.

Encourage students to think of these good reasons to recycle whenever they have the choice to recycle or bin aluminium or other recyclable waste – what will they do?

DIFFERENTIATION

Make easier: During the starter provide example items from which students can choose those made from aluminium. If you do not have internet access during the lesson, provide the list of examples of other uses of aluminium to help students choose what their poster character will become.

Make harder: Challenge students to link recycling to a reduced impact on climate change. Encourage them to design their own posters from scratch and include reasons why recycling is important. Some students could complete the persuasive letter writing extension activity (see below) as a plenary task, if time permits.

EXTENSIONS

Students could:

- Create a display of their posters for your school.
- Link their work to your Eco-Schools activities or eco-club.
- Research which countries aluminium ore (bauxite) comes from and what an aluminium mine looks like.

Computing / ICT link: Create a promotional video or assembly presentation.

English link: Use persuasive writing and letter-writing skills to write a letter encouraging people to recycle. Students could email their letters to your local newspaper.

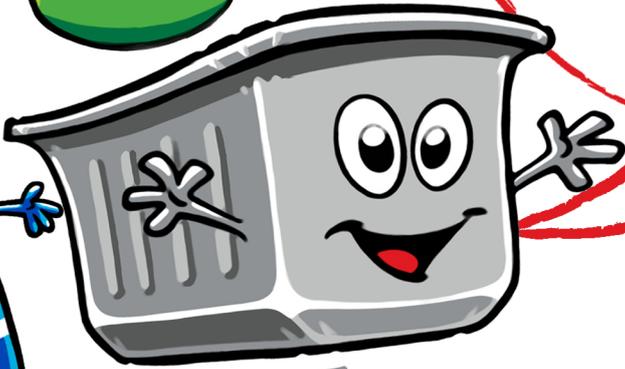
Science link: Link aluminium to your exploration of rocks and soils. Aluminium is the third most abundant element in the earth's crust after silicon and oxygen, making up about 8% of the crust.



Alex the can



Ally the aerosol



Freddy the foil tray

When I'm recycled,
I'd like to be a...

