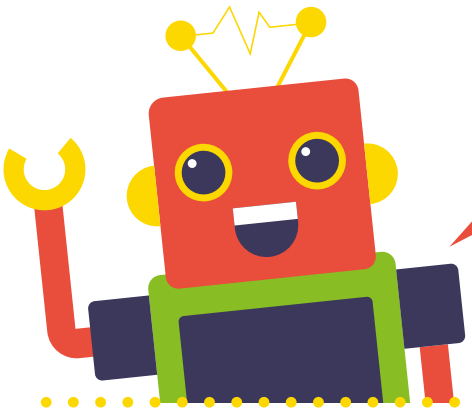
WHAT IS METAL?



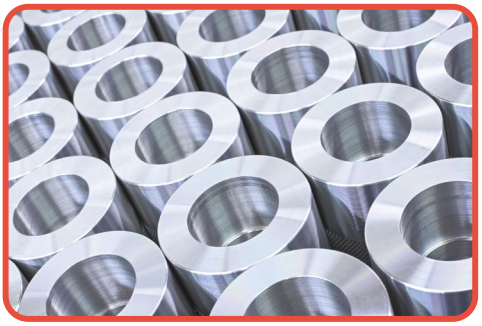
ORE'TIS

THE **PROPERTY** OF A MATERIAL IS SOMETHING ABOUT IT THAT WE CAN SEE, FEEL OR MEASURE.

FOR EXAMPLE, A MATERIAL MIGHT BE STRONG, WEAK, SMOOTH, ROUGH, MELT EASILY, NOT MELT EASILY...

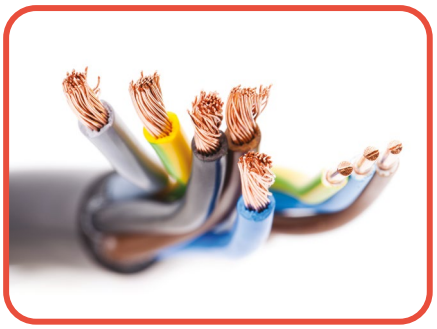
METALS HAVE FIVE PROPERTIES

1. **Most are shiny when clean.**

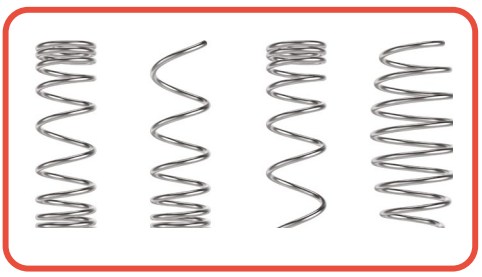


2. **They are strong but malleable.** Malleable means they can bend and be shaped.

3. **They are good conductors.** This means they allow heat and electricity to pass through them so are often used for making electric wires. Do you know which metal is usually used to make electric wire?



4. **They are ductile.** This means they can be pulled or stretched into a wire.



5. **They are dense.** This means they are generally heavy for their size.

WHERE DOES METAL COME FROM?

Most pure metals such as aluminium, silver and copper, come from the Earth's crust. They are found in ores which form in rocks underneath the ground.

Ore is a mixture of rock and metal that has formed naturally over time.

This means there will be different amounts of metal in the ore every time it is taken out of the ground. Sometimes huge amounts of ore are needed to make a very small amount of metal.

Only a quarter of every rock mined to get copper is usable! That means a lot of work and a lot of waste!

Lots of rock needs to be dug up to get enough metal. This means that large areas of the environment are affected:

- Trees might have to be cut down
- Large holes need to be dug
- Animals may need to be rehomed

Recycling metal means that less metal needs to be mined. This helps protect the environment by saving large areas of land.

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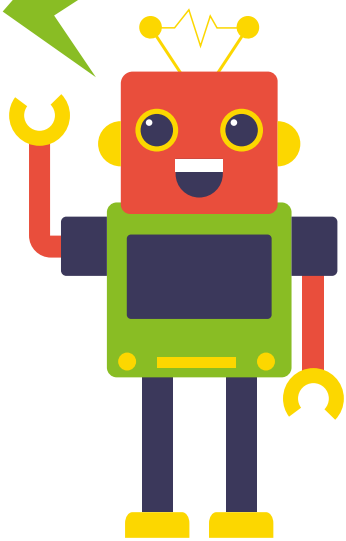
AN ALLOY IS MADE FROM TWO OR MORE METALS WHICH ARE MELTED DOWN AND MIXED TOGETHER TO FORM A NEW METAL. THIS MIGHT CHANGE THE METALS' PROPERTIES. FOR EXAMPLE, THE ALLOY MIGHT NOW BE STRONGER OR MORE SHINY.



WHAT IS AN ALLOY?

Once the metal ore has been mined and processed, it is usually mixed with other metals to give it certain qualities.

These mixtures are called alloys. Alloys are created for lots of different reasons, such as making a metal stronger or less likely to react with air.

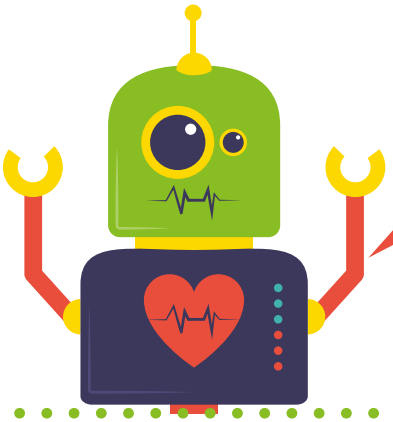
Why else do you think we might use steel for buildings?

CLUE – think about iron being soft before it is mixed with carbon.

Sometimes alloys are made because it is important to have materials that will last a long time. For example, a big problem when using materials to make buildings and other structures is rust. It is caused by metal reacting with oxygen in the air, which makes the metal weaker.

That would cause problems for our buildings, so a common alloy has been made to fix this problem. By mixing carbon (a tough non-metal) with iron (a soft metal) it creates steel. This changes the metal's properties so that it takes a lot longer to rust.

WHAT ABOUT PLASTICS?



PLAS'TIM

DID YOU KNOW THAT PLASTIC IS USED IN MANY THINGS, FROM BOTTLES, BIN BAGS, TOASTERS AND GAMES CONSOLES TO CLOTHING, CARPETS, CARS AND TOOTHBRUSHES!

CAN YOU THINK OF ANYTHING ELSE?

PLASTIC IS ALSO EVERYWHERE!

It is made from natural materials like coal and oil and is a man-made product. It is very popular because there are many different types and it can come in many different shapes, sizes and colours.

The problem with plastic is that it is bad for the environment. Not only do we have to dig up coal and oil to make it, it also takes a very long time to break down and can litter our environment for years and years if not taken care of correctly. That is why things like paper straws and bags are becoming more popular because they rot away easily.

A lot of plastic is ending up in the ocean. Scientists believe the amount of plastic in the ocean will weigh more than the amount of fish by 2050!

THE GOOD NEWS IS THAT SOME PLASTIC CAN BE RECYCLED!

We can break up some plastics and process them at our plastic recycling centre to make it into new plastic pellets that can be melted down and made into new plastic products.

This can be done for lots of different types of plastic, from the plastic in your hair dryers and fridge freezers (refridgerators) to the plastic used in car bumpers.

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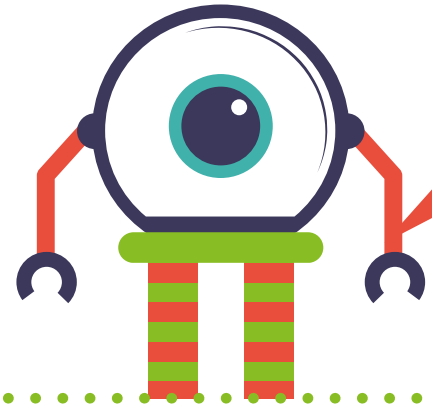
WHY DO WE RECYCLE?



SYCLE

RECYCLING IS THE PROCESS OF TURNING WASTE AND OLD OR USED MATERIALS INTO NEW PRODUCTS. IT IS VERY IMPORTANT FOR OUR PLANET.

You might already recycle paper, plastic and tins at home or in school, but did you know that you can also recycle all types of metal?

Recycling metal is good for the environment! This is because the more metal we recycle, the less ore we need to take from the ground.

Remember, getting ore out of the ground can be expensive and difficult. It also uses a lot of water and energy.

Instead of throwing metal away, EMR recycles it! This means that less waste gets sent to landfill sites each year. The metal we recycle can be used over and over again! You will find out how EMR recycles metal later on.

Here's a photo of waste metal materials waiting to be recycled.

In the past, all our waste used to be sent to a landfill site. It is an area of land where rubbish is dumped. Landfill sites affect the natural environment and local wildlife. They can also be filled with lots of things that won't rot, which means they will be there for hundreds of years, maybe longer!

It is important that we recycle so that:

- Less stuff is sent to landfill
- Whatever is sent to landfill is the right stuff (can break down over time)
- We don't dig up more natural materials to make new things
- We have less negative impact on the local environment and wildlife

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DID YOU KNOW?

One tonne of iPhones has 300 times more gold than one tonne of gold ore and 6.5 times more silver than one tonne of silver ore from the ground?

Although some small electrical products might be broken or very old, most homes have some stored away.

Over 60,000 tonnes of electrical products are thrown in the bin every year even though they can be recycled. That's roughly the same weight as 30,000 cars or 135 planes!

Once in the bin, they could potentially end up being sent to landfill, which means metals such as gold and silver are lost.

It isn't just metal that we can recycle from your small electrical products. It is important that we recycle the plastic in them too.

Protecting the environment is very important and we have a very exciting project that you can be a part of to help us do that! To find out what that is, read on.

WHAT HAVE YOU LEARNT ABOUT RECYCLING METAL?

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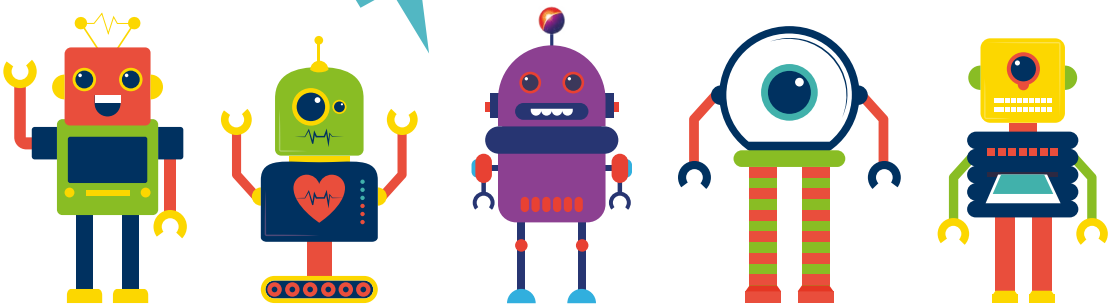
Now that we have told you all about metal recycling, hopefully you can see how amazing metals are and why it is important to recycle them.

Can you answer these questions about recycling metal?



1. Where is metal ore found?

2. Can you name three properties of metal?

3. Why is plastic bad for the environment?

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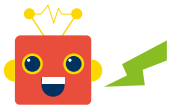
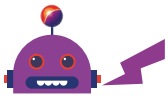
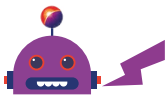


4. What is an alloy?

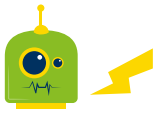


5. Name three small electrical products that you might find in your home.



6. What precious metal can be found in circuit boards?

7. Where would plastic and metal go if we didn't recycle it?



8. Can things like hair dryers, toasters and tablets be recycled?

9. Why is it important to recycle?