

Properties of metals

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All matter has properties. A property is a quality that a substance, plant or animal has. Some properties of matter are the colour, the shape, the strength or whether it breaks easily. A property is a characteristic of a substance that makes it different from other substances. We can use these properties to sort them into metals or non-metals.

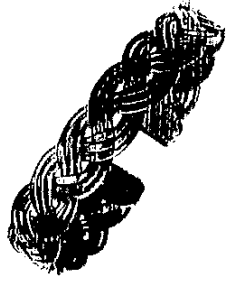
Metals have specific properties, which make them useful for doing certain jobs. For example, jewellery is often made of metal as it is attractive, shiny and is easy to bend into different shapes.

Metals have the following properties:

- metals are shiny
- metals are hard
- metals are strong and do not break easily
- metals can be hammered into different shapes without breaking. We say that they are **malleable**
- metals can be pulled into thin wires without breaking. We say that they are **ductile**
- metals melt at high temperatures.



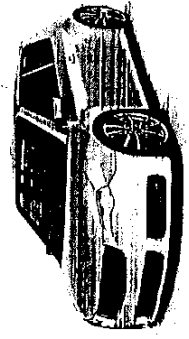
This shiny gold rhino found at Mapungubwe Hill was made 1 000 years ago



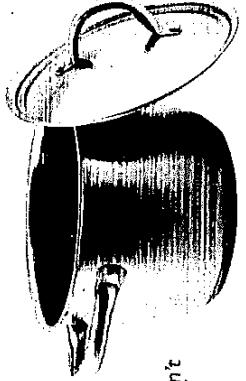
Metals are attractive



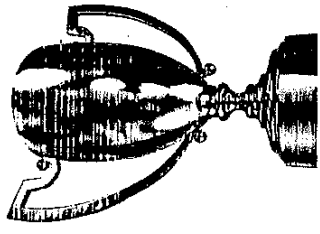
Metals are ductile



Metals are strong



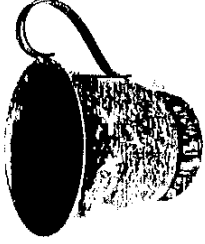
Some metals don't melt easily



Metals are malleable

Metals become tarnished

When metals are left out in the open air, over a period of time their surfaces will change from being shiny to being dull. We say that the metal has become **tarnished**. If you scratch the surface of the metal you can still see the shiny layer beneath. All metals, except for gold and platinum, become tarnished. Look at the picture of this tarnished silver mug.



Tarnished silver

<p>Key words matter the material that everything in the universe is made of, including solids, liquids, and gases property a quality that a substance, plant or animal has</p>	<p>malleable is easy to press or pull into a new shape ductile metals that can be pressed or pulled into shape without needing to be heated</p>
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<p>Key words tarnished when a metal loses its shine and goes dull</p>
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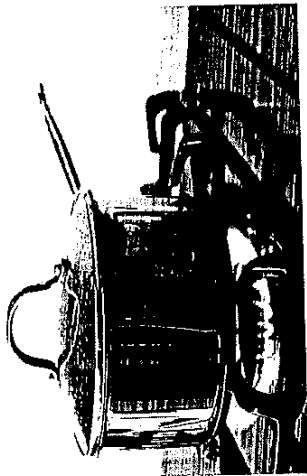
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Other properties of metals

In the previous topic you learnt about some of the main properties of metals. This unit looks at some of the special properties of metals that make them useful.

Metals conduct heat

Have you ever left a metal teaspoon in a hot cup of tea and then touched the teaspoon? The teaspoon feels hot. This is because heat passes easily from the hot tea to the metal teaspoon. Materials that heat can pass through easily are called **conductors**. Metals are good conductors of heat.



Metal cooking pots conduct heat well and make the food in the pot cook quicker

Magnetism

A magnet is a piece of metal that can stick to other metals, or make metal objects move towards it. You may have seen fridges with fridge magnets stuck on them. The fridge door is made of metal. The fridge magnets stick onto the metal door. If you hold the magnet close to the fridge door you can feel it pull towards the door. We say the magnet is **attracted** to the metal door.

A metal that acts as a magnet is called **magnetic**. Some metals are magnetic and some are not. The metal called iron and metal objects that contain iron are magnetic. We call metals and other materials that are not magnetic, **non-magnetic**.

Key words

conductors materials that allow heat to pass through them easily

attracted pulled towards something

magnetic having the power of a magnet to pull something towards it

non-magnetic does not act like a magnet

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People use magnets for sorting recycling



Metal objects that contain iron can rust

Rusting

Sometimes you see reddish-brown metal objects. This colour is caused by **rust**. Water and air change the metal and make it rust. This process is called rusting. Iron is the only metal that rusts. Any metal object that has iron in it can rust.

Other metals do not rust.

When they are exposed to water and air, they tarnish.

This means that they lose their shine and become dull.