



# Year 5 Science: Materials and their Properties



## Why is glass a suitable material to make windows?

Glass has useful physical properties: it is transparent and rigid as well as impermeable which means light can enter a building while rain cannot.

Its working properties allow it to be formed into sheets which can be cut to into shape and fitted to window apertures.

## What is the difference between a conductor and an insulator?

Thermal conductors allow heat to flow through them whereas thermal insulators (such as a woolly jumper) trap the heat and do not allow heat to flow.

Electrical conductors such as copper allow electricity to flow through them while electrical insulators such as plastic resist the flow of electricity.

## Should a lunch bag be made from card?

It is true that some fast food packaging is made from card, but card is not a durable material and will disintegrate. Thin card is not a good thermal insulator so it will not keep food cool and fresh.

I would advise making a lunch bag from some of the following sustainable materials:

Fabric is strong flexible and durable so it can be cut, stitched and shaped and will last a long time. If you use waxed or waterproof fabric your bag will also be impermeable to rain or drinks spillages.

It will also be helpful to include a thermal insulating layer such as wool wadding to keep your food cool.

### Electrical conductor

Lets electricity flow through the circuit easily



### Electrical insulator

Does not let electricity flow through the circuit easily



## Significant scientists



### Jan Ernst Matzeliger

was a person of colour born in America in 1852 (died 1889). He designed a machine that changed the ways shoes were manufactured so they were no longer made by hand. With the machine he could make shoes very quickly which meant they could be mass produced and became affordable for everyone.

### James Dewar

While we generally use thermos flasks to keep our drinks hot, vacuum flasks were invented by James Dewar in 1892 to keep things very cold.



## Key vocabulary

<b>property</b>	Words that describe what something is like and how it works
<b>impermeable</b>	Waterproof materials keep out liquids
<b>durable</b>	Long lasting
<b>synthetic</b>	Made by man
<b>magnetic</b>	is attracted to a magnet eg steel paperclip
<b>non magnetic</b>	is not attracted to a magnet, like a wooden ruler
<b>synthetic</b>	made by man
<b>thermal conductor</b>	lets heat flow through it eg a metal spoon
<b>thermal insulator</b>	does not let heat flow through it eg, a woollen jumper
<b>rigid</b>	Stiff objects that don't bend easily
<b>flexible</b>	Bendable without breaking