

Some common materials, their properties and uses

Wood 	Rigid, strong, hard <i>Can be used for doors, floors, tables, fences</i>
Plastic 	Strong, shiny, bendy <i>Can be used for bottles, pens, rulers, toys, phones, cups, packaging</i>
Glass 	Transparent, smooth, stiff, waterproof <i>Can be used for windows, mirrors, glasses, windscreens</i>
Rock 	Hard, strong, dull <i>Can be used for garden walls, old buildings</i>
Rubber 	Flexible, stretchy, strong <i>Can be used for tyres, elastic bands, balloons, soles on shoes</i>
Brick 	Rigid, strong, dull, rough <i>Can be used for houses, walls</i>

What does *material* mean?

All objects have a name like 'a door'. Material is the 'stuff' an object is made from

Changing the shape of materials

Squashing 	Crushing something so that it becomes flat, soft or out of shape
Bending 	Changing a straight object so that it is curved
Twisting 	Changing the shape of an object by turning it
Stretching 	Made longer or wider without tearing or breaking


Key Vocab

Properties	Ways to describe something
Material	The 'stuff' an object is made out of
Rubber	A tough material that can be shaped
Inflatable	Can be filled with air
Fabric	Cloth produced by weaving or knitting
Flexible	Easily bent without breaking
Absorbent	Able to soak up liquid or moisture
Waterproof	Not letting water through; not absorbent
Reflective	A reflective surface is one that can bounce back light
Magnetic	Magnetic materials are rocks or pieces of metal that can pull certain types of metal toward itself

John Boyd Dunlop

John Boyd Dunlop was a Scottish inventor. He is best known for his work in developing the first pneumatic (inflatable) tyre, a device still used today.

Dunlop found that solid wood, rubber or iron wheels made cycling difficult on the bumpy and rough roads. He experimented by using an inflatable rubber tyre on his son's tricycle. In 1889, cyclist Willie Hume tested Dunlop's tyres by taking part in several races in the UK. He was the first member of the public to buy a bicycle with pneumatic tyres.





Charles Macintosh

Charles Mackintosh was born in 1766 in Scotland.

He started experimenting with ways to use chemicals to make new materials.



During one of his experiments, he found that rubber would dissolve into a liquid in naphtha, a product derived from coal tar that he was investigating.

The dissolved liquid rubber was waterproof.

Charles realised it could be used to make waterproof fabric for clothes.

He painted the dissolved rubber onto a piece of woollen cloth and placed another piece of woollen cloth on top, so the rubber was sandwiched in the middle.

Charles had invented waterproof fabric!

He started to use this fabric to make waterproof coats that he called Mackintoshes.

Some objects can be made from various materials

Spoons

A spoon can be made from plastic, metal or wood



Shoes

A shoe can be made from leather, fabric or rubber



Gloves

A gloves can be made from leather, wool or rubber



Cups

A cup can be made from plastic, paper or glass



John McAdam

John Loudon McAdam was born in Scotland in 1756.

John McAdam became interested in road building and experimented with using different materials.

Roads at the time were often muddy and dangerous. Others were cobbled and very bumpy to travel over.

John McAdam thought it would be easier if the roads were covered in small stones and invented tarmac. It took his company 30 years to cover all roads across the UK. Macadamisation was a success and this method of building roads was used all over the world.



Macadamisation

Large stones were placed at the bottom and small stones and gravel were crushed on the top to create the surface and structure. The roads were also curved, so that rainwater ran off the surface, instead of creating big puddles in the middle of the road.

