



### Key People/Scientists



**Charles Mackintosh (1766-1843)**  
A Scotsman Charles Mackintosh created the first 'waterproof' fabric. It was made by squeezing liquid rubber in between two pieces of fabric, then pressing them together.



**John Macadam (1827-1865)**  
A Scotsman John Loudon Macadam invented the first form of tarmac called Tarmacadam. The new form of tarmac on the roads we know today was made in 1901.



**John Dunlop (1840 - 1921)**  
In 1887 John Boyd Dunlop developed the first practical inflatable tyre for his son's tricycle using his knowledge and experience with rubber.

### Key Questions

<b>What is a material?</b>	A material is anything that something can be made from.
<b>What are the most common materials?</b>	Wood, metal, plastic, glass, brick/rock, paper/cardboard and fabric.
<b>How can you change the shape of some objects?</b>	Squashing, stretching, bending or twisting.
<b>What happens when you apply force onto a material?</b>	In some materials the particles can move around so the materials can change shape. In other materials the particles are so close together that they cannot move at all.
<b>What are properties of materials?</b>	Physical features or behaviours of a material. E.g. One property of plastic is that it is waterproof.

### Diagrams/Visual Aids

How does the material look?

Is the material transparent or opaque?

Is the material rough or smooth?

Is the material heavy or light?

What are you comparing it to?

Is your material...

...hard and rigid?

...flexible?

...soft and squashy?

...breakable?

...waterproof?

...absorbent?

...magnetic?

Does your material conduct electricity?

Which group does your material belong to?

...metal?

...plastic?

...stone (includes glass)?

...fibres?

...wood?

### Misconceptions

#### Misconception:

Material means a fabric.

#### Fact:

A material is anything that an object can be made from.

### Key Vocabulary

<b>elastic</b>	The material can stretch.
<b>flexible</b>	The material can bend easily.
<b>hard</b>	The material does not dent or scratch easily.
<b>opaque</b>	The material does not let any light through.
<b>rigid</b>	The material will not bend or change shape easily.
<b>strong</b>	The material doesn't break easily.
<b>suitability</b>	Having the properties that are right for a specific purpose.
<b>translucent</b>	The material lets some light through.
<b>transparent</b>	The material is see-through.