

Processed materials

Name: _____

Activity 1:

Look at the pictures of these two chairs and answer the questions that follow:

Picture A



Picture B



1) What materials were used to make each of these chairs?

A: _____ B: _____

2) Why do you think these materials were chosen for each of these chairs?

A: _____

B: _____

3) Are these materials RAW or PROCESSED? _____

Raw materials are the items we use to make another product. If you were baking a cake, the raw materials would include all of the ingredients (flour, baking powder, eggs, sugar, milk, vanilla essence). The product would look quite different to the raw materials because the raw materials have been **processed**.

Two processed materials you have already learnt about are Plaster of Paris and Concrete. We are going to learn a bit more about these and a few other processed materials and how they are useful to us.

Various properties of processed materials make them useful to us. We choose to use a particular material based on these things:

- **Strong**
- **Durable (long-lasting)**
- **Water-proof**
- **Fire-/Heat-resistant**
- **Interesting and attractive**
- **Cost effective**

Plaster of Paris

Can you remember what Plaster of Paris is made from? _____

This white powder is mixed with water to form a paste that **can be molded** into various shapes. When it dries it becomes very hard. Plaster of Paris is **water-proof** and **fire-resistant** and these are two reasons it is very useful to us.

We can use it on its own or it can be mixed or added to other substances. Here are some examples:

- **Plaster casts:** bandages are soaked in Plaster of Paris and then molded to the person's arm or leg. When it dries it forms a strong, hard, long-lasting cast
- **Dental moulds:** If you have to get a dental plate or braces, the dentist first takes a mould of your mouth to design the plate, etc. These molds are made of a mixture of Plaster of Paris and other substances
- **Fill cracks:** Polyfilla can be used to fill cracks in walls
- **Art work:** Plaster of Paris can be poured into molds and create ornaments and other pieces of artwork. These can be painted and varnished or glazed to make them beautiful



Concrete

Can you remember what raw materials are used to make concrete?

Concrete is an important material used in building many things: roads, pillars, pipes, foundations, bridges, and so forth.

Here are some pictures of concrete items:



*Concrete power station
cooling towers*



Concrete pillars



Concrete water pipes



A concrete road

There are various reasons that we would use concrete for these items:

- It is strong and hard
- It is durable (lasts a long time)
- It is fire-resistant
- Substances are added to it to make it water-proof
- It can easily be molded into any shape

Fabric

Fabric is made of fibres that are either **natural** or **man-made**.

Natural fibres come from animals or plants; for example, cotton comes from a cotton plant, wool comes from sheep and silk comes from silkworms.

Man-made fibres are made from other substances. Two examples of man-made fibres are nylon and polyester.

Activity 2: What are your clothes made of?

Find four items of clothing that have a label on them and write down what fibres they are made from.

Clothing item	Fibres
E.g. Fleece jacket	Polyester
1)	
2)	
3)	
4)	

There are many different types of fabric that have different textures and properties that make them useful to us. Here are a few examples:

- **Wool** jerseys trap the warm air from our bodies which helps to keep us warm
- **Cotton** shirts allow air to flow through the fibres easily which means that they are cooler to wear
- **Linen** is a sturdy fabric that is used to make table cloths
- **Towelling** is a fabric used to make towels and dish cloths. It absorbs water, soaking it up easily

Ceramics and Glass

Ceramic items include casserole dishes, plates and mugs and some baths. Glass items include glass cups, jugs and windows. Ceramics and glass are very useful to us because they are water-proof and some can withstand high temperatures (heat-resistant) so we can use them for cooking. They are also durable if they are looked after. Unfortunately, because they are brittle they can be broken quite easily.

Ceramic items are made from clay or sand. These items are then fired (baked at a high temperature) in a kiln. They can be painted and glazed and fired again. These processes make them very strong and able to withstand heat better than metal or plastic objects, for example.

Glass is made from a special kind of sand that melts when it is heated. This heated substance can be molded into various shapes.

Activity 3: Ceramic or Glass?

Here are some items made of ceramic and of glass. Match the picture to the objects name.



Ceramic items

- Casserole dish
- Dinner set
- Bath

Glass items

- Window
- Drinking glass
- Glass bottle

Plastics

Plastic is very useful to us as it is light, strong, water-proof and durable. It is also inexpensive compared to other materials. Unfortunately it is not heat-resistant and will melt if exposed to high temperatures.

Activity 4:

Find some pictures of plastic items that are useful to us. Paste them here:

Paint

Paint is a liquid we can use for various things. Some paints prevent metal from rusting, other paints make items waterproof and some paints protect items from being destroyed by the weather. This liquid hardens when it dries.

Pigment is added to give paint different colours. Other substances are added to paint to make it glossy and improve its durability.

Memorandum

Activity 1:

1) What materials were used to make each of these chairs?

A: Wood

B: Plastic

2) Why do you think these materials were chosen for each of these chairs?

A: Strong, Durable, Attractive.

B: Water-proof, Cost effective, Strong, Durable.

3) Are these materials RAW or PROCESSED? **Processed**

Plaster of Paris

Can you remember what Plaster of Paris is made from? **Gypsum**

Concrete

Can you remember what raw materials are used to make concrete?

Cement, Water, Gravel, Sand.

Activity 2: What are your clothes made of?

Clothing item	Fibres
E.g. Fleece jacket	Polyester
1)	
2)	
3)	
4)	

Learners answers will vary.

Activity 3: Ceramic or Glass?

Ceramic items

- Casserole dish
- Dinner plate
- Bath

Glass items

- Window
- Glass cup
- Glass bottle

Activity 4:

Find some pictures of plastic items that are useful to us. Paste them here:

Examples may include:

Plastic kitchen utensils, chairs, tables, pipes, plastic insulation around electrical wires.

Learners answers will vary