

Teacher subject knowledge guide for Year 1, Unit 1: *Everyday materials*

**This unit**

In this unit, pupils are introduced to seven different materials and the concept of a material being something that we can use to make things.

The materials studied are:

- wood
- fabric
- plastic
- rock/stone
- glass
- metal
- paper.

Pupils are introduced to the idea that objects and materials are two different things—that objects are made from materials. They are also introduced to the idea that materials have properties and that a property is a way of describing a material. They find out that some properties are quite easy to see or feel but that others need to be investigated.

The properties that pupils will find out about include:

- hard or soft
- dull or shiny
- stretchy or stiff
- rough or smooth
- bendy (flexible) or not bendy
- waterproof or not waterproof
- transparent or not transparent (opaque)
- absorbent or not absorbent.

Although surface texture (rough/smooth) is not strictly a material property, this is used to help pupils understand the idea of grouping materials by their physical similarities. It is fine to use as a material property at this stage.

At the end of the unit, pupils are introduced to the idea that materials can be sorted by looking at their properties. Also, that objects can be sorted by identifying the materials they are made from and the properties of those materials.

**Properties of materials**

Materials are everywhere in the world around us. A material is a substance or mixture of substances that can be used to create, construct, or make an object. Materials can be pure or impure, living or non-living matter. Materials can be classified based on their physical appearance, by their physical or chemical properties, or by their function. Material science is the study of materials and the applications of those materials. In industry, materials are used in manufacturing processes to produce products or goods.

Materials have properties. A property of a material is a fundamental characteristic of that material. Examples of properties are the ability to absorb liquids, brittleness, colour, density, ductility, elasticity, electrical conductivity, hardness, melting point, thermal conductivity, viscosity, and whether it is magnetic or not.

Materials can be grouped, compared, and sorted using knowledge of those properties.

**Objects**

Objects can be defined as a thing we can see or touch. Objects are made from one or more materials. They have usually been made or created because they are of some use to us. The materials selected to create a particular object are chosen due to their properties. For example, aluminium might be chosen to make a bicycle frame because it is strong and has a low density.

**Wood**

Wood has the following properties: it is hard, stiff, not bendy, waterproof, not transparent (opaque), not absorbent, and usually rough and dull.



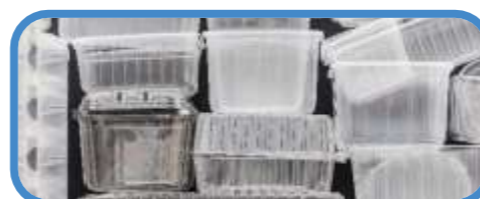
**Fabric**

Many fabrics have the following properties: they are soft, dull, stretchy, bendy, not waterproof (waterproof clothes tend to be treated with a waterproof coating), opaque, and absorbent.



**Plastic**

Plastics have many different properties depending on their chemical composition. Plastics can be soft or hard, dull or shiny, stretchy or stiff, rough or smooth, bendy or not bendy, transparent or opaque. However, most plastics are waterproof and not absorbent. Due to the range of plastics available with specific properties, many objects are formed from plastics.



**Rock/stone**

Rock and stone have the following properties: they are hard, dull, stiff, not bendy, waterproof, opaque, and not absorbent. Many different types of rock/stone exist, so examples may be rough or smooth.

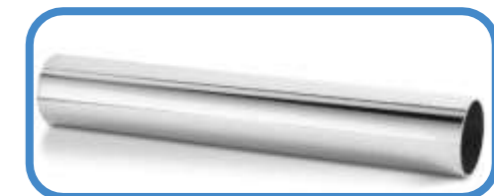


**Glass**

Glass has the following properties: it is hard, shiny, stiff, smooth, not bendy, waterproof, transparent, and not absorbent.

**Metal**

Most metals have the following properties: they are hard, shiny, stiff, smooth, waterproof, opaque, and not absorbent. Metals can also be bendy or not bendy.



**Paper**

Paper has the following properties: it is dull, smooth, bendy, not waterproof, opaque, and absorbent.

