

Term: Autumn Science	Materials – Year 1 and Year 2 Seasonal Changes – Year 1
NC Objectives	Key Knowledge and Vocabulary
<p>Pupils should be taught to:</p> <p>Y1 Materials</p> <ul style="list-style-type: none"> • Distinguish between an object and the material from which it is made. • Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. • Describe the simple physical properties of a variety of everyday materials. • Compare and group together a variety of everyday materials on the basis of their simple physical properties. <p>Y2 Materials</p> <ul style="list-style-type: none"> • Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. 	<p>Year 1 Everyday Materials and Year 2 Uses of Everyday Materials</p> <p>Prior learning: Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur and talk about changes. (Early Learning Goal)</p> <p>Key learning: All objects are made of one or more materials. Some objects can be made from different materials e.g. plastic, metal or wooden spoons. Materials can be described by their properties e.g. shiny, stretchy, rough etc. Some materials e.g. plastic can be in different forms with very different properties. Objects made of some materials can be changed in shape by bending, stretching, squashing and twisting. For example, clay can be shaped by squashing, stretching, rolling, pressing etc. This can be a property of the material or depend on how the material has been processed e.g. thickness.</p> <p>Misconceptions include: Some children may think:</p> <ul style="list-style-type: none"> • only fabrics are materials • only building materials are materials • only writing materials are materials • the word ‘rock’ describes an object rather than a material • ‘solid’ is another word for hard. <p>Key vocabulary: Y1 object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card/cardboard, rubber, wool, clay, hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see-through, not see-through</p> <p>Evidence:</p> <ul style="list-style-type: none"> • Can sort objects and materials using a range of properties • Can choose an appropriate method for testing an object for a particular property • Can use their test evidence to answer the questions about properties e.g. “Which cloth is the most absorbent?” • Can label a picture or diagram of an object made from different materials • Can describe the properties of different materials • Whilst changing the shape of an object can describe the action used

	<ul style="list-style-type: none"> • Can use the words flexible and/or stretchy to describe materials that can be changed in shape and stiff and/or rigid for those that cannot • Can recognise that a material may come in different forms which have different properties e.g. wood/paper/sawdust/card
NC Objectives	Key Knowledge and Vocabulary
<p>Y1 Seasons – focus on: Autumn / winter</p> <ul style="list-style-type: none"> • Observe changes across the four seasons. • Observe and describe weather associated with the seasons and how day length varies. 	<p>Prior learning:</p> <ul style="list-style-type: none"> • Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur and talk about changes. (Early Learning Goal) <p>Key learning:</p> <p>In the UK, the day length is longest at mid-summer (about 16 hours) and gets shorter each day until mid-winter (about 8 hours) before getting longer again.</p> <p>The weather also changes with the seasons. In the UK, it is usually colder and rainier in winter, and hotter and dryer in the summer. The change in weather causes many other changes. Some examples are: numbers of minibeasts found outside; seed and plant growth; leaves on trees; and type of clothes worn by people.</p> <p>Misconceptions include:</p> <p>Some children may think:</p> <ul style="list-style-type: none"> • it always snows in winter • it is always sunny in the summer • there are only flowers in spring and summer • it rains most in the winter. <p>Key vocabulary:</p> <ul style="list-style-type: none"> • Weather (sunny, rainy, windy, snowy etc.) • Seasons (winter, summer, spring, autumn) • Sun, sunrise, sunset, day length <p>Evidence:</p> <ul style="list-style-type: none"> • Can name the four seasons and identify when in the year they occur • Can describe weather in different seasons over a year • Can describe days as being longer (in time) in the summer and shorter in the winter • Can describe other features that change through the year • Use the evidence gathered to describe the general types of weather and changes in day length over the seasons. • Use their evidence to describe some other features of their surroundings, e.g. themselves, animals, plants that change over the seasons

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| | <ul style="list-style-type: none">• Demonstrate their knowledge in different ways e.g. making a weather forecast video, writing seasonal poetry, creating seasonal artwork |
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Notes / vocab

Material - A material is anything made from matter that can be shaped or manipulated in order to make something. A material is therefore anything that physically occupies space and has mass, which can be a solid, a liquid or a gas. The materials that we use to make objects can also be divided into two broad groups – **natural and manufactured**.

Natural materials

Natural materials are taken from our environment. Some natural materials can be used in their original forms, but most will require some processing to change their appearance and properties.

Natural materials include:

- Rocks such as granite, limestone and marble
- Fossil fuels such as coal and oil
- Clay
- Water
- Air
- Wood
- Plant fibres such as cotton and hemp
- Animal products such as wool, leather, tallow and horn
- Plant extracts such as latex

Manufactured materials

Manufactured materials are ultimately derived from natural materials. However, the difference is that they have been processed or combined in such a way that their chemical composition has been altered. These chemical reactions substantially change the properties of the resultant materials.

At lower-primary level the children might group these materials into the following broad groups:

- Metals – extracted from rocks and ores
- Glass – made from sand and other minerals
- Paper – made from wood pulp
- Rubber – made from latex or crude oil
- Fabrics – made from plant and animal fibres such as wool and cotton
- Plastics – polymers made from crude oil
- Ceramics – made by firing clay and minerals

Synthetic materials are heavily processed, often created from chemicals found in crude oil. They include detergents, paints and many types of plastic, such as polythene and polystyrene.

Hardness - in scientific terms, refers to a material's ability to withstand being scratched – hard materials cannot easily be scratched.

We can group materials according to various properties:

Texture – is it rough or smooth, hard or soft?

Flexibility – can it bend or is it stiff?

Water permeability – does it allow water to pass through it?

Density and buoyancy – does it sink or float in water? Does it feel heavy or light?

Is the material transparent, translucent or opaque?

Is the material magnetic?

Does it conduct or insulate heat and electricity? Does it feel cold to the touch?

Some of the general properties of the different groups of materials are described below. There will always be exceptions to these, which can provide interesting discussion points.

Metal: Metals are shiny, strong and (usually) hard. They are good conductors of heat and electricity.

Ceramic: Ceramics are hard and strong but inflexible and brittle. They are good insulators of heat and electricity.

Glass: Glass is transparent. It is hard, but inflexible and brittle. It is a good insulator of heat and electricity.

Plastics: Plastics can be manufactured to have many different properties. Some can be transparent whilst others can be translucent or opaque. Some are flexible while others can be quite stiff. They are good insulators of heat and electricity.

Fibres: Fibres are flexible, but very strong. They are good insulators of heat and electricity. Optical fibres transmit light very efficiently.

Vocab activity: **DO NOT USE THOSE LINKED TO LIGHT AS THEY ARE THE FOCUS OF TERM 5/6 LINKED TO LIGHT AND DARK**