



## Jerry Clay Academy Subject Unit Overview



Subject: Science (Materials) Year Group: 5 Term: Autumn

### Core Learning of This Unit:

- To use scientific vocabulary so that we can describe the properties of different materials.
- To compare and group materials so that we can explain the uses of different materials based on their properties.
- To investigate thermal conductors and insulators so that we can carry out an investigation to find a suitable material for a lining of a lunch box.
- To investigate materials that dissolve so that we can investigate the factors which affect the speed of dissolving.
- To investigate the process of sieving, filtering and evaporating so that we understand how different processes are used to separate mixtures of materials.

### Prior Learning:

From Key stage 1: Some properties of materials including glass; mirrors are made from shiny materials. Children also know that shadows are dark and are similar in shape to the object forming them.

From KS2: How materials are able to change state and an idea of whether these changes are reversible or irreversible

From year 4 children should:

- Compare and group materials together according to whether they are solids, liquids or gases
- Observe that some materials change state according to heating or cooling
- Identify the parts played by evaporation and condensation in the water cycle.



### National Curriculum Statements:

Pupils should be taught to:

- compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets
- know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution
- use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating
- give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic
- demonstrate that dissolving, mixing and changes of state are reversible changes
- explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda

### Key Vocabulary:

- **magnetic**- objects which are attracted to a magnet.
- **transparent**- objects that let light through easily.
- **translucent**- objects that let some light through but scatters the light.
- **opaque**- objects that do not let any light pass through.
- **permeable**- allows liquid to pass through it.
- **absorbent**-soaks liquid up.
- **flammable**-will easily catch fire and burn quickly.
- **insulating**-will stop energy such as electricity or heat from transferring through.
- **melting**-the process of heating a solid until it changes into a liquid.
- **freezing**-when a liquid cools and turns into a solid.
- **evaporating**-when a liquid turns into a gas or vapour.
- **condensing**-when a gas, such as water vapour, cools and turns into a liquid.
- **dissolving**-when a material is absorbed by a liquid when mixed.
- **soluble**-when a material dissolves in a liquid.
- **insoluble**-when a material doesn't dissolve in a liquid.
- **sieving**-used to separate larger from smaller pieces or solids from a liquid.
- **filtering**-to remove solids from liquids using filter paper.
- **thermal conductor**-a materials that does let heat travel through.
- **thermal insulator**- a materials that doesn't let heat travel through
- **reversible**-a material that can be changed back to what it was before.
- **irreversible**-a material that cannot be changed back to what it was before.

### Significant People

Starlite is an intumescent material claimed to be able to withstand and insulate from extreme heat. It was invented by British amateur chemist and hairdresser Maurice Ward during the 1970s and 1980s, and received significant publicity after coverage of the material aired in 1990 on the BBC science and technology show Tomorrow's World. The name Starlite was coined by Ward's granddaughter Kimberly.