

Year 5 – Properties and Changes of Materials Knowledge Planner: What are things made of and why, and can we change materials?

What should I already know?

- Materials are used for certain purposes because of their properties.
- Materials can be grouped into solids, liquids or gases.
- Materials can change depending on the temperature.
- Evaporation is part of the water cycle.

Being a Scientist.

- Take measurements using a range of scientific equipment with increasing accuracy and precision.
- How will you make your experiment a fair test?
- Learn how to use a range of (new) equipment to make measurements with increasing precision.
- Measure using standard units (N, g, kg, mm, cm, mins, seconds, cm²V, km/h, m per sec, m/ sec) using equipment that has scales involving decimals.
- Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.
- Be able to answer their question, describing causal relationships.
- Use test results to make predictions for further tests.

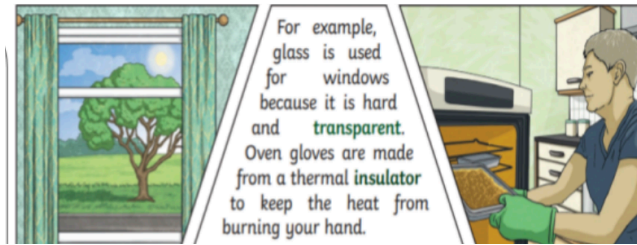
Key Vocabulary

| | |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Burning | to be in flames; be on fire. |
| Evaporate | to turn from liquid into gas; pass away in the form of vapor |
| Filtering | a device used to remove dirt or other solids from liquids or gases. A filter can be made of paper, charcoal, or other material with tiny holes in it. |
| Insoluble | impossible to dissolve, esp. in a given liquid. |
| Irreversible | impossible to reverse, turn back, or change. |
| Mixing | to put different things together so that the parts become one. |
| Mixture | something that is made from combining different things into one. |
| Reversible | able to be reversed or changed back. |
| Separation | to sort; divide. |
| Sieving | Using a sieve to separate solid from liquid or to separate smaller pieces of something from larger pieces. Sieves have small holes or wire mesh on the bottom. |
| Soluble | able to be dissolved. |
| Solution | a mixture that contains two or more unlike substances combined evenly. |

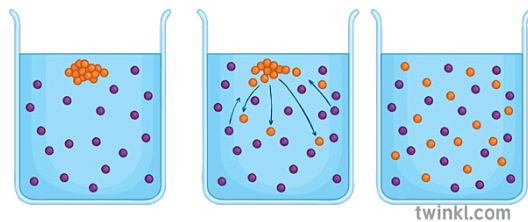
What will I investigate?

- Can you compare and group a selection of materials?
- Which container is the best thermal insulator?
- Is it possible to separate mixtures?
- How hard or soft can a solid be?
- How absorbent is a polymer?
- Can you recover a sugary solution?

Everyday materials can be grouped together based on their properties, including hardness, solubility, transparency, conductivity and response to magnets.



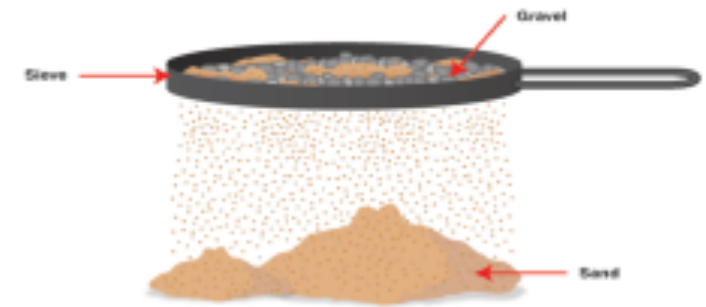
Some changes result in the formation of new materials and this kind of change is not usually reversible including changes associated with burning and the action of acid on bicarbonate of soda.



Some materials will dissolve in liquid to form a solution. Dissolving is a process by which a solid is mixed completely with a liquid to form a solution.

Sieving

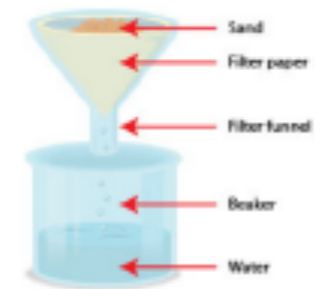
A mixture made of solid particles of different sizes, for example sand and gravel, can be separated by sieving.



Filtering

A mixture of water and an insoluble substance like sand can be separated by filtering.

The mixture of sand and water is poured into the filter funnel, which is lined with filter paper. The water can pass through the paper to collect in the beaker. The sand particles cannot pass through the filter paper and collect in the filter funnel.



Evaporating

By dissolving salt in water we make a solution. The salt dissolves (seems to disappear) into the water. We can separate the salt from the water by boiling a solution. The water will evaporate until it is all gone. The salt will be left behind.

