



# Year 5 Properties and changes of materials

## Strand: Chemistry

Big idea: Matter can change if the arrangement of the building blocks (that make up matter) changes.

Big questions: Is it possible to separate small things like sand, salt and stones?

**Marie Curie**  
1867 – 1934  
discovered two new chemical elements – radium and polonium. She carried out the first research into the treatment of tumours with radiation



### Topic vocabulary

|                     |                                                                                       |
|---------------------|---------------------------------------------------------------------------------------|
| melting             | The process of heating a solid until it changes into a liquid.                        |
| freezing            | When a liquid cools and turns into a solid.                                           |
| Thermal insulator   | An insulator is a material that does not let heat or electricity travel through them. |
| Thermal conductor   | A conductor is a material that heat or electricity can easily travel through.         |
| reversible change   | A change which can be reversed                                                        |
| irreversible change | A change that can not be reversed                                                     |
| dissolve            | When solid particles mix with liquid particles                                        |
| soluble             | Can dissolve in a liquid                                                              |
| insoluble           | Can not dissolve in a liquid                                                          |

### KEEPING COOL

Thermal Insulators - Do not let heat travel through easily such as fabrics, wood and plastics. Can keep heat in or out.



Thermal Conductors - Lets heat travel easily through such as metals.



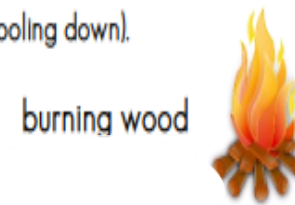
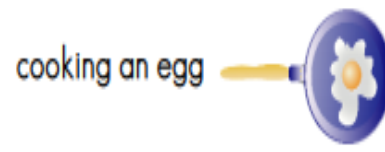
When things get hot, atoms start to vibrate. Heat produces energy. This could cause them to change state!

### Reversible and Irreversible Changes

The following cycle is one which is reversible. (They can be changed back or reversed by adding heat or by cooling down.)

Ice (melts into water) > Water (evaporates into steam) >  
Steam (condenses into water) > Water (freezes into Ice) >

The following examples are ones which are irreversible. (They can NOT be changed or reversed by adding heat or cooling down.)



### Separating Materials

SIEVING – A way to separate two solids of different sizes (e.g. flour and raisins).

FILTRATION – A mixture of liquids and solids which haven't dissolved can be filtered using paper with tiny holes (e.g. sand and water).

EVAPORATION – A solid dissolved in a liquid (solution) can be heated. Liquid evaporates and leaves behind the solid (e.g. salt and water solution).

MAGNETISM – Metal attracts to the magnet, leaving behind the other solid (e.g. paper clips and matchsticks).

### DISSOLVING

Dissolving is when the particles of solids mix with particles of liquids, often appearing like it has disappeared but it has dissolved in the liquid to make a transparent solution (e.g. mixing sugar into water). It does not always need heat to occur. If a material does not dissolve, it is insoluble. If it does, it is soluble.

### MELTING

Involves only solids which change into a liquid due to heat. They stay as the same material (e.g. ice to water).

