

Key knowledge

Different materials are used for particular jobs based on their properties:

Electrical conductivity **Flexibility** **Hardness**
Insulator **Magnetism** **Solubility**
Thermal conductivity **Transparency**

For example...
 glass is used for windows because it is hard and **transparent**.



Oven gloves are made from a **thermal insulator** to keep the heat from burning your hands



Reversible and Irreversible Changes

Reversible

Dissolving water in sugar
 Freezing water
 Melting chocolate

Irreversible

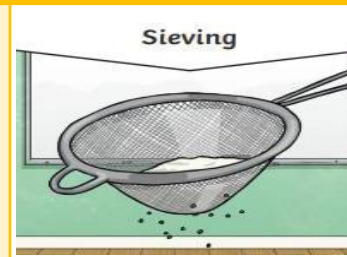
Toasting bread
 Cooking a cake
 A candle melting



Toasting bread is **irreversible**: once it is **toasted** it can't go **back** to being **untoasted**

Separating materials

Sieving: Smaller materials are able to fall through the holes in the sieve, separating them from the larger particles.



Filtering: the solid particles will get caught in the filter paper but the liquid will be able to get



through.

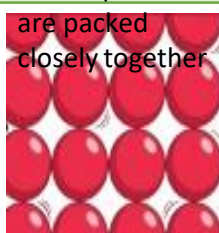
Evaporating the liquid changes into a gas, leaving the solid particles behind.



Particle Arrangement

Solid – particles

are packed closely together



Liquid – particles

have some space to move



Gas –

particles are free to move



Key Vocab

Soluble	Able to be dissolved, especially in water
Insoluble	Cannot be dissolved, especially in water
Dissolve	When something solid mixes with a liquid and becomes part of the liquid
Solution	A solution is made when one substance dissolves into another
Reversible change	Can be reversed back to its original state
Irreversible change	Cannot be reversed back to its original state
Transparent	Allows light to pass through
Thermal conductor	A material or device which allows heat to carry through
Electrical conductor	A material or device with allows electricity to carry through
Electrical	Does not allow electricity to
Insulator	Sieve
Magnetic	
Evaporation	
Filter	

pass through it.

Capable of being
magnetised or attracted
by a magnet

The process of liquid
heating and changing
into a gas

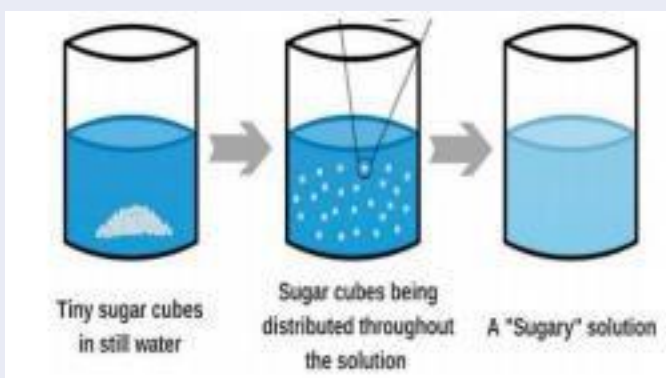
Separates an insoluble
solid
that is mixed in a liquid.

Separates solids of
different sizes

Dissolving

A **solution** is made when solid particles are mixed with liquid particles e.g. dissolving sugar in hot tea. The solid seems to disappear in the solution but it is still there – it has just become part of the liquid.

Materials that will dissolve are known as **soluble**.



Materials that won't dissolve are known as **insoluble**.

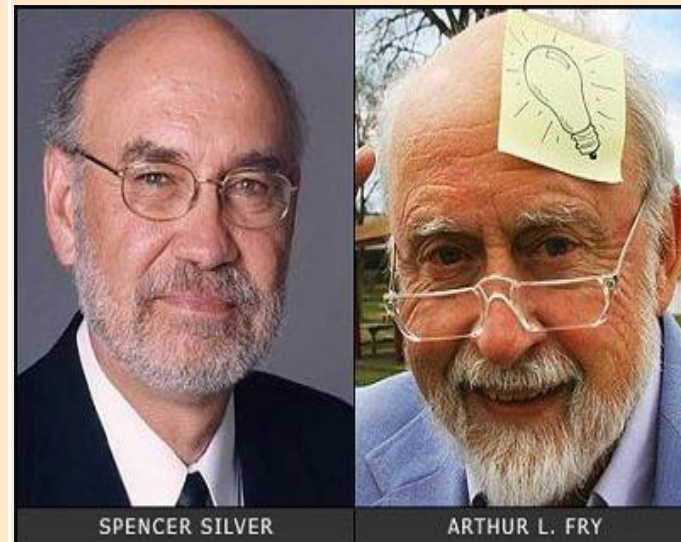
Sand is an insoluble material



Spencer Silver, chemist

Whilst working at 3M Company, Spencer Silver was trying to make a very strong adhesive to be used in building planes. Instead, he managed to create a very weak adhesive that could be peeled off and re-used. At the time, Silver could not think of a use for this weak adhesive.

Many years later, Silver's colleague Art Fry, who sang in a local choir, kept losing the bookmarks in his hymn book. A eureka moment resulted in making an association between Silver's weak glue and his bookmarks falling out. The idea of Post-It notes was created.



Guinness Book of World Records

The most sticky notes stuck on the face in 30 seconds is 38 and was achieved by Silvio Sabba in Milan, Italy, on 18 April 2018.

