

Year 5 Autumn Term Science Knowledge Organiser

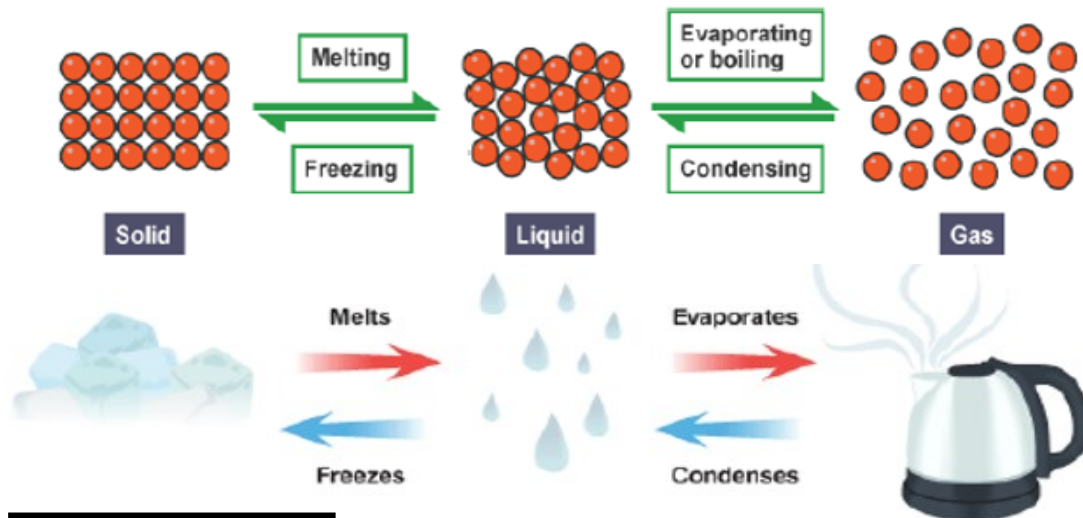
KEY QUESTION: What are the properties of materials and how do they link to how they are used?

Three states of matter:

SOLID: particles close together / vibrate around a fixed position

LIQUID: particles close but randomly arranged / move around

GAS: particles far apart and randomly arranged / move around



Materials can be grouped together based on their properties

magnetic

transparent

flexible

permeable

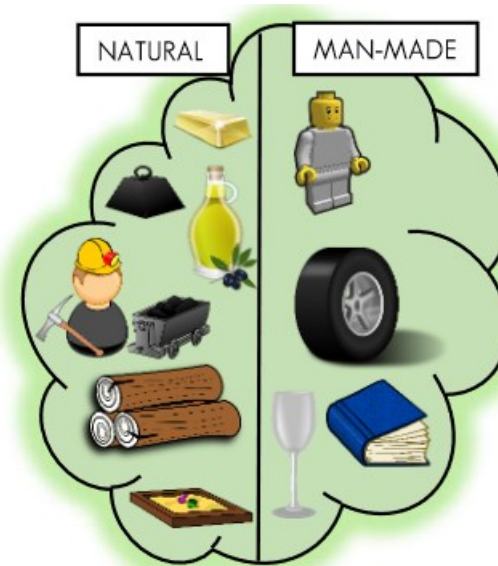
soluble

insoluble

- **Electrical conductors** allow electricity to pass through them easily while **electrical insulators** do not.
- **Electrical insulators** have a high resistance which means that it is hard for electricity to pass through these objects.

States of Matter Vocabulary

| | | | |
|--------------|-----------|-------------|-------------|
| Condensation | Gas | Particles | Soluble |
| Conductor | Insoluble | Permeable | Solution |
| Dissolves | Insulator | Properties | State |
| Electricity | Liquid | Rate | temperature |
| Evaporation | magnetic | reversible | Thermal |
| filtering | Melting | Solid | Transparent |
| flexible | opaque | solidifying | Translucent |

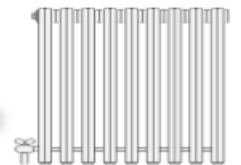


KEEPING COOL

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!



electrical insulator



electrical conductor

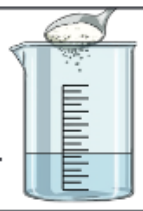
Reversible Changes

Dissolving, mixing and changes of state are **reversible** changes.

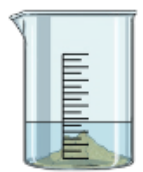
Mixtures can be separated through filtering, sieving and evaporating.

Dissolving
A solution is made when **solid** particles are mixed with **liquid** particles. **Materials** that will dissolve are known as soluble. **Materials** that won't dissolve are known as insoluble. A suspension is when the particles don't dissolve.

Sugar is a soluble **material**.



Sand is an insoluble **material**.



Sugar dissolves in the water making a sugar solution. You cannot see the sugar but it is still there in tiny particles.

The water evaporates. This means that it becomes water vapour. The process will be quicker if the water is heated.

Once all the water has evaporated, the sugar is left at the bottom of the beaker. This is because sugar cannot evaporate.

| Sieving | Filtering | Evaporating |
|------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| | | |
| Smaller materials are able to fall through the holes in the sieve, separating them from larger particles. | The solid particles will get caught in the filter paper but the liquid will be able to get through. | The liquid changes into a gas , leaving the solid particles behind. |

Irreversible Changes

Some changes result in new materials and this change is **not** reversible, e.g. burning.



Irreversible changes often result in a new product being made from the old **materials** (reactants). For example, burning wood produces ash. Mixing vinegar and milk produces casein plastic.

Activities to complete at home. Bring in your work over the next 4 weeks so it can be celebrated and shared .

1. Investigate whether different materials will dissolve in water. Record your findings in a chart.
2. Investigate the buoyancy of different materials. Take photos or draw pictures to show what you found out.
3. Create a crossword with definition clues linked to the keyword vocabulary list.
4. Practically investigate states of matter. <http://www.sciencekids.co.nz/gamesactivities/materialproperties.html>

