

7C1 Knowledge Organiser – Properties

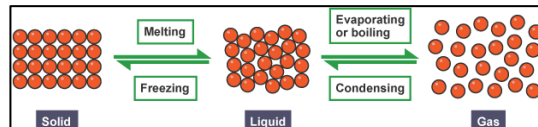
States of Matter

State	Solid	Liquid	Gas
Diagram			
Arrangement of particles	Regular arrangement	Randomly arranged	Randomly arranged
Movement of particles	Vibrate about a fixed position	Move around each other	Move quickly in all directions
Closeness of particles	Very close	Close	Far apart

Remember when drawing a liquid there should be no particle sized gaps between the particles.

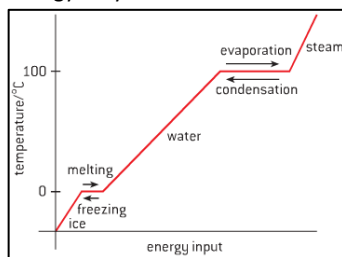
<https://www.youtube.com/watch?v=21CR01rlmv4>

Changes of state



As a substance is heated it gains **energy**. When the particles gain enough energy they overcome the **forces** between them.

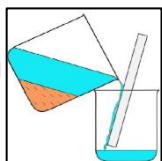
Whilst a **change of state** is happening the **temperature** of the substance does not change. (flat line on graph)



<https://www.youtube.com/watch?v=s2ObEtQKePI>

Decanting

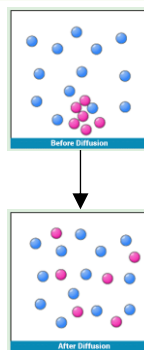
Pour a liquid from the top of a settled solid or a more dense liquid.



Diffusion

Particles in a liquid or a gas **spread** out from an area of **high concentration** to an area of **low concentration** until the concentrations are equal. The **higher** the concentration **gradient** the **faster** the net diffusion.

The **higher** the **temperature** the **faster** the net diffusion. If the particles that are spreading are **water** molecules we call this process **osmosis**.



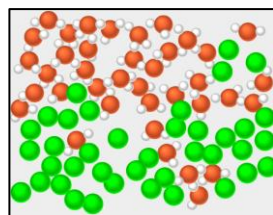
Dissolving

When the particles in a solid spread out in a liquid.

<https://lab.concord.org/embeddable.html#interactives/interactions/dissolving-solubility.json>

We call the liquid the **SOLVENT**

We call the solid the **SOLUTE**



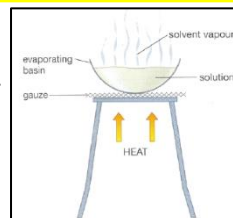
We call the mixture of the solid and the liquid a **SOLUTION**. A solid that will dissolve in a liquid is called **SOLUBLE**.

A solid that will not dissolve in a liquid is called **INSOLUBLE**.

<https://www.youtube.com/watch?v=XEAiLm2zuvc&t=4s>

Evaporation

Separating a soluble solid from a liquid.



Crystallisation

Heat until almost all the water has evaporated.

Leave for the remaining water to evaporate slowly to form crystals.

Chromatography

Method

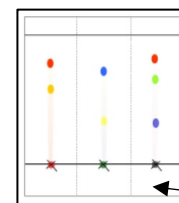
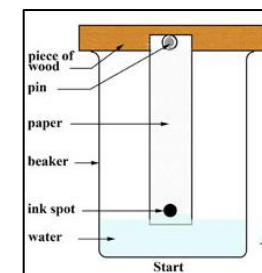
Draw pencil line.

Put dot of colour on line.

Hang bottom edge (below dot) in the water.

Leave until water soak up to almost the top of the paper..

Compare with known substances.



Chromatogram

Different colours contain different mixtures of inks. The different inks move at different speeds up the paper. This is because of different solubility.

Distillation

Separating substances with different boiling points. Salt water mixture is heated.

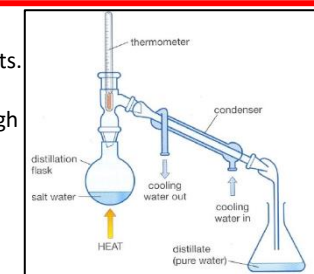
At 100°C water boils and the particles gain enough energy to become a gas (water vapour).

Boiling point of salt is 1413°C so it does not boil and stays in the flask.

Water vapour rises and travels past the thermometer into the condenser.

Thermometer checks the temperature to identify the gas.

Condenser cools the water vapour so that it condenses back to liquid water.



Filtration

Separates an insoluble solid from a liquid. The solid pieces are too big to fit through the holes in the filter paper.

<https://www.youtube.com/watch?v=pFYG7xjGHs>

