

### Changes of state

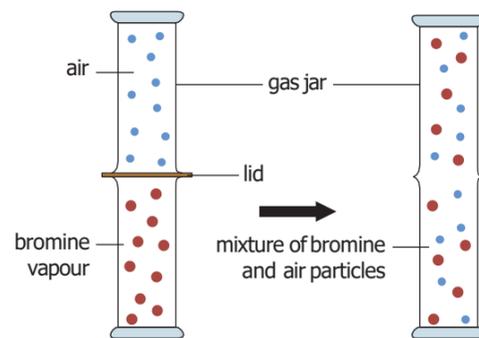
changes of state	solid	liquid	gas	
state of matter	solid	liquid	gas	
how do the particles move?	Particles do not move around	Particles touching but can slide over each other	particles are spread out far away from each other	
arrangement of particles				
can it be compressed?	No, because there is no space between the particles	No, because the particles are touching their neighbours	Yes, because there is space between the particles	
can it flow?	No, because the particles can't move around	No, because the particles can't move around	Yes, because the particles can move around	
changes of state	melting		boiling/evaporation	
	freezing		condensation	

### Mixtures

- **Mixtures** are different **substances** which are together, they are not chemically bonded and so are easy to separate
  - The substances which make up a mixture keep their own **properties** unlike those in a compound
  - A mixture is an **impure** substance as it does not have a fixed melting point, instead it has a range
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- A **solution** is a type of mixture which is made up of two parts
  - A **solute** is the part which has dissolved in the solution
  - A **solvent** is the liquid part which the solute has dissolved into
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- The **solubility** of a substance is a measure of how much of it will **dissolve**
  - Not all solutes will dissolve in all solvents
  - Solutes which do not dissolve are known as **insoluble**
  - Substances which do dissolve are known as **soluble**
  - The **solubility** of a substance can be increased by increasing the temperature of the solution or by stirring the solution
  - A **saturated solution** is one where the maximum amount of solute has dissolved in it, no more solute will be able to dissolve

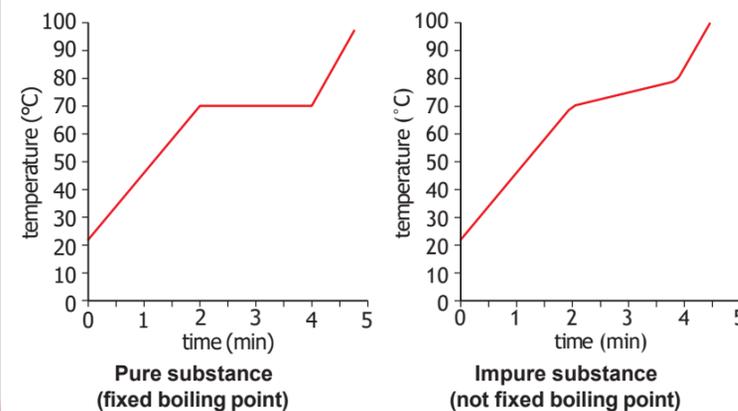
### Diffusion

- **Diffusion** is the movement of particles from an area of high concentration (lots of the same particle) to an area of low concentration (not a lot of the same particle)
- It is a random process which does not need energy
- The speed of diffusion can be increased by:
  - A higher temperature
  - Smaller particles diffusing
  - A gas rather than a liquid
- Diffusion does not happen in a solid as the particles can't flow



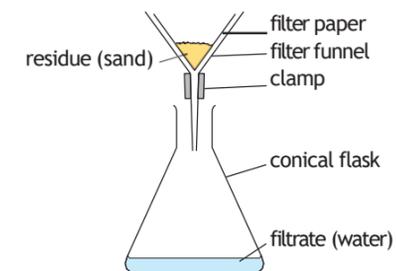
### Melting and boiling points

- The **melting point** of a substance is the temperature at which it turns from a solid to a liquid, or a liquid to a solid
- The **boiling point** of a substance is the temperature at which it turns from a liquid to a gas or a gas to a liquid
- **Pure substances** have a fixed (sharp) boiling or melting point, whereas **impure substances** have a range which appears as a diagonal line on a graph

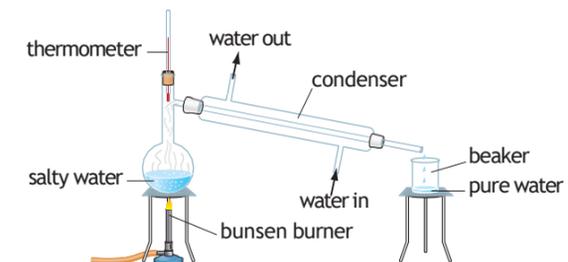


### Separating Mixtures

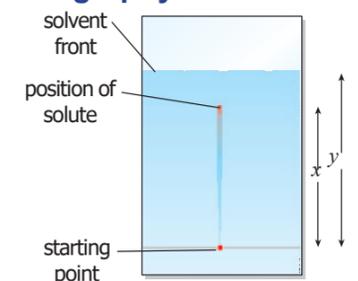
#### Filtration



#### Distillation



#### Chromatography



#### Evaporation



### Key terms

Make sure you can write definitions for these key terms.

boiling point   chromatography   condensation   diffusion   dissolve   distillation   evaporation   filtration   freezing   impure substance   melting point   mixture  
property   properties   pure substance   saturated solution   substance   soluble   solubility   solute   solution   solvent