

Edexcel GCSE Chemistry

Topic 2: States of matter and mixtures

States of matter

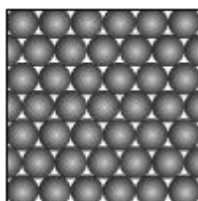
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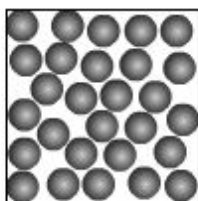


2.1 Describe the arrangement, movement and the relative energy of particles in each of the three states of matter: solid, liquid and gas

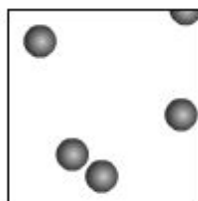
- The three states of matter are solid, liquid and gas
- Melting and freezing take place at the melting point
 - solid → liquid: melting
 - liquid → solid: freezing
- Boiling and condensing take place at the boiling point
 - liquid → gas: boiling
 - gas → liquid: condensing



Solid



Liquid



Gas

- They can be represented by the simple model above, particles are represented by small solid spheres
- Gas: particles have the most energy – shown by the diagram, as the particles are the most spread apart
 - Liquid: particles have more energy than those in a solid, but less than those in a gas and solid has least energy – particles are fixed

2.2 Recall the names used for the interconversions between the three states of matter, recognising that these are physical changes: contrasted with chemical reactions that result in chemical changes

- State changes (melting, boiling, freezing and condensing) are physical changes – they involve the forces between the particles of the substances but the particles themselves don't change.
- Chemical changes are where a new product has been formed

2.3 Explain the changes in arrangement, movement and energy of particles during these interconversions

- Particle theory can help to explain melting, boiling, freezing and condensing...
 - The amount of energy needed to change state from solid to liquid and from liquid to gas depends on the strength of the forces between the particles of the substance.
 - The nature of the particles involved depends on the type of bonding and the structure of the substance.
 - The stronger the forces between the particles the higher the melting point and boiling point of the substance.



2.4 Predict the physical state of a substance under specified conditions, given suitable data

- if you are given the melting point and boiling point of a substance:
 - at temperatures below the melting point, the substance will be solid
 - at temperatures above the melting point but below the boiling point, the substance will be liquid
 - at temperatures above the boiling point, the substance will be a gas

