

OCR (B) Physics GCSE

Topic 6.1 - How does energy transform matter?

Flashcards

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What is density?



What is density?

Mass per unit volume.



Give the equation for density



Give the equation for density

Density (kg/m^3) = mass (kg) \div volume (m^3)

$$\rho = m \div V$$



How does density compare in solids,
liquids and gases?



How does density compare in solids, liquids and gases?

Solids are the most dense, then liquids, then gases.



Define specific heat capacity



Define specific heat capacity

The amount of energy needed to raise the temperature of 1kg of a substance by 1°C .



Give the equation linking energy and specific heat capacity



Give the equation linking energy and specific heat capacity

$$E = mc\Delta T$$

Where...

E = energy (J) c = specific heat capacity ($\text{J}/\text{kg}^\circ\text{C}$)

m = mass (kg) ΔT = change in temperature ($^\circ\text{C}$)



Define specific latent heat



Define specific latent heat

The amount of energy needed to change the state of 1kg of a substance without changing its temperature.



What are the 2 types of specific latent heat?



What are the 2 types of specific latent heat?

Specific latent heat of fusion - energy between solid and liquid (melt/freeze).

Specific latent heat of vaporisation - energy between liquid and gas (boil/condense).



Give the equation for energy for a
change of state



Give the equation for energy for a change of state

$$E = mL$$

Energy (J) = mass (kg) x specific latent heat (J/kg)



Define internal energy



Define internal energy

The energy stored by particles within a system.



What kinds of energy is stored as internal energy?



What kind of energy is stored as internal energy?

Kinetic and potential.



How does heating affect internal energy?



How does heating affect internal energy?

It increases internal energy. The particles gain energy and move more, increasing their kinetic energy and therefore increasing the overall internal energy.



What does an increase in internal energy result in?



What does an increase in internal energy result in?

A change of state or increase in temperature.



When melting/evaporating...



When melting/evaporating...

Energy is absorbed.



When freezing/condensing...



When freezing/condensing...

Energy is released.



What is sublimation?



What is sublimation?

When a solid turns directly into a gas
(eg. dry ice).



Describe how specific heat capacity is determined



Describe how specific heat capacity is determined

- Use an electric heater to heat a substance for a set time.
- Work out energy from $E=Pt$ (from the power of the heater).
- Measure the temperature change with a thermometer.
- Calculate specific heat capacity from $E=mc\Delta T$.

