

P5 Electricity in the home

AC - alternating current

DC - direct current

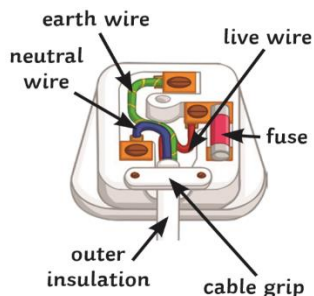
Cable - most have three wires, covered in plastic insulation for safety.

Wires in a plug:

Live wire: provides the potential difference from the mains

Neutral wire: completes the circuit.

Earth wire- protection- stops the appliance from becoming live. Carries the current if there is a fault.



Touching the live wire can cause the current to flow through your body. This causes an electric shock.

Energy transferred depends on how long an appliance is on for and its power.

To calculate energy transferred in an appliance we use the following equation:

Energy Transferred (kWh) = Power (kW) x time (h)
($E = Pt$)

Power (P) = Energy (E) / time (t)

Power (P) = Current (I) x Potential Difference (V)

Power (P) = Current² (I²) x Resistance (R)

P6 Molecules and Matter

Density is a measure of how much matter is within a given volume of a substance.

Water has a density of 1 g/cm³, so anything with a density greater than this will sink and anything with a density less than this will float when placed in water.

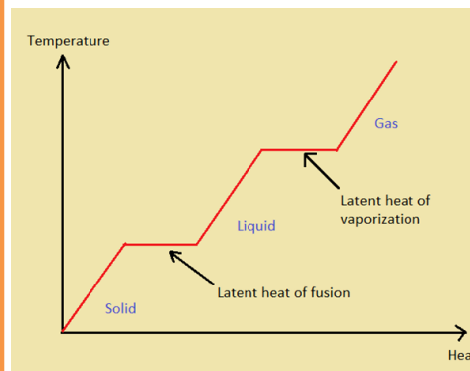
Matter can exist in many forms, the ones you need to know for GCSE are: Solid, Liquid and Gas.

Solid: Densely packed particles that cannot be compressed. They are aligned and all in contact.

Liquid: Particles can flow around each other and will take the shape of whatever container they are in. Particles are not aligned but are in contact.

Gas: Particles are free to move randomly in all directions. Particles are not aligned or in contact.

When a material is transformed through states of matter energy is used to either make or break bonds between particles. This means that the temperature during a change of state remains constant.



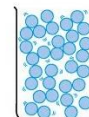
Gas

Hydrogen: 0.089 kg/m³
Oxygen: 1.43 kg/m³
Carbon Dioxide: 1.96 kg/m³



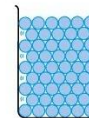
Liquid

Alcohol: 789 kg/m³
Water: 1000 kg/m³
Mercury: 13534 kg/m³



Solid

Aluminium: 2700 kg/m³
Steel: 7500 kg/m³
Uranium: 18800 kg/m³



Vocabulary:

Alternating current (a.c.) - electric current in a circuit that repeatedly reverses its direction

Direct current (d.c.) - electric current in a circuit that is in one direction only

Earth wire - the wire in a mains cable used to connect the metal case of an appliance to earth

Fuse - a fuse contains a thin wire that melts and cuts the current off if too much current passes through it

Live wire - the mains wire that has a voltage that alternates in voltage (between +325 V and -325 V in Europe)

Neutral wire - the wire of a mains circuit that is earthed at the local substation so its potential is close to zero

Oscilloscope - a device used to display the shape of an electrical wave

Plugs - a plug has an insulates case and is used to connect the cable from an appliance to a socket

Step-down transformers - electrical device used to step-down the size of an alternating potential difference

Step-up transformers - electrical device used to step-up the size of an alternating potential difference

Three-pin plug - a three-pin plug has a live pin, a neutral pin and an earth pin

Density - mass per unit volume of a substance

Internal energy - the energy of the particles of a substance due to their individual motion and positions

Latent heat - the energy transferred to or from a substance when it changes its state

Physical change - a change in which no new substances are produced

Videos



Quizzes

