Thermal physics

IGCSE Physics · Vocabulary in context

Word	Example
states of matter /steɪts ɒv 'mætə/	Solid, liquid and gas are three **states of matter**.
solid /'sɒlɪd/	In a **solid**, the particles are packed tightly and only vibrate.
liquid /'lɪkwɪd/	In a **liquid**, the particles are close but can move past each other.
gas /gæs/	In a **gas**, the particles are far apart and move quickly.
condensation /kɒnden'seɪʃn/	**Condensation** forms water droplets as moist air cools.
solidification /sə,lɪdɪfɪ'keɪʃn/	Cooling the molten metal causes **solidification**.
kinetic particle model /kɪ'netɪk 'pɑːtɪkl 'mɒdl/	The **kinetic particle model** says matter is made of tiny moving particles.
particle /'pɑːtɪkl/	Model the box as a **particle**, so its size does not matter.
vibrate /vaɪ'breɪt/	The particles in a solid **vibrate** in place.
kinetic energy /kɪ'netɪk 'enədʒi/	A fast car has a lot of **kinetic energy**.
temperature /'temprɪtʃə/	The thermometer shows the water's **temperature**.
absolute zero /'æbsəluːt 'zɪərəʊ/	Nothing can be colder than **absolute zero**.
pressure /'preʃə/	A sharp knife puts a large **pressure** on the bread.

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Brownian motion /'braʊnɪən 'məʊʃn/	**Brownian motion** is the random jiggling of smoke particles in air.
kelvin /'kelvɪn/	Water freezes at 273 **kelvin**.
thermal expansion /'θɜːml ek'spænʃn/	**Thermal expansion** makes sea water take up more space as it warms.
lattice /'lætɪs/	The ions in salt sit in a regular **lattice**.
internal energy /ɪn'tɜːnl 'enədʒi/	Heating the gas raises its **internal energy**.
specific heat capacity /spə'sɪfɪk hiːt kə'pæsɪti/	Water has a high **specific heat capacity**, so it warms up slowly.
heater /'hiːtə/	The **heater** warms the water.
thermometer /θɜː'mɒmɪtə/	Put the **thermometer** in the water.
insulating material /'ɪnsjuːleɪtɪŋ mə'tɪərɪəl/	Wool is a good **insulating material**.
melting /'meltɪŋ/	**Melting** turns ice into water.
boiling /'bɔɪlɪŋ/	During **boiling**, bubbles form all through the water.
evaporation /ɪ,væpə'reɪʃn/	**Evaporation** dries wet clothes.
cools down /kuːlz daʊn/	A cup of tea **cools down** over time.
transfer of thermal energy /'trænsfɜː ɒv 'θɜːml 'enədʒi/	The **transfer of thermal energy** always goes from hot to cold.

Word	Example
conduction /kən'dʌkʃn/	Metal pans heat food by **conduction**.
delocalised electrons /dɪ'lɒkəlaɪzd ɪ'lektrɒnz/	Metals have **delocalised electrons** that carry heat fast.
thermal conductor /'θɜ:ml kən'dʌktə/	Copper is a good **thermal conductor**.
thermal insulator /'θɜ:ml 'ɪnsju:leɪtə/	Plastic is a good **thermal insulator**.
convection /kən'vekʃn/	**Convection** carries warm air up from a heater.
potassium permanganate /pə'tæsɪəm pə'mæŋgəneɪt/	**Potassium permanganate** shows the convection current in the water.
thermal radiation /'θɜ:ml ˌreɪdɪ'eɪʃn/	The Sun warms us by **thermal radiation**.
infrared /ˌɪnfrə'red/	A TV remote uses **infrared** light.
dull /dʌl/	A **dull** black surface is a good radiation absorber.
emitter /ɪ'mɪtə/	A black surface is a good **emitter** of heat.
absorber /əb'sɔ:bə/	A black surface is a good **absorber** of heat.
reflector /rɪ'flektə/	A shiny surface is a good **reflector** of heat.
Leslie cube /'lesli kju:b/	A **Leslie cube** has four different sides to compare heat radiation.
atmosphere /'ætməsfɪə/	Water vapour leaves the leaf and goes into the **atmosphere**.

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Word	Example
independent variable /ˌɪndɪ'pendənt 'veərɪəbl/	The **independent variable** is the one you change.
dependent variable /dɪ'pendənt 'veərɪəbl/	The **dependent variable** is the one you measure.
control variables /kən'trəʊl 'veərɪəblz/	Keep the **control variables**, such as the temperature, the same.
parallax /'pærəlæks/	Look straight at the scale to avoid **parallax** errors.
radiator /'reɪdɪeɪtə/	A **radiator** warms the room.
vacuum flask /'vækju:m flæsk/	A **vacuum flask** keeps drinks hot for hours.