

Definitions and Concepts for Edexcel Physics IGCSE

Topic 5: Solids, Liquids and Gases

*Definitions in **bold** are for higher tier only*

Definitions marked by '' are for separate sciences only*

Absolute Zero: The lowest possible temperature. At this temperature the particles have no kinetic energy and so are completely stationary.

***Change in Thermal Energy:** The product of the mass, specific heat capacity and temperature change of a substance.

Chemical Changes: Changes to the chemical structure of a substance. The substance does not usually restore its original properties when the changes are reversed.

Condensation: The changing from vapour state to a liquid state, when a substance is cooled.

Density: The mass per unit volume of an object.

Evaporation: The changing from liquid state to a vapour state, when a substance is heated.

Freezing: The changing from a liquid state to a solid state, when a substance is cooled.

Gas Temperature: The absolute temperature of a gas is directly proportional to the average kinetic energy of its molecules.

***Gas:** A state of matter in which the particles are spread apart and have high kinetic energies. Any intermolecular forces acting between the particles are very weak.

Internal Energy: The energy stored by the atoms and molecules that make up a system. It is equal to the sum of the total kinetic and potential energies of the particles in the system.

Kelvin: The SI unit of temperature, based on an absolute temperature scale. To convert from degrees Celsius to degrees Kelvin, subtract 273 degrees. For a gas it is proportional to the average kinetic energy of the molecules.

***Liquid:** A state of matter in which the particles are in contact, but can flow over each other. Intermolecular forces act between the particles.

This work by [PMT Education](https://www.pmt.education) is licensed under [CC BY-NC-ND 4.0](https://creativecommons.org/licenses/by-nc-nd/4.0/)



Melting: The changing from solid state to liquid state, when a substance is heated.

Pascals: The unit of pressure, equal to a force of one Newton acting perpendicular to an area of one metre squared.

Physical Changes: Changes to the physical properties of a substance which can be reversed. Changes of state are physical changes since substances can restore their original properties when the changes are reversed.

Pressure in a Liquid Column: Equal to the product of the height of the column, the density of the liquid and the gravitational field strength.

Pressure of a Gas: The perpendicular force per unit area acting on the surfaces of a container as a result of the gas particles colliding with it. It acts equally in all directions.

Pressure: The force acting perpendicular to a surface, per unit area.

Pressure-Volume Relationship: When at a constant temperature, the volume of a fixed quantity of gas is inversely proportional to its pressure.

Pressure-Temperature Relationship: When at a constant volume, the pressure of a fixed quantity of gas is directly proportional to its absolute temperature.

***Solid:** A state of matter in which the particles are tightly packed together and can only vibrate about their fixed positions. Strong intermolecular forces act between the particles

***Specific Heat Capacity:** The amount of energy needed to increase the temperature of one kilogram of a given substance by one degree Celsius.

Temperature: A measure of the average kinetic energy of the particles in a substance. An increase in temperature will result in an increase in the particles' kinetic energies and velocities.

