

Definitions and Concepts for Edexcel Physics A Level

Topic 9: Thermodynamics

Absolute Zero: When the particles of a substance have zero kinetic energy, 0 K.

Avogadro's Constant: The constant number of particles per mole of a substance.

Black Body Radiator: A perfect emitter and absorber of all possible wavelengths of radiation.

Boltzmann Constant: A constant relating the average kinetic energy of the particle in a gas to the gas' temperature.

Boyle's Law: As volume decreases the pressure on a gas at a constant temperature increases.

Charles' Law: As temperature increases the volume of a gas at constant pressure increases.

Ideal Gas: A hypothetical gas that has molecules with no interactions and occupy negligible space so it obeys the ideal gas law.

Ideal Gas Law: A combination of Boyle's, Charles' and the Pressure Law that describes the relationship between pressure, volume and temperature of an ideal gas.

Internal Energy: The sum of all the randomly distributed potential and kinetic energies of the particles that make up a substance.

Luminosity: The total power radiated by a light emitting source.

Pressure Law: As temperature increases the pressure of a gas of constant volume increases.

Specific Heat Capacity: The energy required to raise the temperature of 1 kg of a substance by 1 Kelvin without changing its state.

Specific Latent Heat: The energy required to change the state of 1 kg of a substance without a change in temperature. Specific latent heat of fusion for solid to liquid and specific latent heat of vapourization for liquid to gas.

State Changes: During a state change a substance will not change kinetic energy, temperature will be constant, but its potential energy will change, bonds will be broken or formed.



Stefan-Boltzmann Law: The luminosity of a black body radiator is directly proportional to its surface area and its absolute temperature to the fourth power.

Wein's Law: The peak wavelength of emitted radiation is inversely proportional to the absolute temperature of the black body.

