# Definitions and Concepts for Edexcel Chemistry A-level

## Topic 8: Energetics 1

**Enthalpy change:** Heat energy change in a reaction at constant pressure ($kJmol^{-1}$).

**Standard conditions:** 100 kPa, 298 K, 1 $moldm^{-3}$ concentrations of ions.

**Exothermic**: Heat given off; −ve value of enthalpy change.

**Endothermic**: Heat absorbed; +ve value of enthalpy change.

**Standard enthalpy change of reaction:** Enthalpy change when reaction occurs in the molar quantities shown in the chemical equation under standard conditions.

**Standard enthalpy change of formation:** Enthalpy change when 1 mole of a compound is formed from its elements in their standard states under standard conditions.

**Standard enthalpy of combustion:** Enthalpy change when 1 mole of a substance is completely burned in oxygen under standard conditions.

**Standard enthalpy of neutralisation:** Enthalpy change when an acid and alkali react together under standard conditions to form 1 mole of water.

**Equation for calorimetry calculations:** heat change $\mathbf{Q = mC\Delta T}$, where m = mass, C = specific heat capacity, $\Delta T$ = change in temperature.

**Specific heat capacity**: The amount of energy needed to raise a temperature of 1 g of a substance by 1 degree.

**Hess's law:** The total enthalpy change is independent of the reaction pathway taken.

**Bond Enthalpy:** Amount of energy required to break 1 mole of the stated bond in the gas phase.

In terms of bond enthalpies:

**Enthalpy Change of reaction = Sum of bond enthalpies of reactants – Sum of bond enthalpies of products.**

**Mean bond enthalpy:** average amount of energy needed to break a specific type of bond, measured over a variety of different molecules.