

Enthalpy change
= total energy to break bonds – total energy to make bonds

Calculate overall enthalpy change of a reaction

Mean bond enthalpy

The enthalpy change when one mole of a type of covalent bond is broken averaged out across the range of compounds

Calculations use average values so not as accurate as Hess's law calculations

Bond Enthalpies

1.4 ENERGETICS

Standard conditions:
100 kPa and 298 K

Standard enthalpy change

Standard enthalpy of combustion

Standard enthalpy of formation

Enthalpy Change (ΔH)

Heat energy change measured

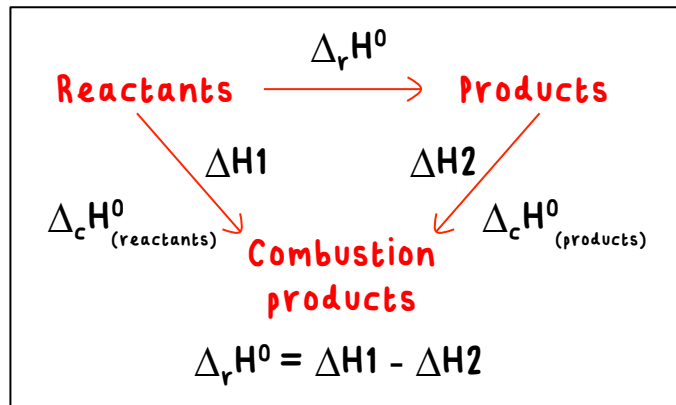
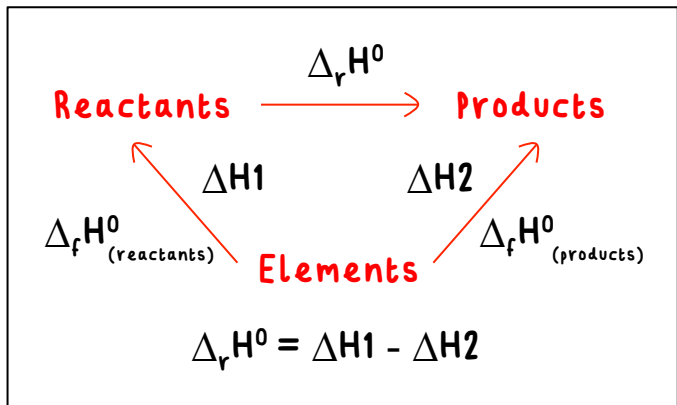
Conditions:
any given temperature

Exothermic reactions

Endothermic reactions

AQA





Indirectly calculate enthalpy change

Enthalpy change of a reaction is independent of the route taken

Enthalpies of formation

Enthalpies of combustion

Hess's Law

1.4 ENERGETICS

Calorimetry

Experiment to determine enthalpy change

Example reactions:

Dissolution

Neutralisation

Combustion

Displacement

AQA

Heat change (kJ) / Moles of fuel reacting

Determine molar enthalpy change (kJ mol⁻¹)

Make the value negative if the reaction was exothermic

$q = mc\Delta T$

ΔT = temperature change

C = specific heat capacity

Q = heat change (J)

M = mass of substance which changes temperature

