

Ch.34 standard enthalpy change of reactions

Standard conditions:

1. pressure of one atmosphere
2. temperature of 25
3. concentration of 1 mole dm^3
4. substances in standard state – carbon- graphite
phosphorous- red phosphorous

thermochemical equation:

enthalpy change- kJ mol^{-1}

physical state

energy used in change state= enthalpy difference of the states

the balanced equation is multiply / divided = the enthalpy change will be m/d

Standard enthalpy change of combustion =

- enthalpy change when **one mole – substance** – completely burnt in oxygen- under standard conditions
- always negative

town gas = hydrogen , methane (CH_4)

LPG= Propane, butane

Petrol= isooctane

How to determine the enthalpy change:

- simple calorimeter (metal can)
- amount of heat released
- mass of water x specific heat cap x temp change of the mixture

enthalpy change = - heat released/ no. of moles of sub. Burnt

kJ mol^{-1} (1000)

k ---X---c (c + 273)

error:

1. heat loss to the surrounding (convection, conduction, evaporation)
2. heat cap. Of the metal can and the thermometer were not taken into account
3. incomplete combustion
4. the experiment was not carried out under standard conditions

most accurate: bomb calorimeter