

OCR A GCSE Chemistry

Topic 3: Chemical reactions

Energetics

Notes

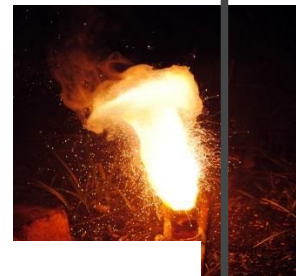




C3.2a distinguish between endothermic and exothermic reactions on the basis of the temperature change of the surroundings

Exothermic reactions

- An exothermic reaction is one that transfers energy to the surroundings so the temperature of the surroundings increases.
- Examples of exothermic reactions include; combustion, many oxidation reactions and neutralisation.
- Everyday examples of exothermic reactions include; self-heating cans (e.g for coffee) and hand warmers.



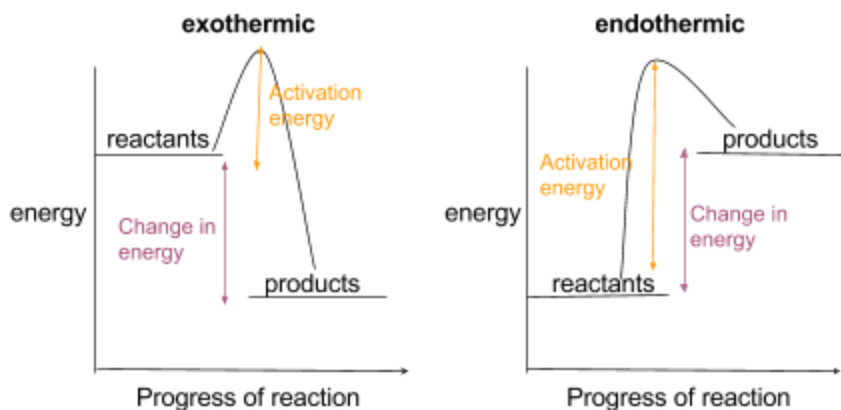
Endothermic reactions

- An endothermic reaction is one that takes in energy from the surroundings so the temperature of the surroundings decreases.
- Examples of endothermic reactions are thermal decomposition and the reaction of citric acid and sodium hydrogencarbonate.
- Some sports injury packs are based on endothermic reactions.



C3.2b draw and label a reaction profile for an exothermic and an endothermic reaction

- Chemical reactions can occur only when reacting particles collide with each other and with sufficient energy.
 - Activation energy = minimum amount of energy that particles must have to react
- Reaction profiles can be used to show the relative energies of reactants and products, the activation energy and the overall energy change of a reaction.
- The arrow shows overall energy change.



C3.2c explain activation energy as...

- The energy needed for a reaction to occur

(HT only) C3.2d calculate energy changes in a chemical reaction by considering bond making and bond breaking energies

- During a chemical reaction:
 - o Energy must be taken in to break bonds in the reactants
 - o Energy is released when bonds in the products are formed
 - o Sum of energy to BREAK – sum of energy RELEASED = overall energy change
- Energy needed to BREAK > energy RELEASED **ENDOTHERMIC**
- Energy needed to BREAK < energy RELEASED **EXOTHERMIC**

