

Endothermic reactions

Endothermic reactions are reactions that **take in energy from the surroundings** leading to the decrease in the temperature of the surroundings.

Endothermic reactions **absorb or take-in** energy.

Bond breaking is an endothermic reaction because energy must be taken-in to break bonds.

Understand that the word *endo* means **inside**. You can use this to grasp the concept that exothermic reactions **take-in energy** or **simply absorb energy inside a body** or something like that.

Examples of Endothermic reactions include;

1. Photosynthesis
2. Electrolysis
3. $\text{NaCO}_3 + \text{CH}_3\text{COOH}$
4. Melting & boiling

Exothermic Reactions

Exothermic reactions are reactions which **transfer thermal energy to the surroundings** which causes the temperature of the surroundings to increase.

Exothermic reactions **release heat** to the surroundings.

In this type of reaction, **the energy of the reactants is more or larger than that of the products**. This is why on a reaction diagram the reactant is on a high level and the product is on a lower level.

Bond making is an exothermic reaction because energy (heat energy, to be exact) is released or given out when bonds are made.

Exothermic Reactions (cont)

Understand that the word *exo* means **external** or **outside**, this will enable you to understand that **energy is given out** in an exothermic reaction.

Examples of Exothermic reactions include:

1. Combustion reactions
2. Most Oxidation reactions
3. Respiration
4. Neutralisation reactions ie. acid+base=
=salt+water
5. freezing & condensation

Terms in Chemical energetics

Activation energy E_a	Enthalpy change ΔH
Activation energy is the minimum amount of energy required for colliding materials to react.	Enthalpy change is the transfer of thermal energy.

👍 The enthalpy change value of an exothermic reaction is usually a **negative** number.

👍 The enthalpy change value for an endothermic reaction is usually a **positive** number.

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Published 20th August, 2022.
Last updated 20th August, 2022.
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