

### 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 $\Delta H$
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Activation energy is the minimum amount of energy required for colliding materials to react.	Enthalpy change is the transfer of thermal energy.
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👍 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.  
Page 1 of 1.

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