

Exothermic Reactions



What are exothermic and endothermic reactions?

Exothermic reactions release energy – they get hot.

- ex = out (as in 'exit')
- thermic = relating to heat

Endothermic reactions absorb energy – they get cold.

- en = in (as in 'entrance')

Most chemical reactions are exothermic.



Exothermic reactions **release** thermal energy (heat) into their surroundings. Exothermic reactions can occur spontaneously and some are explosive.

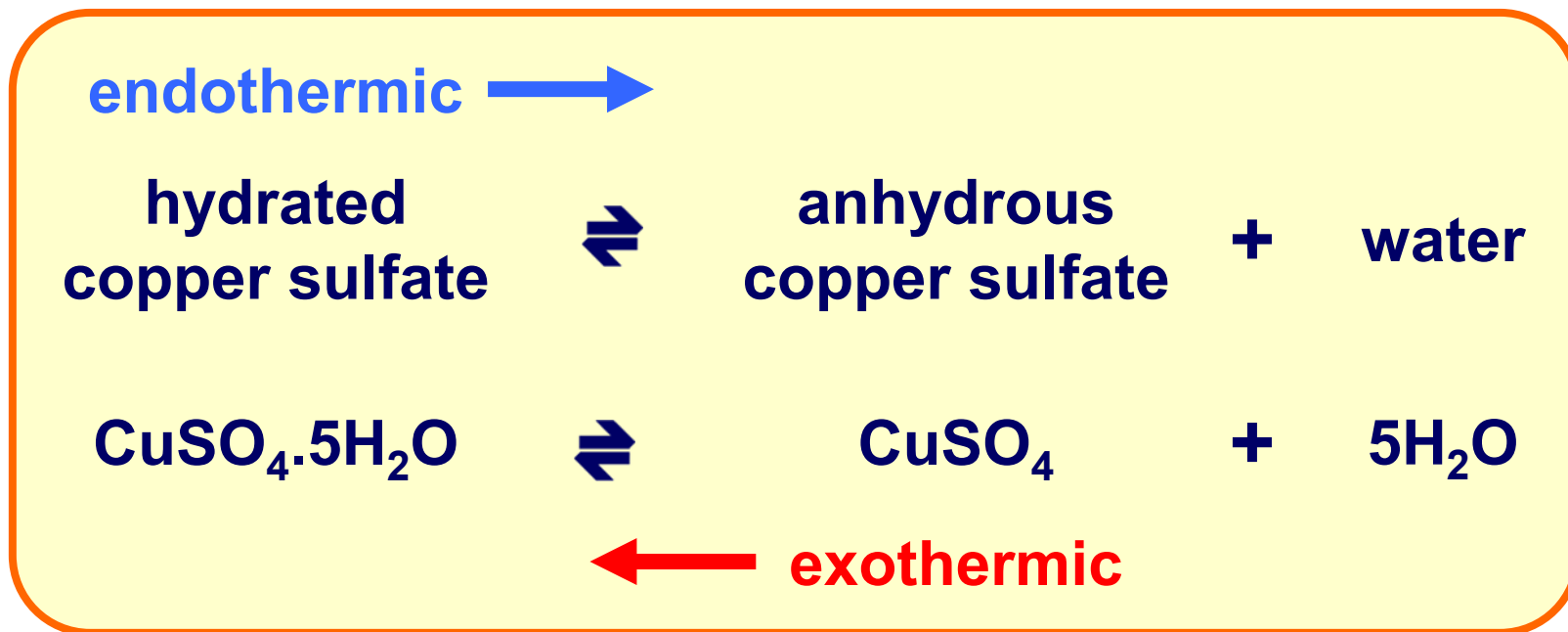
What are some examples?

- combustion
- respiration
- neutralization of acids with alkalis
- reactions of metals with acids
- the Thermit Process.



Reversible reactions and energy

Reversible reactions are exothermic in one direction and endothermic in the other direction. For example:



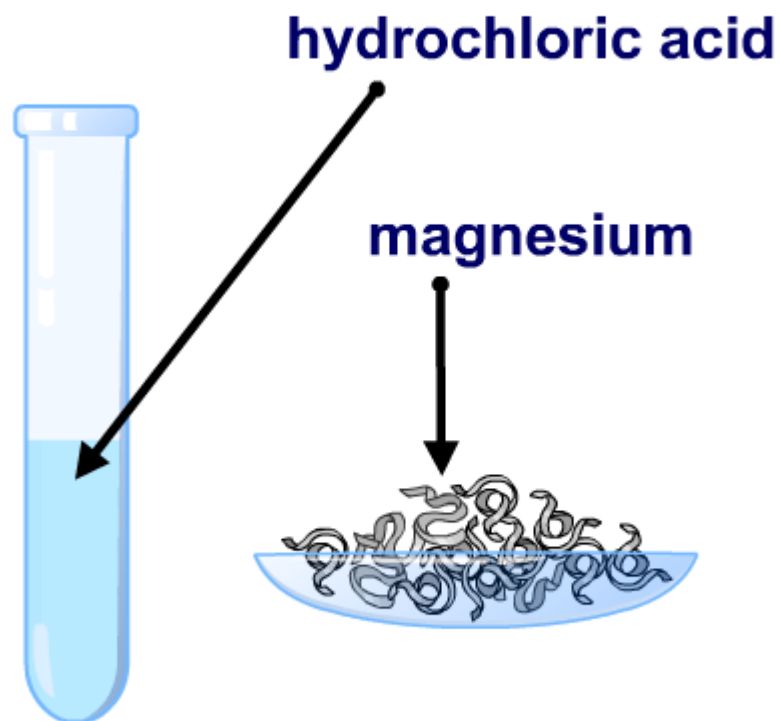
The amount of energy transferred in each direction is exactly the same.



Is this reaction exothermic or endothermic?

When magnesium reacts with hydrochloric acid it produces a temperature change.

Click "**play**" to find out if the reaction is endothermic or exothermic.



Exothermic reaction: energy transfer

What happens to energy in the reaction between magnesium and hydrochloric acid?

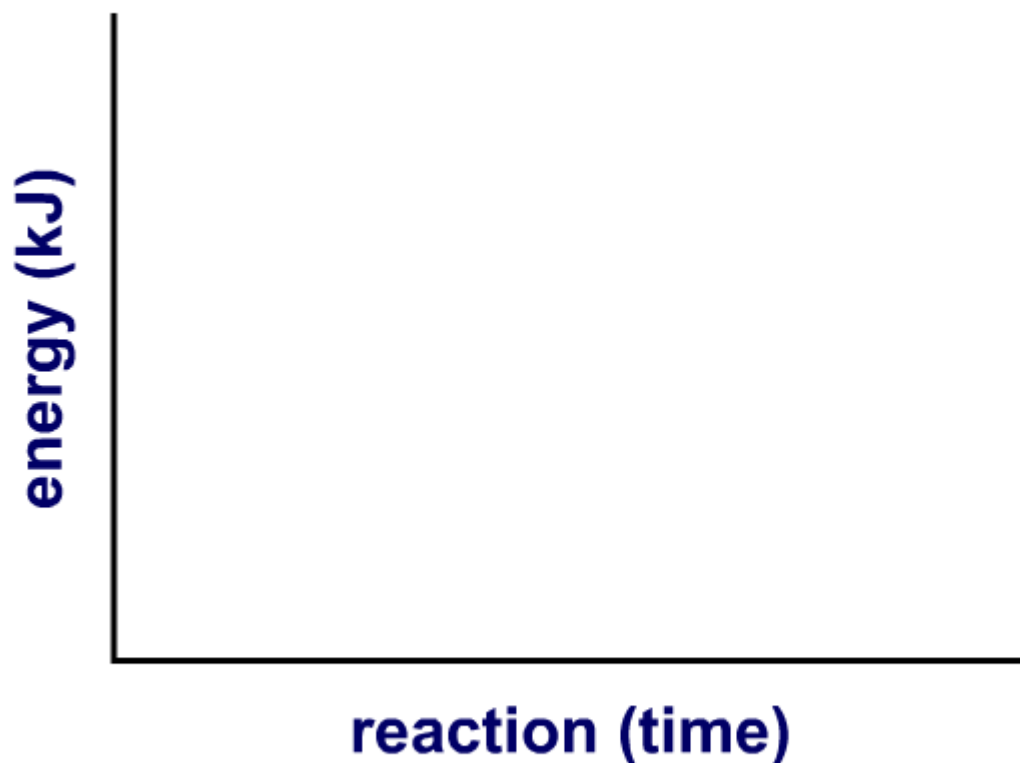


- No external heat source is used, so the heat released during the reaction must come from the reactants.
- During the reaction, chemical energy in the reactants is converted to thermal energy (heat). This causes the temperature of the reaction mixture to rise.
- This thermal energy is eventually lost to the surroundings and the temperature of the reaction mixture returns to normal.

Energy level diagram for an exothermic reaction

The energy transfer in a reaction can be represented in an **energy level diagram**.

Click "**play**" to find out more about the energy level diagram for an exothermic reaction.



What are the missing words about exothermic reactions?

1. An exothermic reaction energy.

2. In an exothermic reaction, e.g.
the temperature will .

3. This is because heat, or energy,
is released to the surroundings.

4. In an exothermic reaction, the reactants have
 energy than the products.



solve

