

Exothermic vs Endothermic

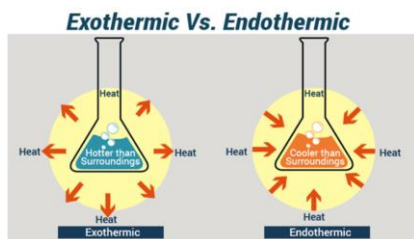
Exo**thermic**

In some reactions more energy comes OUT than goes in



The reactants have more energy than the products.

e.g. combustion, oxidation, neutralisation.



Endo**thermic**

In some reactions more energy goes IN than comes out.



The products have more energy than the reactants.

e.g. thermal decomposition

Uses

Exo**thermic**

Self heating cans, hand warmers



Chemicals react in an exothermic reaction and give OUT heat energy.

Endo**thermic**

Cool packs for sports injuries

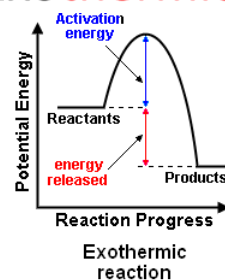


Chemicals react in an Endothermic reaction and take IN heat energy – therefore cooling the surroundings.

C7 Energy Changes

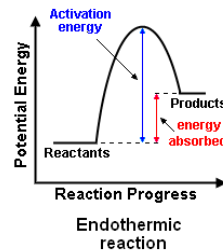
Reaction Profiles

Exo**thermic**



Products at LOWER energy than reactants

Endo**thermic**

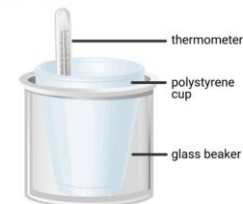


Products at HIGHER energy than reactants

Activation Energy is the energy needed to start a reaction.

Required practical

Experiment Set-up



- Place the polystyrene cup inside the glass beaker to make it more stable.
- Measure an appropriate volume of each liquid, eg 25 cm³.
- Place one of the liquids in a polystyrene cup.
- Record the temperature of the solution.
- Add the second solution and record the highest or lowest temperature obtained.
- Change your **independent variable** and repeat the experiment. Your independent variable could be the concentration of one of the reactants, or the type of acid/alkali being used, or the type of metal/metal carbonate being used.