

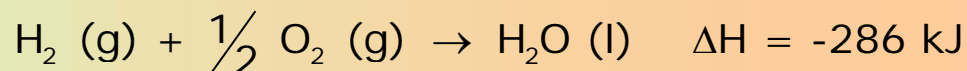
Stoichiometry of Thermochemical Equations

Thermochemical Equations

Thermochemical equations are balanced equations that also states the heat of reaction (ΔH).

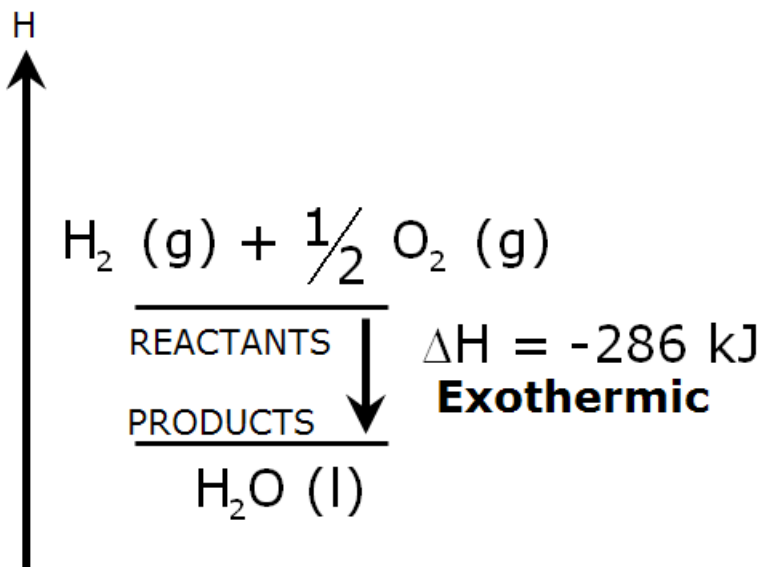
The value of ΔH refers to the amounts of substances in that specific equation.

Let's take this example:

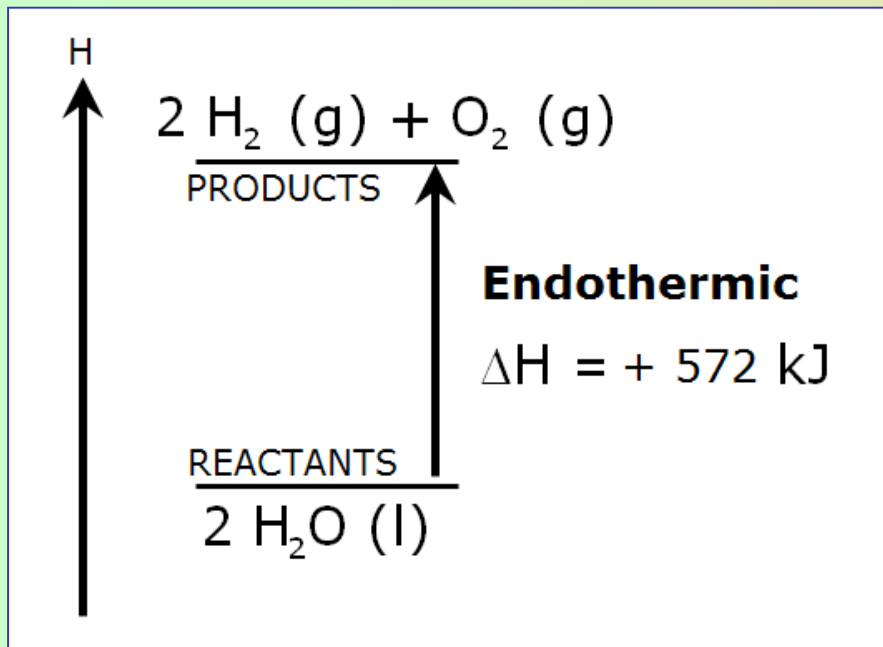


- The negative value means that the process is exothermic

- The value corresponds to the formation of 1 mol of water

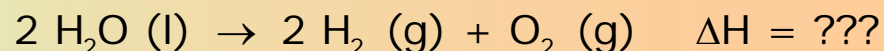


Stoichiometry of Thermochemical Equations



Thermochemical Equations

Let's change the direction of change and the amount of substances involved in that change:



To determine the enthalpy of this reaction we need to do the following:

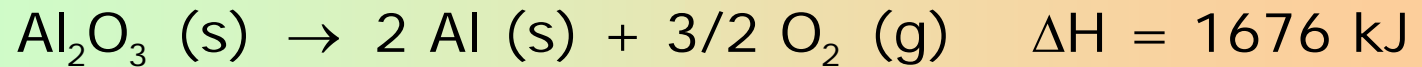
- change the sign of the enthalpy of the previous equation, because the direction of reaction is opposite
- change the value because the amount involved now is double

$$x = 286 \frac{\text{kJ}}{\text{mol H}_2\text{O}} * 2 \text{ mol H}_2\text{O} = + 572 \text{ kJ (endothermic)}$$

Stoichiometry of Thermochemical Equations

Exercise

This is a reaction to produce aluminum from bauxite:



Determine the amount of aluminum produced when 10^6 kJ of heat is transferred.

Atomic mass:
Al = 27

Sol: 32.2 kg Al