

# Definitions

What is enthalpy?	The stored energy in a chemical system.
What are the standard conditions?	<ul style="list-style-type: none"> <li>• 1 atmosphere (101 kPa)</li> <li>• 298 K (25 °C)</li> <li>• 1 mol dm<sup>-3</sup></li> </ul>
How does an enthalpy definition change when "standard" is added before it?	Add "and under standard conditions" to the end
What is the 'enthalpy change of reaction' ( $\Delta_r H^\circ$ ) defined as?	Enthalpy change of a reaction in the <b>molar quantities expressed by the balanced chemical equation</b> with all substances in their standard conditions.
What is 'enthalpy change of formation' ( $\Delta_f H^\circ$ )?	<ul style="list-style-type: none"> <li>• Enthalpy change when <b>one mole</b> of a substance is formed from its constituent elements with all substances in their standard states.</li> <li>• <math>2 \text{ Na (s)} + \frac{1}{2} \text{ O}_2 \text{ (g)} \rightarrow \text{Na}_2\text{O (s)}</math></li> </ul> <p><i>For an element, this is zero.</i></p>
What is enthalpy change of combustion' ( $\Delta_c H^\circ$ )?	<ul style="list-style-type: none"> <li>• Enthalpy change when <b>one mole</b> of a substance undergoes complete combustion in oxygen with all substances in standard states.</li> <li>• <math>\text{H}_2 \text{ (g)} + \frac{1}{2} \text{ O}_2 \text{ (g)} \rightarrow \text{H}_2\text{O (g)}</math></li> </ul>
What is 'ionisation enthalpy' ( $\Delta_{\text{ie}} H^\circ$ )?	<ul style="list-style-type: none"> <li>• Enthalpy change when each atom/ion in <b>one mole of gaseous</b> atoms/ions loses one electron to form <b>one mole of gaseous</b> ions.</li> <li>• <math>\text{Mg (g)} \rightarrow \text{Mg}^+ \text{ (g)} + \text{e}^-</math> <u>OR</u> <math>\text{Mg}^+ \text{ (g)} \rightarrow \text{Mg}^{2+} \text{ (g)} + \text{e}^-</math></li> </ul> <p><i>Must be specific in the number of the charges when asked for something such as "define the second electron affinity".</i></p>
What is 'enthalpy of neutralisation' ( $\Delta_{\text{neut}} H^\circ$ )?	Enthalpy change when <b>one mole</b> of water is formed in a reaction between an acid and alkali in their standard states.

What is 'electron affinity' ( $\Delta_{\text{ea}}H^\circ$ )? (with equation)	<ul style="list-style-type: none"> <li>Enthalpy change when each atom/ion in <b>one mole of gaseous</b> atoms/ions gains one electron to form <b>one mole of gaseous</b> ions.</li> <li><math>\text{Mg (g)} + \text{e}^- \rightarrow \text{Mg}^- \text{ (g)}</math> <u>OR</u> <math>\text{Mg}^- \text{ (g)} + \text{e}^- \rightarrow \text{Mg}^{2-} \text{ (g)}</math></li> </ul> <p><i>Must be specific in the number of the charges when asked for something such as "define the second electron affinity".</i></p>
What is 'standard enthalpy of atomisation' ( $\Delta_{\text{at}}H^\circ$ )?	<ul style="list-style-type: none"> <li>Enthalpy change when <b>one mole of gaseous atoms</b> is formed from its elements under standard state.</li> <li><math>\frac{1}{2} \text{I}_2 \text{ (s)} \rightarrow \text{I (g)}</math></li> </ul> <p><i>Must be specific in the number of negative charges.</i></p>
What is 'hydration enthalpy' ( $\Delta_{\text{hyd}}H$ )?	<ul style="list-style-type: none"> <li>Enthalpy change when <b>one mole of gaseous</b> ions become hydrated (dissolved in water).</li> <li><math>\text{Mg}^{2+} \text{ (g)} + \text{H}_2\text{O} \rightarrow \text{Mg}^{2+} \text{ (aq)}</math></li> </ul>
What is 'enthalpy of solution' ( $\Delta_{\text{sol}}H$ )?	<ul style="list-style-type: none"> <li>Enthalpy change when <b>one mole of an ionic solid</b> dissolves in an excess of water to ensure that the dissolved ions are well separated and do not interact with one another.</li> <li><math>\text{MgCl}_2 \text{ (s)} + \text{H}_2\text{O} \rightarrow \text{Mg}^{2+} \text{ (aq)} + 2\text{Cl}^- \text{ (aq)}</math></li> </ul> <p><i>This involves breaking up the bonds and forming new bonds between the metal ions and water molecules.</i></p>
What is 'bond dissociation enthalpy' ( $\Delta_{\text{de}}H$ )? (with an equation)	<ul style="list-style-type: none"> <li>Enthalpy change when <b>one mole of covalent bonds</b> is broken in the <b>gaseous state</b>.</li> <li><math>\text{I}_2 \text{ (g)} \rightarrow 2 \text{I (g)}</math></li> </ul>
What is 'lattice enthalpy of formation' ( $\Delta_{\text{lef}}H$ )? (with example)	<ul style="list-style-type: none"> <li>Enthalpy change when <b>one mole of an ionic solid</b> is formed from its constituent ions in the <b>gas phase</b>.</li> <li><math>\text{Mg}^{2+} \text{ (g)} + 2\text{Cl}^- \text{ (g)} \rightarrow \text{MgCl}_2 \text{ (s)}</math></li> </ul>
What is 'lattice enthalpy of dissociation' ( $\Delta_{\text{led}}H$ )? (with equation)	<ul style="list-style-type: none"> <li>Enthalpy change when <b>one mole of an ionic solid</b> is broken up into its constituent ions in the <b>gas phase</b>.</li> <li><math>\text{MgCl}_2 \text{ (s)} \rightarrow \text{Mg}^{2+} \text{ (g)} + 2\text{Cl}^- \text{ (g)}</math></li> </ul>