

Definition of Enthalpy**Enthalpy at constant pressure**

How to calculate the enthalpy of a reaction from the energy of products and energy of reactants

4 WAYS TO CALCULATE CHANGE IN ENTHALPY

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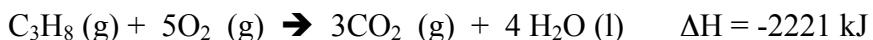
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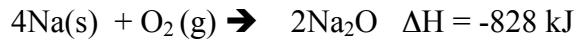
Using stoichiometry (molar relationships) to calculate enthalpy for an experimental reaction

Sample Problem: Consider the combustion of propane (C_3H_8):



Assume that all of the heat comes from the combustion of the propane. Calculate ΔH for a reaction where 5.00 g of propane is burned in excess oxygen at constant pressure.

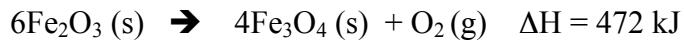
Sample Problem 2: The enthalpy for the formation of Na₂O is shown below with the synthesis reaction:



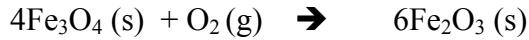
What is the amount of heat released when 1 mole of Na₂O is formed?

Sample Problem 3:

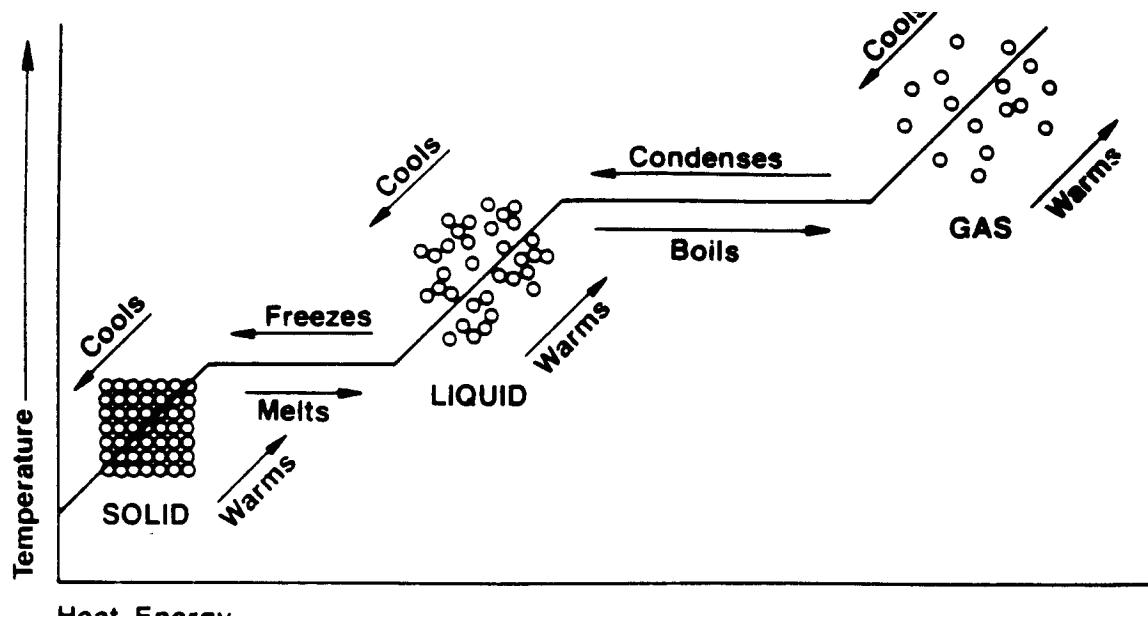
The enthalpy and balanced reaction for the decomposition of Fe₂O₃ is shown below:



What is the enthalpy change for the following reaction:



Definition of a phase change:



Calculating the enthalpy of a phase change

Calculating the heat of an increase (or decrease) in temperature: Calorimetry
Definition

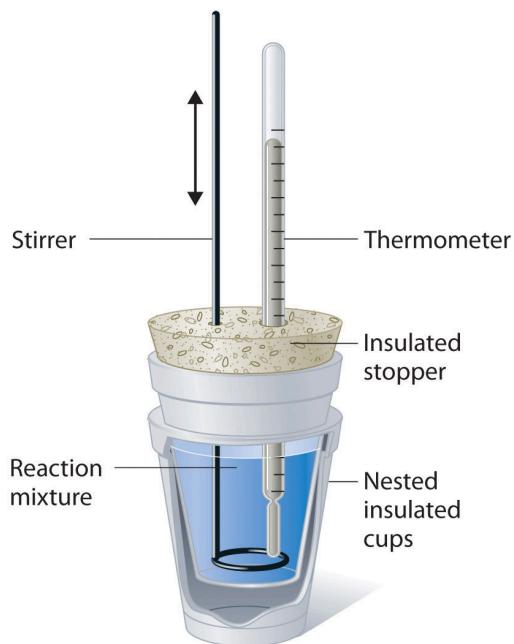
Specific Heat Equation:

Calculating ΔT

Sample Calorimetry Problem: How much heat must be added to change the temperature of 250g of water from 25° C to 60 ° C?

Enthalpy and Calorimetry:

Coffee Cup Calorimeter



Sample Problem: A 100.0 g sample of water at 90°C is added to a 500.0 g sample of water at 10°C. Calculate the final temperature of the water.