# Deducing enthalpy if combustion of magnesium oxide with hess's law essay sample

Law

Background: Hess’s law enables us to determine enthalpy of a reaction. It states that the enthalpy of a reaction is independent of the route taken to yield the products. Therefore, through this, it is possible for us to obtain enthalpies of reaction, which are otherwise difficult to measure by using the enthalpies of reactions.

Aim/ Purpose: To deduce the enthalpy of the oxidation of Magnesium by means of Hess’s law and the measured enthalpy’s of reaction of Magnesium with Hydrochloric acid, and reaction of Magnesium Oxide with Hydrochloric acid and the formation of water.

Hypothesis: A prediction was made that the value of reaction enthalpy of oxidization of Magnesium would be approximately -601. 8 KJ/ mol, which is the accepted value. (Source of accepted value of oxidization of Magnesium: IUPAC)

Apparatus:

* Standard Thermometer

* 1 M HCl

* Magnesium Oxide (MgO)

* Magnesium Ribbon (Mg)

* Probe (GLX)

* Graduated Cylinder (100 ml)

* Beaker (250 ml)

* Styrofoam Cup X 2

Method:

A Styrofoam cup was set up and placed in a beaker. 50 ml of I M HCl was measured and poured into a Styrofoam cup. A temperature probe was placed in hole at the top of cup and the initial temperature was recorded. 0. 25 g Magnesium was added to the solution. Temperature was recorded until the trend stabilized. The solution was then disposed. The same process was repeated with 0. 5 g Magnesium Oxide and HCl.

Variables:

* Dependent: Temperature Change, Enthalpy Change

* Independent: Reactants

* Control: Room temperature, Time of recording temperature

Raw Data:

Table 1: Measurements recorded during reactions of MgO and Mg with HCl

Reaction 1 (MgO)

Reaction 2 (Mg)

Volume of 1. 00 M HCl (mL)

48. 30

47. 79

Initial Temperature (°C)

22. 5

23. 3

Final Temperature (°C)

29. 9

42. 1

Mass of Solid (g)

0. 52

0. 21

Figure 1: Temperature change of the reaction MgO(s) + 2 HCl(aq) –> MgCl2(aq) + H2 O(l)

Figure 2: Temperature change over time of the reaction Mg(s) + 2 HCl(aq) –> MgCl2(aq) + H2(g)