

Exp. No. 9	Experiment/Subject Hess' Law	Date 11/5/2023	Course & Section No. 213 203
Name Emporia Karishh Ramesh	Lab Partner	Locker/Desk No.	

Hess' Law

Reference "An Experiment in Thinking of Scientifically", By Sardella
Chem Ed 67-333 (1992)

Purpose: Enthalpy of formation for magnesium oxide with Hess' Law.

Material: Styrofoam cups (2) with plastic cover, weight boat, thermometer, metal spatula or glass stirring rod, electronic balance, ring stand assembly, clamps

Procedure: get a two styrofoam cups and plastic cover.

Place a cup on top of the other cup. Add about 100 ml of 1.00M HCl to calorimeter.

Cover the calorimeter and place a thermometer in calorimeter and to weight 0.2g of Magnesium (Mg) metal precisely measured to the 0.01. Add a metal in calorimeter. Stir the mixture and wait till reach max t. Record the final temperature.

Repeat this process for a 2nd sample of Mg

Weight a sample of 0.5g of MgO and add to HCl solution.

Mix it and swirling. Monitor t until it reach max t. Record the t.

Signature	Date	Witness/TA	Date
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Repeat the process for a 2nd sample of MgO

Clean up the Experiment.

Table 1.

	Part A		Part B	
	Trial one	Trial two	Trial one	Trial two
Volume of HCl (mL)	50 mL	50 mL	49.9 mL	49.5 mL
Mass of Mg/MgO (g)	0.200	0.201	0.500	0.501
Initial Temperature (°C)	24.5 °C	38 °C	24.5 °C	30 °C
Change in Temperature (°C)	39 °C	51 °C	31 °C	35 °C
Heat evolved (kJ)	-3.201	-2.976	-1.488	-1.488
ΔH (kJ/mol)	-645.017	-599.655	-119.931	-30.665
Average ΔH (kJ/mol)		-622.336		-75.298

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Observation:

Magnesium have higher change in temperature than MgO . Magnesium has dissolved in reaction. Magnesium HCl temperature has changed huge than in Magnesium react than MgO .

Change

50 mL	50 mL
0.200	0.201
24.5	38.0

39
24.5
0.201
1.488

97.0

-1.488

35.0

-1.488

-2.488

-1.488

-75.248

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