EXP. NUMBER	EXPERIMENT/SUBJECT	DATE	14
	Measurement of change in Enthalpy		
NAME [redacted]	LAB PARTNER [redacted]	LOCKER/DESK NO.	COURSE & SECTION NO. L69

Prelab Questions

1.(a) $Mg_{(s)} + 2HCl_{(aq)} \rightarrow MgCl_{2(aq)} + H_{2(g)}$
0 +1 -1 +2 -1 0

- The reaction is a redox reaction. Magnesium is oxidized by HCl.

(b) $0.0385\,g / 24.31\,g/mol = 1.58 \times 10^{-3}$ mol Mg

$\Delta V = \frac{mass_{water}}{density_{water}} - \frac{mass_{ice}}{density_{ice}}$

$\Delta V = m\left(\frac{1}{d_w} - \frac{1}{d_i}\right)$

$= m\left(\frac{1}{1\,g/mL} - \frac{1}{0.917\,g/mL}\right)$

$= m(-0.0190)$

$m = \Delta V \times (-11.05)$

$= -0.15\,mL\,(-11.05)$

$= 1.66\,g$ of ice melted → heat of fusion of ice.

$\Delta H_{ice} = m \cdot (333.55\,J/g)$

$= 1.66\,g \cdot 333.55\,J/g$

$= 554\,J$

$\Delta H_{ice} = -\Delta H_{mg}$ → $-0.554\,kJ$

$\Delta H_{mg} = -554\,J / 1.58 \times 10^{-3}\,mol\,mg$

$= -351\,kJ/mol$

∴ The enthalpy for the reaction would −351 kJ/mol.

Purpose: To determine the enthalpy change of reaction using an ice calorimeter.

Procedure: The experiment was carried out as described in Experiment 5 (Measurement of a change in Enthalpy) of the Chemistry 1A03/1E03 Lab Manual.

Part A – Observations

Time	Volume (mL)
3:05	0.975 mL
3:06	0.975 mL
3:07	0.975 mL
3:08	0.975 mL
3:09	0.975 mL
3:10	0.975 mL
[illegible] 3:12:00	1.0
3:12:15	0.982
3:12:30	0.976
3:12:45	0.970
3:13:00	0.957
3:13:15	0.944
3:13:30	0.935
3:13:45	0.927
3:14:00	0.915
3:14:15	0.908
3:14:30	0.900
3:14:45	0.892
3:15:00	0.884
3:15:15	0.880
3:15:30	0.877
3:15:45	0.874
3:16:00	0.870
3:16:15	0.869

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