

THE MOLAR MASS OF MAGNESIUM

Date: _____ Name: _____ Lab Day/Time: _____

Object

To determine the molar mass of magnesium with the aid of the ideal gas law.

Procedure

As in Chem 1110 lab manual, pages 56, 57, 59, and 60.

Observations

Data

Table 1. Constants

Barometric pressure (mm Hg)	
Density of Mercury (g/cm^3)	13.6
Density of water (g/cm^3)	1.00
Gas constant, R ($\text{L}\cdot\text{atm} / \text{mol}\cdot\text{K}$)	.0820573

Table 2. Magnesium Data

	Run 1	Run 2
Mass of Mg turnings and weighing boat (g)		
Mass of boat after Mg turnings emptied from it (g)		
Therefore mass of Mg turning used (g)		
Temperature of solution after reaction ($^{\circ}\text{C}$)		
Distance between top of water in gas buret and top of water in beaker <i>after</i> reaction (mm)		
Volume of H_2 given off		
Vapour pressure of water at solution temperature		

Calculations

In the space below, show the following calculations

1. The total pressure inside the gas buret after reaction
2. The pressure inside the gas buret after reaction due to the H₂ *only*
3. The number of moles of H₂ in the gas buret after reaction
4. The moles of Mg
5. The atomic mass of Mg
6. The % error

$$\% \text{ error} = \frac{|\text{expected value} - \text{experimental value}|}{\text{expected value}} \times 100\%$$

Results

State the average atomic mass of magnesium determined. Do not automatically average your runs; only average them when both have no known experimental error, and in the case where there *is* known experimental error, use only the one good run and state why the other run is being discarded.

Average atomic mass _____

Discussion

Give one possible experimental error, which could account for the difference between the accepted molar mass and the experimental molar mass (remember to check if this error would cause the atomic mass of Mg to change in the way *your* results differed from the expected value).

Questions

Attach any questions your instructor assigns from the lab manual.