Atomic weight of magnesium - lab report example

Science, Chemistry

Atomic Weight of Magnesium

iLab, Week # 3 ATOMIC WEIGHT OF MAGNESIUM LAB Introduction Balanced chemical equations can be used in predicting the results of combining premeasured reactants. As well, the amount of reactants needed to produce certain amounts of particular molecules or compounds may be calculated using the balanced equations. It is easy to imagine that this is highly applicable in increasing the returns per cost in industries such as medicine, pharmacy, and food technology.

In this experiment, the validity of balanced equations was demonstrated by accurately predicting the molecular weight of Magnesium, supposedly a constant at 24. 3 g/mol. The ChemLab was used to simulate the reaction involving Magnesium and Hydrochloric acid, which produced hydrogen gas, magnesium and chloride ions. By measuring the amount of gas produced, the molecular weight of Magnesium was calculated.

Upon doing the experiment, it was verified that the use of balanced equations can accurately calculate for the molecular weight of Magnesium, which is 24. 3 g/mol Mg.

Procedure

Using ChemLab, 30 ml 2M HCl was added to 300 ml H2O. 10 mg Magnesium was then added to the solution. After measuring the amount of Hydrogen produced, the molecular weight (grams per mole) of Magnesium was calculated.

Observations and Results

Moles of hydrogen evolved: 4. 1 x 10-4 mol H2

Grams of hydrogen released: 0. 829 mg

Mole of hydrogen gas released: 0. 00041 mol H2

Calculated atomic weight of magnesium:

g Mg consumed/H2 released = 0. 010 g Mg /0. 00041 mol H2 = 24. 3 g/mol Mg

Discussion

The calculation of the molecular weight using the weight of magnesium and the amount of hydrogen gas released was facilitated by the used of the balanced equation describing the reaction between magnesium and HCl:

Mg + 2HCl --> H2 + Mg2+ (aq) + 2Cl- (aq)

This means that a mole of magnesium needs two moles of HCl to produce a mole of hydrogen gas, a mole of magnesium ion, and a mole of chloride ion. This direct relation is applicable only when the parameter compared is the mole.

Conclusion

The use of balanced chemical equations is important in accurately calculating for the reactants and products.