Chemistry 11

Lab: Limiting & Excess

Name:

Block:

For Students:	For Teacher:
Lab performed:	Pre-lab completion: ☐ Yes ☐ No
Lab due:	Lab Submitted: ☐ On Time ☐ Late

Introduction & Objectives

Define a limiting reactant:

Define an excess reactant:

Objectives:

1.

2.

3.

Procedure & Observations

Part I: Aluminum-Copper Replacement Reaction

Procedure:

Mass of Aluminum:	**Molar Mass:**
Balanced reaction: _____ + _____→ _____ + _____	
Calculated mass of copper (II) chloride: **Teacher initial: _____** Mass +10% =	
Qualitative Observations:	
Mass of filter paper:	Mass of filter paper + residue:

Part II: Gas Production

Procedure:

Mass of Magnesium:	mL of gas produced (2 decimal places!):	Qualitative Observations:

Analysis of Results

Part I: Aluminum-Copper Replacement Reaction

1. Between the two reactants, determine which is the limiting reactant and excess reactant:

   Limiting reactant: _____

   Excess reactant: _____

2. Using the subscripts for solid (s) and aqueous (aq), write the balanced reaction. *(What type of reaction is it?)*

3. Using the mass of aluminum used in the reaction, calculate the mass of the solid product that theoretically should have formed.

4. What mass of solid product was actually formed?

5. Calculate the percent yield for the reaction using the following equation:

$$\%\, Yield = \frac{Yield_{actual}}{Yield_{theoretical}} x100\%$$

Part II: Gas Production:

1. Balanced reaction of Mg and HCl:

   _____ + _____ → _____ + _____

2. Between the two reactants, determine which is the limiting reactant and excess reactant:

   Limiting reactant: _____

   Excess reactant: _____

3. Assuming STP and using the volume of gas produced, calculate the mass of Mg that initially reacted. How does it compare to your recorded mass?

Conclusion

State the results of Objectives 1-3

1.

2.

3.