Put the following into your Lab Book

Limiting Reactant Determination and Percent Yield from the reaction between Copper (II) Chloride and Aluminum

**Equation:**

**Purpose:** Using the reaction between \_\_\_\_\_\_\_\_\_\_\_\_\_\_and \_\_\_\_\_\_\_\_\_\_\_\_, the limiting reactant, the excess reactant and the percent yield (from one experiment) of the product \_\_\_\_\_\_\_\_\_\_\_ will be determined, using two different experiments.

**Experimental Procedure:**

1. Mass .25 g of aluminum foil
2. Label a 250 mL beaker "A" 0.20M CuCl2
3. Label a 250 mL beaker "B" 0.10M CuCl2
4. In beaker "A" pour 100mL of 0.200 M CuCl2
5. In beaker "B" pour 100mL of 0.100 M CuCl2
6. Tear one piece of the foil in small pieces and place in beaker
7. Stir and record your observations, Describe color and temperature changes.
8. Add the second piece of Al foil to beaker "B" and record your observations

**Cleaning up and obtaining product**

1. **Day 1 for beaker “A”:**
   1. Write your **group name** on the edge of a piece of filter paper. Mass the filter paper and record the mass.
   2. Use funnel, filter paper, Erlenmeyer setup.
   3. Pour contents of beaker “A” through the filter paper to isolate the copper. Use distilled water to be sure that all contents of the beaker are transferred to the filter paper. Add additional water to the filtered contents at least 2 times (letting drain through each time) to be sure that the soluble aluminum chloride has been rinsed through.
   4. Place funnel with filter paper containing product in 400 or 600 mL beaker to be dried in the oven.
   5. Wash and rinse all remaining glassware, leave to dry on paper towel, be careful to set funnel upside down or it will roll off the table.
   6. Wipe off the countertop with a damp paper towel.
2. Discard contents of **beaker B into waste** container in fume hood.

**Procedure (Day 2)**

1. Mass filter paper containing product. Record mass.
2. Discard filter paper containing product in trashcan. Wash funnel and beaker in stockroom sink.

**Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Period \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Lab report**

**Equation:**

**Data Table:**

|  |  |
| --- | --- |
|  | **# grams** |
| **Dry Filter Paper Paper + Copper** |  |
| **Dry Filter Paper** |  |
| **A.Y. Copper** |  |

# Beaker A

# Describe Qualitative Observations in table below:

|  |  |
| --- | --- |
| Color change of solution |  |
| Appearance or disappearance of a solid and the color of the solid (s) |  |
| Temperature change |  |
| Exothermic or Endothermic |  |
| Limiting Reactant |  |
| Excess Reactant |  |

# Calculations:

**Theoretical Yield calculation:**

**% Yield Calculation:**

# Beaker B

# Describe Qualitative Observations in table below:

|  |  |
| --- | --- |
| Color change |  |
| Appearance or disappearance of a solid and the color of the solid (s) |  |
| Temperature change |  |
| Exothermic or Endothermic |  |
| Limiting Reactant |  |
| Excess Reactant |  |

# Calculations:

**Theoretical Yield calculation:**

**% Yield Calculation:**

**Results from beaker A, 0.200 M CuCl2**

A. Y. was \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

L.R. was \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Excess Reactant was \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Results from beaker B, 0.100 M CuCl2:**

A. Y. was \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

L.R. was \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Excess Reactant was \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Note: only one beaker can be used to calculate actual yield. Why? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_