Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Observing Chemical Changes:   
Aluminum and Copper (II) Chloride Reaction**

**Purpose**: In this lab you will explore the reaction between aluminum and copper (II) chloride. In addition, you will make both ***quantitative*** and ***qualitative*** observations about the reaction.

**Hypothesis**: What two products do you think will be produced by this reaction? Which do you think will be soluble, and which will be insoluble?

**Materials**

* 200 mL Beaker
* Thermometer
* Wooden stir stick
* Scoopula
* Scale
* Distilled water
* Copper (II) chloride
* Aluminum foil

**Safety Precautions:**

* Wear safety googles at all times.
* Be careful not to get any chemical in your eyes or mouth.
* Wash your hands when finished.

**Procedure:**

1. Measure about 50 mL of water in your beaker. Record initial observations in your data table.
2. Record the temperature of the water.
3. Measure 1.5 g of copper (II) chloride crystals. Record observations in your data table.
4. Add copper (II) chloride to the water, and stir. Record observations in your data table.
5. Obtain a piece aluminum foil. Record observations in your data table.
6. Place your piece of aluminum foil into your beaker and let it sit for at least 3 minutes. Carefully watch what is happening in your beaker and record observations in your data table. You may stir gently once your twice.
7. After the 5 minutes, record the temperature of the mixture and write down any other observations.
8. Clean up your lab area according to your teacher’s instructions. Leftover solution must be disposed of in the waste collection beaker.

\*\*Make sure to have a completed Data Table and answer the Analysis Questions!

**Data:**

|  |  |  |
| --- | --- | --- |
|  | **Before Reaction** | **After Reaction** |
| Temperature |  |  |
|  | | |
|  | **Observations** | |
| **Water** on its own |  | |
| **Copper (II) chloride** on its own |  | |
| **Water** and **copper (II) chloride** mixed |  | |
| **Aluminum foil** on its own |  | |
| During the reaction (aluminum foil added to beaker) |  | |
| After the reaction (the 5 minutes) |  | |

**Analysis Questions**

1. What observations were quantitative and qualitative? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
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2. Was this an *exothermic* (producing heat) or an *endothermic* (taking heat) reaction? Why? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
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3. What substance to you think formed from this reaction? (Hint, look at the names of the reactants) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_