

CP Chemistry - Sample Lab Report

I. Experiment #3: Observing a Chemical Reaction

II. **Purpose:** To learn how qualitative and quantitative observations of a chemical reaction are used to formulate a hypothesis.

III. **Background**

1. *Observation* – statement of fact, based on what you detect by your senses
2. *Interpretation* – judgment or opinion about what you have observed
3. *Quantitative* – observation that involves measurement
4. *Qualitative* – observation that involves a description

IV. **Procedure**

1. Obtain and describe a sample of copper (II) chloride, CuCl_2
2. Fill a 100-mL beaker a quarter of the way with water. Without stirring, add 1 teaspoonful of crystals and observe and record.
3. Use the teaspoon to stir. Observe and record.
4. Place the thermometer in the solution and record the temperature. Place a loosely crumbed ball of Aluminum foil in the solution and observe and record. Stir mixture occasionally for at least 10 minutes. Record and changes in temperature.
5. Follow teacher's instructions for proper disposal.

V. **Data Table**

System	Observations
<i>Dry copper (II) chloride crystals</i>	-turquoise -rocky -solid
<i>Copper (II) chloride in water</i>	-turn green -appear to be dissolving -trapped air bubbles come up
<i>Stirred copper (II) chloride in water</i>	-turns teal -quickly dissolves
<i>Copper (II) chloride solution plus aluminum foil</i>	-bubbles slightly -foil starts to turn reddish-brown where touching solution -reddish-brown solid falls to the bottom of the beaker -starts to bubble -starts to get hot -aluminum foil dissolves
<i>Initial temperature</i>	24.9°C
<i>Final Temperature</i>	62.1°C

VI. **Questions**

1. Check your observations. Cross out any that are interpretations rather than observations.
2. List your observations in one of four following sections, number your observations consecutively. Circle the number of any observation that is quantitative.
 - i. Observations of dry crystals
 - ii. Observations of wet crystals before stirring
 - iii. Observations of the solution before addition of aluminum

- iv. Observations of the reaction that occurs when the aluminum is added to the solution
3. Would you expect your observations or your interpretations to most closely match those of your classmates? Explain.

VII. Answers to Questions

1. See Data Table.
2. List observations
 - i. Turquoise, rocky crystals, solid
 - ii. Turns green, appears to be dissolving, and trapped air bubbles come up
 - iii. Quickly dissolves and turns into a teal liquid at 24.9°C.
 - iv. When the aluminum is added, it bubbles, dissolves, and turns reddish-brown and goes up to 62.1°C.
3. Observations would most closely match my classmates and not interpretations because observations are objective and interpretations are subjective.

VIII. **Calculations:** None.

IX. Conclusion

The purpose of this lab is to observe and make qualitative and quantitative measurements during a chemical reaction.

In this lab, copper (II) chloride, CuCl_2 was added to water to make a solution and aluminum foil was then added to it. CuCl_2 crystals are turquoise and when added to water turn green. After stirring, they all dissolve and make a teal solution. When the aluminum foil is added, the temperature of the solution goes from 24.9 °C to 62.1 °C. The solution also starts to bubble and reddish-brown solid coats the foil before falling off on the bottom and the foil dissolves completely.

All of the observations listed were qualitative except for the temperature readings because they describe the experiment where as the temperature readings use a number value.

A possible source of error for this lab, could be not adding enough CuCl_2 crystals. When this happens, the mixture does not get that hot and color changes are not as strong.

An alternative lab experiment could be to add paper, saran wrap, a dollar bill, or coins to the CuCl_2 solution to see if similar or different changes occur.

In conclusion, this lab showed different qualitative and quantitative measurements during a chemical reaction of CuCl_2 and aluminum foil.