

Aluminum – Copper (II) Chloride Lab

In this lab, students will explore the reaction between aluminum metal and copper (II) chloride. In addition, they will make both quantitative and qualitative observations about the reaction.

Science 9

Curriculum Connection:

BC Science 9 (2016)

Element properties as organized in the Periodic Table.

The arrangement of electrons determines the compounds formed by elements.

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Chemistry: Aluminum – Copper (II) Chloride Reaction Lab

Purpose: *In this laboratory, 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 / Equipment:

beaker
thermometer
stirring rod
scoopula
copper (II) chloride crystals
aluminum foil

Safety Precautions:

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

Procedure:

1. Put about 50mL of water into the beaker.
2. Record the temperature of the water.
3. Add one scoopula of copper (II) chloride to the water and stir.
4. Take the temperature of the water / copper (II) chloride solution and write down any qualitative observations that you can.
5. Place a piece of loosely-crumpled aluminum foil into the solution and let the mixture sit for at least three minutes. You should observe some definite changes. You may stir gently once or twice.
6. Take the temperature of the mixture and, again, write down any qualitative observations that you can.
7. Clean up your lab area according to your teacher's instructions. Leftover solution must be disposed of in the waste collection beaker.

Data:

Be sure to include all temperature readings and all qualitative observations in a neat data table.

Analysis Questions:

1. What products were produced. What evidence did you observe to support this?
2. Write the balanced equation for the reaction.
3. How would the following changes affect the reaction rate?
 - a. Using larger crystals of copper (II) chloride
 - b. Using hot water
 - c. Using more copper (II) chloride
 - d. Tightly crumpling the aluminum foil
4. Was this an exothermic or endothermic reaction?