

Name: _____ Per _____

Solution Concentration

Lab

Directions: In this lab you will determine an unknown concentration of a copper (II) sulfate solution.

Procedure:

1. Weigh an empty Erlenmeyer flask. Record this mass on line 1.
2. Pour approximately 25 mL of copper (II) sulfate solution into a graduated cylinder. Record the *exact* volume on line 2
3. Transfer the solution to the Erlenmeyer flask. Determine the mass of the Erlenmeyer flask with the copper (II) sulfate solution. Record on line 3
4. Place the Erlenmeyer flask on the hotplate. Heat the solution in the flask until all the liquid has been removed.
5. In the observations, describe and record the appearance of the copper (II) sulfate after heating. Allow the Erlenmeyer flask to cool and weigh. Record the mass of the Erlenmeyer flask with the dry copper (II) sulfate on line 5. Calculate the mass of the dry copper (II) sulfate solution and record (line 6= line 5-line 1)
6. Rinse the flask in the sink and clean all glassware.

Results and Observations:

1	mass of empty of the Erlenmeyer flask (g)	
2	Exact volume of copper (II) sulfate solution (mL)	
3	Mass of Erlenmeyer flask with copper (II) sulfate solution (g)	
4	Mass of copper (II) sulfate solution (g)	
5	Mass of Erlenmeyer flask after heating (g)	
6	Mass of dry copper (II) sulfate (g)	
Appearance of copper (II) sulfate solution		
Appearance of copper (II) sulfate after heating		

Questions:

1. A. Write the formula for the compound copper (II) sulfate.

B. Determine the molar mass of copper (II) sulfate

C. From the mass of copper (II) sulfate (line 6) and the molar mass, calculate the moles. (round your answer to four decimal places)
2. From the exact volume of copper (II) sulfate solution (line 2), determine the volume of the solution in Liters.

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- From the moles and volume of the copper (II) sulfate solution, calculate the molarity. (round your answer to two decimal places)
- Calculate the percent concentration of copper (II) sulfate in the solution from the mass of the solute (line 6) and the mass of the solution (line 3). (round your answer to one decimal place)

$$\text{percent concentration} = \frac{\text{mass of solute}}{\text{mass of solution}} \times 100\%$$

- As the solution was boiling, the volume of the solution was _____ (increasing or decreasing)

As a result, the concentration of the solution was _____ (increasing or decreasing)

- What is the purpose of this lab?

Conclusion:

The concentration of the solution of copper (II) sulfate was _____ M

The percent composition of the copper (II) sulfate solution was _____ %.