

# **TDC Part III**

## **Practical (Lab Work)**



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**TOPIC:- Tetraamine cupric sulphate  
complex**

# Tetraamine cupric sulphate complex [Cu(NH<sub>3</sub>)<sub>4</sub>]SO<sub>4</sub>.H<sub>2</sub>O

## Objective

To prepare tetraammine cupric sulphate complex

### Requirements

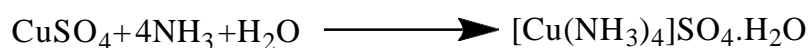
#### Chemicals:

Copper sulphate	2.5 grams
Liquid ammonia	5 mL
Ethyl alcohol	7.5 mL

**Apparatus:** Electronic weighing machine, beaker 500 mL, beaker 250 mL, filtration apparatus, flask conical, funnel, desiccator, glass rod, tongs, tripod stand, watch glass, water bath.

## Theory

Hydrated tetraammine cupric sulphate is obtained by addition of liquid ammonia in the solution of copper sulphate followed by the addition of ethyl alcohol in the solution.



## Procedure

The four steps involve during the formation of hydrated tetraammine cupric sulphate complex given as

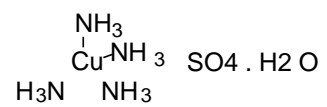
**Step I** Firstly dissolve 2.5 g of crystalline  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$  in minimum amount of  $\text{H}_2\text{O}$  in 250 mL beaker. Now add few drop of conc.  $\text{H}_2\text{SO}_4$  to clear up the solution if necessary.

**Step II** Add liquor ammonia to copper sulphate solution from dropping funnel with constant stirring until the blue precipitate formed is dissolved to give a deep solution.

**Step III** Now add 20 mL of ethyl alcohol slowly with constant stirring to the deep blue solution. And allow it to stand to slow evaporation which gives long needle shaped brilliant dark blue-violet crystal of tetraamine cupric sulphate complex.

**Step IV** Filter and wash it with ethyl alcohol and dry in a

desiccator.



Structure of tetraamine cupric sulphate complex

## Result

The yield of tetraamine cupric sulphate is g.

