



## SPECTROPHOTOMETRIC DETERMINATIONS OF COPPER WITH 3-HYDOXY-3-METHYL-1-P-METHOXY PHENYL TRIAZENE

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### **3-Hydroxy-3-methyl-1-p-methoxy phenyl triazene has been established as a new reagent for determination of Copper.**

3-Hydroxy-3-methyl-1-p-methoxy phenyl triazene has been prepared[1] (m.p. 80°C) by coupling methyl hydroxylamine with diazonium salt in 1:1 molar proportion at 0-50°C. The reagent solution was prepared in ethanol. The standard solution of copper was prepared by dissolving requisite quantity of copper sulphate pentahydrate (B.D.H., A.R.) in double distilled water. A few drop of concentrated H<sub>2</sub>SO<sub>4</sub> were added to the solution to prevent hydrolysis. It was further standardized with EDTA using murexide as an indicator[2]. A systronics UV-VIS spectrophotometer-108 was used for spectrophotometric work and for pH-measurements systronics pH meter-324 was used. The green Cu (II) complex was soluble in ethanol and its color was stable for more than 24 h. It gives maximum absorbance at 380 nm but subsequent absorbances were made at 430 nm against solvent blank. Eight fold excess of the reagent was used and pH was kept between 6.0 to 6.6. The system obeys Beer's law in the range from 15.88 ppm to 31.77 ppm of copper. Sandell's sensitivity is 47.4 ng/cm<sup>2</sup> and molar absorptivity is 2,040 liter/mole cm. The Job's method[3], Slope ratio method[4] and mole ratio methods- (i) Yoe & Jones[5] and (ii) Zolotov's[6] gave 1:2 (Fe:R) stoichiometry for the complex. Interference of 22 diverse ions was studied in determination of 31.77 ppm of copper. K(I), Cl<sup>-</sup>, Br<sup>-</sup>, SO<sub>4</sub><sup>2-</sup>, NO<sub>3</sub><sup>-</sup> and CO<sub>3</sub><sup>2-</sup>, did not interfere when present in 100 ppm concentration. In addition to these ions, Na(I), NH<sub>4</sub><sup>+</sup>, Br<sup>-</sup>, CH<sub>3</sub>COOH, and PO<sub>4</sub><sup>3-</sup> did not interfere when present in 50 ppm. The precision study was carried for 31.77 ppm of Cu (II), standard deviation was 0.03 ppm of copper. The solid complex was obtained as brown micro crystal, m.p. 158°C with molecular formula Cu (C<sub>14</sub>H<sub>20</sub>N<sub>6</sub>O<sub>4</sub>). H<sub>2</sub>O. This molecular formula corroborates the composition of the complex found with solution studies.

**Keywords:** Sandell's sensitivity, Molar absorptivity, Interference, Precision study