

Analysis for Copper Sulphate

Apparatus needed

- * 50 ml Pipette.
- * 25 ml Graduated cylinder.
- * 50 ml Burette.
- * 500 ml Erlenmeyer flask.

Reagent Required

- * Ammonium hydroxide AR grade. : AR grade
- * Glacial Acetic Acid. : AR grade
- * Potassium Iodide : AR grade
- * Starch Indicator Solution. : 5 g/l soluble starch.
- * Sodium thiosulphate Solution. : 0.1N

Contd..6/-

Procedure

- * Pipette 5 ml of the plating solution into a 500 ml Erlenmeyer flask.
- * Add about 20 ml distilled water.
- * Add ammonium hydroxide by drops until a deep blue colour develops.
- * Dilute to 150-250 ml with distilled water.
- * Add 10 ml glacial acetic acid and 3-4 gms of potassium iodide.
- * Titrate with 0.1 N sodium thiosulphate solution using starch indicator.

Calculations

ml of 0.1 N Sodium thiosulphate titrate $\times 5.0 =$ g/l copper sulphate.

Analysis of Sulphuric Acid

Apparatus needed

- * 10 ml Pipette.
- * 50 ml Burette.
- * 250 ml Erlenmeyer flask.

Reagent Needed

- * Methyl orange indicator solution.
- * 0.1N sodium hydroxide solution.

Procedure

- * Pipette 10 ml sample of plating bath into a 250 ml. Erlenmeyer flask.
- * Add 100 ml distilled water and 3-4 drops Methyl orange indicator solution.
- * Titrate with 0.1 N Sodium hydroxide solution until yellow colour develops.

CALCULATION

ml of 0.1 N Sodium hydroxide titrated $\times 4.9 =$ g/l Sulphuric Acid (66Be.)

Analysis for Chloride Content

Apparatus needed

- * Magnetic Stirrer.
- * 50 ml Burette.
- * 200 ml Beaker (Tall form).
- * 50 ml Pipette.

Reagents needed

*** 50% Nitric Acid Solution :**

Carefully add with stirring 20 ml of concentrated Nitric Acid to 20 ml of distilled water.

*** 0.1 N Silver Nitrate Solution :**

Dissolve 17 gms of silver nitrate in distilled water and dilute to 1 ltr. in a volumetric flask and store in an amber coloured bottle.

Contd..7/-

*** 0.01 N Mercuric Nitrate Solution:**

Dissolve 1.083 gms of Mercuric Oxide in 5 ml of 50 % Nitric acid solution. Dilute to one ltr. with distilled water. Standardize by titrating 25 ml of 0.002 N Standard Chloride Solution (0.1168 gms/ltr NaCl) with the 0.01 N Mercuric Nitrate solution using following formula :

$$\frac{\text{Normality of Mercuric Nitrate Solution}}{\text{ml of Mercuric Nitrate soln.}} = 0.002 \text{ N} \times 25 \text{ ml Sample}$$

PROCEDURE

- * Pipette 50 ml of Cu A operating solution into a 200 ml Beaker (Tall form).
- * Add 40 ml. of distilled water and 10 ml of 50 % Nitric Acid solution.
- * Add sufficient 0.1 N Silver Nitrate Solution to produce turbidity (usually 4-5 drops).
- * Immediately titrate with 0.1 N Mercuric Nitrate Solution by dropwise additions with stirring until turbidity clears.

CALCULATION

ml Mercuric Nitrate Titrated x Normality of Mercuric Nitrate x 709 = m.gm.ltr. (PPM chloride)