

### 3. Preparation & standardization of Sodium Thiosulphate Solution- By Ms. Lipsa Samal

**AIM:**To determine the normality of given sample of sodium thiosulphate.

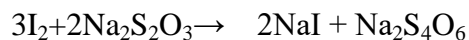
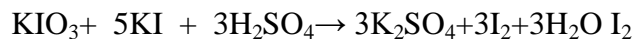
#### **REQUIREMENTS:**

**Apparatus :** Burette, Volumetric flask, Pipette,

**Reagents :** 0.1 N sodium thiosulphate, Potassium iodate, Potassium iodide.

#### **PRINCIPLE:**

The principle of standardization of sodium thiosulphate is based on redox iodometric titration with potassium iodate (primary standard). Potassium iodate is a strong oxidizing agent, it is treated with excess potassium iodide in acidic media which liberates iodine which is back titrated with sodium thiosulphate. Uniformity of reactions between iodine and sodium thiosulphate forms basis for utilizing the standard solution of iodine in the analysis of sodium thiosulphate. Sodium thiosulphate is used in the analysis of iodine. In the analysis of iodine starch solution is used as indicator.



#### **PROCEDURE:**

##### **Preparation of 0.1N Sodium thiosulphate**

Dissolve 24.8g of sodium thiosulphate pentahydrate( $\text{Na}_2\text{S}_2\text{O}_3 \cdot 5\text{H}_2\text{O}$ ) in 800 ml of freshly boiled and cooled water and mix thoroughly by shaking for approximately 15 minutes. Make up the volume to 1000 ml.

##### **Preparation of 0.1N Potassium Iodate**

Weigh accurately about 356 mg of  $\text{KIO}_3$  and dissolve in 100 ml distilled water

##### **Preparation of Starch indicator**

Take 1 gm of soluble starch and triturate with 5 ml of water and add it to 100 ml of Boiling water containing 10 mg of Mercuric iodide with continuous stirring

##### **Standardisation of 0.1N sodium thiosulphate**

Take 10 ml of Potassium Iodate solution .Add 2 gm of Potassium Iodide and 5 ml of dilute  $\text{H}_2\text{SO}_4$ ,keep it in dark for 10 minutes, add 2 to 3 drops of starch indicator and titrate with sodium thiosulphate using starch solution as indicator until the blue colour is disappeared.

$$N_1 V_1 = N_2 V_2$$

$$N_2 = \frac{N_1 V_1}{V_2}$$

$$V_2$$

**Observation table –**

Sl. NO	Content of the Flask	Burette Reading (ml)				Indicator
		Initial reading	Final reading	Difference	Precision	
1	10 ml of 0.1N Potassium Iodate solution + 5 ml H <sub>2</sub> SO <sub>4</sub>	0.0	10	10		Starch indicator
2	10 ml of 0.1N Potassium Iodate solution + 5 ml H <sub>2</sub> SO <sub>4</sub>	0.0	9.9	9.9	9.9	Starch indicator
3	10 ml of 0.1N Potassium Iodate solution + 5 ml H <sub>2</sub> SO <sub>4</sub>	0.0	9.9	9.9		Starch indicator

**Calculation :**  $N_1 V_1 = N_2 V_2$

$N_1 = 0.1$  N = Normality of Potassium Iodate Solution,  $N_2 = ?$  = Normality of Sodium thiosulphate

$V_1 = 10$  ml = Volume of Potassium Iodate Solution,  $V_2 = 9.9$  ml = Volume of Sodium thiosulphate

$$N_2 = \frac{N_1 V_1}{V_2}$$

$$N_2 = \frac{10 \text{ ml} \times 0.1}{9.9}$$

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$$N_2 = 0.10 \text{ N}$$

**REPORT:** The strength of the given solution of sodium thiosulphate is 0.10 N