Observations and Calculations

Standardization of Sodium Thiosulfate

S. No.	Volume of sodium thiosulphate used from the burette
1	9.4 mL
2	9.5 mL
3	9.5 mL

Given concentration of copper sulphate = 0.005 M

Equivalents of Copper = Equivalents of Thiosulphate

(Normality x Volume) of Copper = (Normality x Volume) of Thiosulphate

0.005 x 10 mL = Normality of Thiosulphate x Volume of Thiosulphate (Burette Reading)

Suppose Burette Reading is 9.5 mL
Normality of Thiosulphate = (0.005 x 10)/9.5
Normality of Thiosulphate = 0.0053 M

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Estimation of Iodine

S. No.	Volume of sodium thiosulphate used from the burette
1	2.4 mL
2	2.5 mL
3	2.5 mL

$IO_3^- + 6S_2O_3^{2-} + 6H^+ \longrightarrow 3S_4O_6^{2-} + I^- + 3H_2O$

Consider the above reaction of iodate ions present in salt sample reacting with sodium thiosulphate

$6 \times M_1V_1$ Iodate = M_2V_2 Thiosulphate
6 x M1 x 50 = 0.0053 x Burette Reading

Value obtained by standardizing sodium thiosulphate against a standard copper solution

Suppose Burette Reading is 2.5 mL
$6 \times M_1 \times 50 = 0.0053 \times 2.5$
Molarity of Iodate solution = 4.4 exp -6

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Thus, the solution contains 4.4 exp -6 moles of Iodine per Liter of solution
The solution contains 4.4 exp -6 x 126.90 grams Iodine per Liter of solution
Atomic Weight of Iodine = 126.90 g

Solution contains 5.6 exp -3 grams Iodine per Liter of solution
= 5.6 mg of Iodine per Liter of solution

Concentration in ppm

To report in ppm

Suppose we started with 10 g of salt,

10 g salt was dissolved in 50 mL of water

In 50 ml of solution;

(5.6 mg x 50)/ 1000 = 0.28 mg of Iodine

Thus, 0.28 mg of Iodine in 10 g of salt

ppm means parts per million; which is mg per Kg

(0.28/10) x 1000 = 28 ppm of Iodine was present in our salt sample