

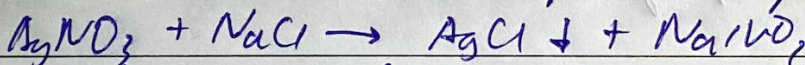
ESTIMATION OF AMOUNT OF CHLORIDE IN A WATER SAMPLE.

AIM:

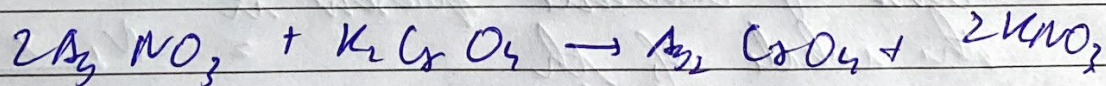
To estimate the amount of chloride in a water sample

PRINCIPLE

It is an example of precipitation reaction. The reaction between chloride and silver nitrate is direct and simple. It proceeds as



The completion of the reaction in their case is observed by employing $\text{K}_2\text{Cr}_2\text{O}_7$ solⁿ as an indicator. At the end point, the yellow colour changes into reddish brown due to the reaction



$\text{K}_2\text{Cr}_2\text{O}_7$ indicator will not be precipitated as $\text{Ag}_2\text{Cr}_2\text{O}_7$ until all the chlorides in the solution have been precipitated as AgCl .

PROCEDURE-

Titration I : Standardization of AgNO_3 solⁿ
10 mL of standard NaCl solution (N/20) is pipetted out into a clean conical flask. 1 mL of 2% K_2CrO_4 indicator is added to it. The solⁿ turns yellow in colour. It is titrated against AgNO_3 solⁿ taken in a burette. During each addition of AgNO_3 , the content in the conical flask is shaken well. At the end point, yellow changes into reddish brown (which does not disappear after shaking). The titration is repeated till the concordant value is obtained.

Titration II : Estimation of chloride

The given chloride solution is diluted to 100 mL using distilled water in a standard flask. Exactly 10 mL of this solution is pipetted out into a clean conical flask. To this solution add 1 mL of 2% K_2CrO_4 indicator. It is titrated against standard AgNO_3 solution from the burette. The addition of AgNO_3 is continued until the solution produced a permanent reddish brown colour. The titration is repeated.

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till the concordant value is obtained.
From the volume of AgNO_3 consumed, the strength of chloride and hence its amount is calculated.

RESULT-

Amount of chloride present in the whole of the given solution is $0.0625 \text{ g} / 100 \text{ ml}$.

OBSERVATION.

Table -1. Standardization of AgNO_3

S.No.	Vol of NaCl Sol ⁿ (mL)	Burette Reading		Concordant Value (mL)	Indicator
		Initial	Final		
1	10	0	12.7	12.9.	2% K_2CrO_4 (1mL)
2	10	0	12.9		
3	10	0	12.9		

Table -2. Estimation of Chloride

S.No.	Vol of Chloride Sol ⁿ (mL)	Burette Reading		Concordant Value	Indicator
		Initial	Final		
1	10	0	11.2	11.4	2% K_2CrO_4
2	10	0	11.4		
3	10	0	11.4		

CALCULATION

Titration - I

Normality of NaCl solⁿ = 0.02 N.

Volume of NaCl solⁿ = 10 mL (V₁)

Volume of AgNO₃ solⁿ = 12.9 mL

$$\text{Normality of AgNO}_3 = \frac{N_1 V_1}{V_2} = \frac{0.2 \times 10}{12.9}$$

$$= 0.0155 \text{ N}$$

Titration - II

Volume of chloride solution = 10 mL

Normality of chloride solution = ~~0.023~~ N.

Volume of AgNO₃ solution = 10.4 mL

Normality of AgNO₃ solⁿ = 0.0155 N.

$$N_1 = \frac{N_2 V_2}{V_1} = 0.0176 \text{ N}$$

Amount of chloride present in
the whole of the
given calculation

$$= \frac{N_1 \times 36.46}{10}$$

$$= 0.0625 \text{ g / 100 mL}$$