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Experiment No-11: Determination the amount of Chloride in irrigation water.

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Principle:

Mohr's titration method is most commonly used for chloride estimation. It depends upon the formation of a sparingly soluble brick-red silver chromate (Ag_2CrO_4) precipitate at the end point when the sample is titrated against standard silver nitrate (AgNO_3) solution in the presence of potassium chromate (K_2CrO_4) as indicator.

Initially the Cl^- ions are precipitated as AgCl and dark brick-red precipitate of Ag_2CrO_4 starts just after the precipitation of AgCl is over.



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Apparatus

Beakers/porcelain dish

Burette

Reagents

Potassium chromate (K_2CrO_4) indicator (5%) solution: Dissolve 5 g of K_2CrO_4 in about 75 ml distilled water and add drop by drop saturated solution of $AgNO_3$ until a slight permanent red precipitate is formed. Filter and dilute to 100 ml. With high purity analytical reagent, the indicator solution can be prepared directly.

Standard silver nitrate solution (0.05M): Dissolve 8.494 g of silver nitrate ($AgNO_3$) in distilled water and make the volume to one liter. Standardize it against standard NaCl solution and keep in amber coloured bottle away from light.



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Procedure

Take 5 ml of the sample in a 100 ml beaker or a porcelain dish and diluted to about 25 ml with distilled water.

Add 5-6 drops of K_2CrO_4 indicator (making it dark yellow), and titrate against the standard $AgNO_3$ solution with continuous stirring till the first brick-red tinge appears.

Run a blank to avoid error due to any impurity in chemicals.

Calculation:

$$Cl \text{ (mg/liter of water)} = X \times 1.775 \times \underline{\text{ml of sample}} \times 1000$$

Where, ml of water sample taken = 5

X = ml of 0.05M $AgNO_3$ consumed in titration

1.775 = factor representing mg of Cl in aliquot/sample as calculated below: 1 ml of 1M $AgNO_3$ = 1 me of Cl

1 ml of 0.05M $AgNO_3$ = 0.05 me of Cl = $35.5 \times 0.05 = 1.775$ mg of Cl (in aliquot).



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Observation: Students must complete your calculation with above formula and write proper result.

Sample No	Chloride content (ppm)
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1.

2.

3.