

DETERMINATION OF CHLORIDE CONTENT OF WATER BY ARGENTOMETRY.

AIM: To estimate the chloride concentration in the given water sample

APPARATUS: Conical flask, burette with stand, pipette, measuring cylinder, volumetric flask, beakers, funnel and wash bottle etc.

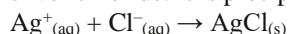
CHEMICALS REQUIRED: Silver Nitrate (AgNO_3), Potassium chromate (K_2CrO_4), Distilled Water, Raw Water

PRINCIPLE:

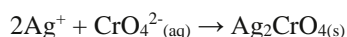
Theory of determination of chloride in water

The amount of chloride in water can be simply determined by titrating the collected water sample with silver nitrate solution by using potassium chromate indicator. The reaction is quantitative. The AgNO_3 reacts with chloride ion in a 1:1 ratio. The result is expressed as ppm.

When silver nitrate solution is gradually added into the flask, then silver ions react with chloride ions and forms silver chloride. It is precipitated in bottom of the flask. The precipitation is white in color.



The end point of the titration takes place when all the chloride ions reacts and precipitated. Then slightly extra silver ions react with the chromate ions and form a brownish-red precipitate of silver chromate. The solubility product of silver chromate exceeded in the presence of additional silver ions, and then the precipitation occurs.



FORMULAE:

Amount of chloride content present in water sample = $(V_2 - V_1) \times 35.5 \times 1000 / \text{Volume of Sample}$

Where N = Normality of $\text{AgNO}_3 = 0.01 \text{ N}$

PROCEDURE:

1. Fill the burette with silver nitrate and fix it to the burette stand
2. Take a 20 ml collected water sample into a conical flask.
3. Add 2-3 drops potassium chromate (K_2CrO_4) indicator. The color of the water sample is turn into light yellow.
4. Titrate the water sample solution with standard silver nitrate from the burette and shake well.
5. Titrate until the light yellow color changes to permanent brownish-red color (bricks-red color) precipitate.
6. Tabulate all the readings and calculate the volume of AgNO_3 consumed by using the formula.
7. Calculate chloride ion concentration.
8. Amount of chloride content is obtained in mg/lit (or) ppm.

RESULT:

The amount of total chloride content present in water sample ----- mgs