Chloride (Cl^-)

The chloride name deriving from chlorine gas name, where the chlorine gas considered a gas in the molecular from Cl_2 , So , chloride is a form of chlorine gas (Cl_2) usually this ion has ability to combined with positive ions to form a salts which found in form of Metallic salts .

Chlorine ion considered as a larger ion or non-organic compounds that present in the potable water and sewage. Salinities considered as an important factor in the watery environment, The watery environment divided in to the following dependent up on salinity degree :

- **Fresh water** which salinity degree less than (0.5 ppm)
- **Brackish water** which salinity degree between (0.5 – 30 ppm)
- **Salt water** which salinity degree more than (30 ppm).

Titration of Silver nitrate:

Procedure:

1. Check pH of sample, if pH value between (7-10) therefore the sample don't equalized **Or** if pH outside these limits , therefore ; equalized either by "H_2SO4" (1M) or by "NaOH" (1M) .

2. Add (1M) of potassium chromate (K_2CrO_4) indicator to (25ml) of sample.

3. Also add (1ml) of potassium chromate to (25ml) of distilled water sample

Note: **yellowish color is formed**.

4. Titrate both sample and distilled water with silver nitrate solution (0.0141) until reaction end point the result is red brown color .

While , if the chloride concentration in the sample was high therefore the result in the beginning is white precipitate as chlorine reaction with silver and then red brown color is formed as a result of silver ions reaction with chromate ions.

As in equation:

$$AgNO3 + KCL \rightarrow AgCl + KNO3$$

$$AgCL + K2CrO4 \rightarrow Ag2CrO4 + 2KNO3$$

$$Cl - \frac{mg}{l} = \frac{(A - B) \times 0.0141 \times 35.450 \times 1000}{Volume\ of\ used\ sample}$$

Where:

A: Volume of silver nitrate used against sample

B: Volume of silver nitrate used against distilled water