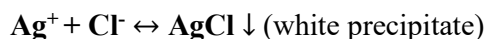


**Aim:** Estimation of Chloride in different water samples.

**Introduction:** Chloride occurs naturally in all types of water. In fresh water the chloride concentration remains quite low and is generally less than that of sulfates and other bicarbonates. Increased chloride concentration in fresh water is due to sewage contamination. Man and other animals excrete very high quantity of chloride together with nitrogenous compounds (about 8 – 15 gm of NaCl is excreted by a person every day). Therefore, chloride concentration serves as an important indicator of pollution by sewage.

**Principle:** Silver nitrate ( $\text{AgNO}_3$ ) reacts with chloride ions to form a very slightly soluble precipitate of Silver chloride. At the end, all the chloride gets precipitated, while free silver ions combine with chromate to give Silver chromate, a reddish brown compound.



**Reagents required:**

1) 0.02 N  $\text{AgNO}_3$ : Dissolve 3.4 gm of dried  $\text{AgNO}_3$  in distilled water and make the volume upto 1000ml, this reagent should be kept in dark bottle,

2) 5 % Potassium chromate ( $\text{K}_2\text{CrO}_3$ ): Dissolve 5 gm potassium chromate in 100 ml distilled water.

**Procedure:** Take 50 ml of water sample in a clean conical flask, add 2ml of 5% Potassium chromate solution. Titrate the solution against 0.02 N  $\text{AgNO}_3$  solutions taken in the burette until a permanent red tinge is formed. Titration is repeated to get concordant values.

**Calculation:**

$\text{Chloride (mg/L)} = \frac{\text{MBR} \times \text{N of AgNO}_3 \times 1000 \times 35.5}{\text{Volume of sample taken}}$
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Where,

MBR = Mean burette reading

Eq. Wt of Chloride = 35.5

Vol. of sample taken = 50 ml

<b>Trial number</b>	<b>I</b>	<b>II</b>	<b>III</b>
Final burette reading (ml)			
Initial burette reading			
Vol. of 0.02 N AgNO <sub>3</sub> used (ml)			

**Result:**

The chloride content in tap water is =..... mg/L

The chloride content in pond water is =..... mg/L

**Comments:**

Chloride is a naturally occurring element that is common in most natural waters and is most often found as a component of salt (sodium chloride) or in some cases in combination with potassium or calcium.

The drinking water had low concentration due to filtering process which removes excess of Chloride present in tap water.

The pond water contained a high concentration of chloride because of anthropogenic or human-caused factors such as road salt, sewage contamination, and the use of water softeners in laundry.

(The tap water had a higher concentration of chloride in the present study, which is because the source of tap water was groundwater, which can accumulate chloride through a number of sources, including the leaching from soils and salt-bearing rocks. Also, the city municipal may use chloride to bleach water to kill parasites, bacteria, and viruses).