Aim: Determine the chlorine content of given water sample.

Introduction: Chloride in the form of chloride (Cl^-) ion is one of the major inorganic anions in water and wastewater. The chloride concentration is higher in wastewater than in raw water because sodium chloride is a common article of diet and passes unchanged through the digestive system (Average estimate of excretion: 6 g of chlorides/person/day; additional chloride burden due to human consumption on wastewater: 15 mg/L). Along the sea coast chloride may be present in high concentration because of leakage of salt water into the sewage system. It also may be increased by industrial process. In potable water, the salty taste produced by chloride concentration is variable and depends on the chemical composition of water. Some waters containing 250 mg/L Cl^- may have a detectable salty taste if sodium cation is present. On the other hand, the typical salty taste may be absent in waters containing as much as 1000 mg/L when the predominant cations are calcium and magnesium. In addition, a high chloride contents may harm metallic pipes and structures as well as growing plants. The measured chloride ions can be used to know salinity of different water sources. For brackish water (or sea water or industrial brine solution), it is an important parameter and indicates the extent of desalting of apparatus required. It also interferes with COD determination and thus it requires a correction to be made on the basis of amount present or else a complexing agent, such as HgSO4 can be added. Further, chloride ions are used as tracer ions in column studies to model fate of different contaminants in soil and liquid media.

Requirements:

Apparatus: Burette, conical flask, pipette, measuring cylinder

Reagents: Potassium chromate indicator solution, standard silver nitrate titrant.

Procedure:

1. Take 25 ml sample in a conical flask.
2. Add 4-5 drop potassium chromate indicator.
3. Titrate with standard silver nitrate solution to brick red end point and note down volume of titrant used.
4. Calculate chloride ion concentration.

Observation:

After adding potassium chromate indicator solution turned yellow colour further addition of silver nitrate solutions it turns into brick red colour.

Observation table:

S.no.	ml of Sample	ml of used silver nitrate	Chloride content in mg/lit
1	Pound Water	--	--
2	Tap Water	--	--
3	R.O water	----	--

Calculations:

Chloride Ion Concentration (mg/L) = (A×N ×35.45)*1000 / Volume of sample (ml)

Where: A = volume of titrant used, N is normality of silver nitrate

Precautions:

1. A uniform sample size must be used
2. A definite amount of indicator must be used to provide a certain concentration of chromate ions, otherwise silver chromate may form too soon or not soon enough.
3. Caution should be made to notice indicator color change as it can varies person-to-person. The usual range is 0.2 to 0.4 ml of titrant.