# ****CHLORIDE****

**1. General Discussion**

a. Principle: In a neutral or slightly alkaline solution, potassium chromate can indicate the end point of the silver nitrate titration of chloride. Silver chloride is precipitated quantitatively before red silver chromate is formed.

b. Interference: Substances in amounts normally found in potable waters will not interfere. Bromide, iodide, and cyanide register as equivalent chloride concentrations. Sulfide, thiosulfate, and sulfite ions interfere but can be removed by treatment with hydrogen peroxide. Orthophosphate in excess of 25 mg/L interferes by precipitating as silver phosphate. Iron in excess of 10 mg/L interferes by masking the end point.

**2. Apparatus**

a. Erlenmeyer flask, 250-mL.

b. Buret, 50-mL.

**3. Reagents**

a. Potassium chromate indicator solution: Dissolve 50 g K2CrO4 in a little distilled water. Add AgNO3 solution until a definite red precipitate is formed. Let stand 12 h, filter, and dilute to 1 L with distilled water.

b. Standard silver nitrate titrant, 0.0141M (0.0141N): Dissolve 2.395 g AgNO3 in distilled water and dilute to 1000 mL. Standardize against NaCl; 1.00 mL = 500 µg Cl–. Store in a brown bottle.

c. Standard sodium chloride, 0.0141M (0.0141N): Dissolve 824.0 mg NaCl (dried at 140°C) in distilled water and dilute to 1000 mL; 1.00 mL = 500 µg Cl–.

**4. Procedure**

a. Sample preparation: Use a 100-mL sample or a suitable portion diluted to 100 mL. If the sample is highly colored, add 3 mL Al(OH)3 suspension, mix, let settle, and filter. If sulfide, sulfite, or thiosulfate is present, add 1 mL H2O2 and stir for 1 min.

b. Titration: Directly titrate samples in the pH range 7 to 10. Adjust sample pH to 7 to 10 with H2SO4 or NaOH if it is not in this range. Add 1.0 mL K2CrO4 indicator solution. Titrate with standard AgNO3 titrant to a pinkish yellow end point. Be consistent in end-point recognition. Standardize AgNO3 titrant and establish reagent blank value by the titration method outlined above. A blank of 0.2 to 0.3 mL is usual.

**5. Calculation**



where:

 A = mL titration for sample,

 B = mL titration for blank, and

 N = normality of AgNO3.

mg NaCl/L = (mg Cl–/L) × 1.65