CHLORIDE TEST KIT

Thiocyanate Method (Colorimetric)

Product Code: 10013 / 11013 / 12013	**Reaction Type:** End Point with Standard
Pack Size: 25x1 ml / 50x1 ml / 2x50 ml	**Matrix Target:** Human Serum
Storage Temp: Room Temperature (RT)	**Wavelength:** 505 nm (Red Filter)

INTENDED USE & CLINICAL SIGNIFICANCE

Intended Use: This liquid diagnostic reagent system is configured for the direct quantitative in vitro colorimetric determination of Chloride concentrations in human serum specimens.

Clinical Significance: Chloride is estimated in conjunction with other electrolytes to support metabolic and acid-base interpretation. The anion gap, calculated as $(Na^+ + K^+) - (Cl^- + HCO_3^-)$, is frequently altered in systematic disease states. Increased chloride levels occur in nephritis, prostatic obstruction, eclampsia, and severe dehydration. Decreased levels are seen with impaired gastrointestinal or renal tubule function.

METHOD PRINCIPLE

In the presence of ferric nitrate and mercuric thiocyanate, chloride ions displace the thiocyanate to form a highly colored, stable ferric thiocyanate complex:

> Mercuric Thiocyanate + Cl^- + Fe^{3+} → Ferric Thiocyanate Complex (Brown) + Mercuric Chloride

The coloration intensity of this brown coordination complex is evaluated photometrically at 505 nm and is directly proportional to the chloride concentration in the sample.

STEP 1: REAGENT CONFIGURATION & PIPETTING BASELINE

Glassware Rule: All glassware must be thoroughly washed with 1N Nitric Acid and rinsed completely with high-purity deionized water prior to use to prevent structural trace contamination from common laboratory detergents.

Reagent/Component Line	Blank	Std.	Test
R1 - Chloride Reagent	1000 µl	1000 µl	1000 µl
Chloride Standard (100 mmol/L)	—	05 µl	—
Patient Serum Sample (Non-hemolysed)	—	—	05 µl

Operational Directive: Mix well, wait for exactly 2 minutes at Room Temperature, and read the absolute optical absorbance of the Standard (A_{Std}) and Test (A_{Test}) against the Reagent Blank at 505 nm within 10 minutes.

STEP 2: CALCULATIONS & DATA TRACKING

> Serum Chloride (mmol/L) = ***(Abs. of Test / Abs. of Std.) × 100 (Standard Concentration)***

TECHNICAL PARAMETERS & CLINICAL SUPPORT MATRIX

Universal Safeguards	Professional use only. **CRITICAL METALLIC TOXICITY WARNING:** This reagent formulation contains mercury(II) thiocyanate and mercury(II) chloride. Do not swallow. Avoid skin and mucous membrane contact. Grossly hemolysed, lipaemic, or jaundiced samples yield falsely elevated results and must be rejected. High concentrations of immunoglobulins (e.g., multiple myeloma) interfere due to turbidity development.
Expected Range	Chloride: 98 to 107 mmol/L. These values are for orientation purposes; each laboratory should establish its own reference range.
Analytical Linearity	Linear between 70 and 130 mmol/L. High samples must be systematically diluted and re-assayed.

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