CHLORIDE

MTC Method

Intended Use:
Chloride Test reagent/kit is a medical device intended for estimation of Chloride in serum/plasma.

Clinical Significance
Chloride, a major anion, is important in the maintenance of the cation/anion balance between intra and extra-cellular fluids. This electrolyte is therefore essential to the control proper hydration, osmotic pressure and acid/base equilibrium.Elevated serum chloride values may be seen in dehydration, hyperventilation, congestive heart valve and prostatic or other types of urinary obstruction.Low serum chloride values are found with extensive burns, excessive vomiting, intestinal obstruction, nephritis, metabolic acidosis, and in Addisonian crisis.

Principle
The Chloride ions react with mercuric thiocyanate to release thiocyanate ions, which in turn react with ferric ions to form a red colored complex of ferric thiocyanate. The intensity of the color is proportional to the chloride concentration.

$2Cl^- + Hg(SCN)_2 \longrightarrow HgCl_2 + 2(SCN)^-$

$3(SCN)^- + Fe^{3+} \longrightarrow Fe(SCN)_3$ (red colored complex)

Reagent Composition

R1 Chloride Reagent	Mercuric (II) thiocyanate-5 mmol/L Iron (III) Nitrate - 20 mmol/L Nitric acid - 45 mmol/L Mercuric stabilizer and surfactants
Standard	100mmmol/L

Working Reagent Preparation
Reagent is ready to use.

Stability and Storage
Store at Room Temp or <30ºC.
All the kit contents are stable until the expiry date stated on thelabel. Do not use reagents over the expiration date.
Store the vials tightly closed protected from light and preventcontaminations during the use.
Discard if signs of deterioration appear:
- Presence of particles and turbidity.

Materials required
- Photometer or spectrophotometer with a thermostat cell compartment set at 25/30/37ºC, capable of reading at 505 nm (520 – 570 nm).
- Stopwatch, strip-chart recorder or printer.
- Cuvettes with 1-cm path length
- Pipettes to measure reagent and samples.

Sample and Stability
Serum or plasma
Serum or heparinized plasma free of hemolysis, urine and CSF.Chlorideis reported to be stable in serum for atleast 2 weeks at 2-8ºC.

Assay Procedure
Pipette into clean dry test tubes labeled as Blank (B), Standard (S) and Test (T)

Addition Sequence	Blank	Std	Test
R1 MTC Reagent	1000µl	1000µl	1000µl
Standard (S)	-	10µl	-
Sample	-	-	10µl

Mix well read absorbance of standard (S) and Test (T) against Reagent blank (B) at 505 nm

Calculation

$$\text{Chloride (mmol/L)} = \frac{\text{Abs. of Test}}{\text{Abs.of Standard}} \times 100$$

mEq/l. = mmol/L

Quality Control
To ensure adequate quality control (QC), each run should include aset of controls (normal and abnormal) with assayed values handledas unknowns.

If the values are found outside of the defined range, check the instrument, reagents and procedure.
Each laboratory should establish its own Quality Control scheme and corrective actions if controls do not meet the acceptable results.

Linearity
This method is linear up to 150 mmol/L

Reference Values
Serum : 98-107 mEq/l (98-107 mmol/L)
CSF : 123-128 mEq/l (123-128 mmol/L)
Urine : 170-250 mmol/24hrs.
It is recommended that each laboratory establish it own normal range representing its patient population.

General System Parameters

Mode	End Point
Reaction	Increasing
Wavelength	505 nm
Blank with	Reagent
Sample Volume	10µl
Reagent Volume	1000µl
Std Conc.	100mmol/L
Incub. Temp.	R.T.
Incub. Time	--
Delay Time	5 sec
Normal Range	98 – 107 mmol/L
Linearity	Up to 150 mmol/L
Unit	mmol/L

Notes
1. Gross haemolysis, ampicillin and heparin interfere with the results. Elevated bilirubin and lipemic samples may have a slight effect on accuracy. For grossly lipemic samples run a sample blank by adding 0.02 ml sample in 2 ml distilled water. Read the absorbance against D.W. and substract the blank absorbance.
2. Clinical diagnosis should not be made on findings of a single test result, but should integrate both clinical and laboratory data.

Reference

1. Schoenfeld RG, LervellerCV.ClinChem 10,533 (1964)
2. Levinson,S.S (1976) ClinChem, 22,273

For *in vitro* Diagnostic use only.