

# GASTEC Instructions for No.221LL Chloride Ion Extra Low Range Detector Tube

## FOR SAFE OPERATION :

Read this instruction manual carefully prior to use.

**⚠ CAUTION :** If not observed, injuries to the operator or damage to the product may result.

1. When breaking the tube ends, keep away from eyes.
2. Do not touch the broken glass tubes, pieces and reagent with bare hand(s).

**△ NOTES :** For maintaining performance and reliability of the test result

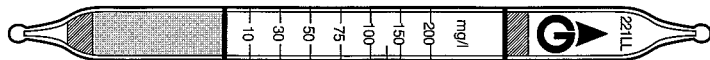
1. Use this tube under the temperature range of 0 - 65°C (32 - 149°F) in water.
2. Use this tube between pH values of 3.0 to 11.0.
3. This tube may be interfered by the coexisting substances. Refer to the "INTERFERENCES".
4. Shelf life and storage condition of the tube is marked on the label of the box of tube.
5. Place the lower end plug packing of the tubes below the water surface.
6. If tubes are kept more than 30 minutes in the water, the printed scale of the tube will be peeled off. Read the concentration immediately after the sampling is completed.

## APPLICATION OF THE TUBE :

Use of this tube for the detection of Chloride Ion in the Waste or other Waters.

## SPECIFICATION :

(As a result of Gastec's commitment to continued improvement, specifications are subject to change without notice.)



Detecting Layer

Measuring Range	10 - 200 mg/l
Sampling Time	1 minute
Detecting Limit	3 mg/l
Color Change	Brown → White
Reaction Formula	$2Cl^- + Ag_2CrO_4 \rightarrow AgCl + CrO_4^{2-}$

**\*\* Shelf Life :** Please refer to the Validity Date printed on the box of tube.

**\*\* Store the tubes in dark and cool place.**

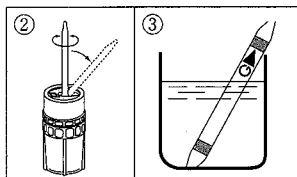
## CORRECTION FOR TEMPERATURE, HUMIDITY AND PRESSURE :

**Temperature :** No correction is required for water temperature between 0 - 65°C (32 - 149°F).

**pH Value :** Use the tube in the pH value of 3.0 - 11.0.

## MEASUREMENT PROCEDURE :

1. Take sample water into an approximately 100 ml capacity of dry, clean beaker.
2. Break tips off a fresh detector tube by bending each tube end in the tube tip breaker (tube tip stock No. 721 optional extra.)



3. Immerse the filled end of the tube into the sample water as illustrated below. Capillary action occurs and the sample water instantly rises through the reagent. If the sample contains Chloride ion, the brown reagent of the tube turns to white.
4. When the sample water rises up to the upper end plug, remove the tube.
5. Read concentration at the interface of the stained-to unstained reagent.
6. If the stain exceeds the highest calibration mark (200 mg/l), dilute the sample with pure water and retest using a fresh tube. Obtain true concentration by multiplying the tube reading by the dilution ratio.

$$\text{True Concentration} = \frac{V1 + V2}{V1} \times \text{Tube Reading}$$

V1: Volume of Sample water

V2: Volume of diluent (pure water)

Notes: More than 30 minutes lapse after immersion of the tube will cause peeling off of the calibration marks. If tube did not start capillary action immediately after immersion into the water, we recommend the use of a rubber bulb to help start the action. Connect the squeezed rubber bulb at the upper end of glass tube. When the tube begins capillary action, remove the rubber bulb from the tube. Tube must be read immediately after the test. Do not immerse the tube into sample water past the upper end plug.

## INTERFERENCES :

### Possible coexisting substances and their interferences

Substance	Concentration	Interference	Change color by itself to
CN <sup>-</sup>	10 mg/l or higher	Plus error	Discolor white stain at 1 mg/l or higher
Br <sup>-</sup>	10 mg/l or higher	Plus error	Discolor white stain at 10 mg/l or higher
SCN <sup>-</sup>	1 mg/l or higher	Cannot read	Discolor white stain at 100 mg/l or higher
Fe <sup>3+</sup>	20 mg/l or higher	Minus error	No effect less than 1000 mg/l or below
Fe <sup>3+</sup>	20 mg/l or higher	Plus error	Discolor white stain at 20 mg/l or higher
F <sup>-</sup>	1000 mg/l or higher	No effect	No effect less than 1000 mg/l
I <sup>-</sup>	20 mg/l or higher	Plus error	Discolor pale yellow higher than 20 mg/l
S <sup>2-</sup>	3 mg/l or higher	Plus error	Discolor blackish gray 3 mg/l or higher
SO <sub>4</sub> <sup>2-</sup>	1000 mg/l or higher	No effect	No stain at 1000 mg/l or lower

## DISPOSAL INSTRUCTION :

Reagent of the tubes use a small amount of chromic acid. On disposing the tube regardless of used or unused, follow the rules and regulations of the local government.

## WARRANTY :

If you have any questions regarding gas detection and quality of the tubes, please feel free to contact your Gastec representatives.

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