

# GASTEC Instructions for No.1LL Carbon Monoxide Extra Low Range Detector Tube

## FOR SAFE OPERATION :

Read this manual and the instruction manual of your Gastec Gas Sampling Pump carefully.

### ⚠ WARNING:

1. Use only Gastec detector tubes in a Gastec Pump.
2. Do not interchange or use non-Gastec parts or components in Gastec's detector tube and pump system.
3. The use of non-Gastec parts or components in Gastec's detector tube and pump system or use of a non-Gastec detector tube with a Gastec pump or use of a Gastec detector tube with a non-Gastec pump may result in property damage, serious bodily injury, and death; voids all warranties; and voids all performance and data accuracy guaranties

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

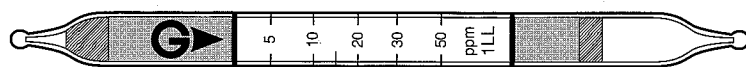
1. When breaking the tube ends, keep away from eyes.
2. Do not touch the broken glass tubes, pieces and reagent with bare hand(s).

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

1. Use Gastec Gas Sampling Pump together with Gastec Detector Tubes only for the purposes specified in the instruction manual of the detector tube.
2. Use this tube within the temperature range of 0 - 40°C (32 - 104°F).
3. Use this tube within the relative humidity range of 0 - 90%.
4. This tube may be interfered by the coexisting gases. Please refer to the "INTERFERENCES".
5. Shelf life and storage conditions of the tube are marked on the label of the box of tube.

**APPLICATION OF THE TUBE :** Use of this tube for the detection of Carbon monoxide in air or the industrial areas and environmental atmospheric condition.

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



Measuring Range	5 - 50 ppm
Number of Pump Strokes	2
Correction Factor	1
Sampling Time	2 minutes per pump stroke
Detecting Limit	1 ppm ( n = 2 )
Color Change	Yellow → Blackish Brown
Reaction Principle	$\text{CO} + \text{Na}_2\text{Pd}(\text{SO}_3)_4 \rightarrow \text{Pd} + \text{CO}_2 + \text{SO}_2\text{Na}_2\text{SO}_3$

**Coefficient of Variaton : 15%(for 5 to 10ppm),10%(for 10 to 50ppm)**

**\*\* 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 :** Temperature correction is not required.

**Humidity :** Humidity correction is not required.

**Pressure :** To correct for pressure, multiply the tube reading by

$$\frac{\text{Tube Reading (ppm)} \times 1013 \text{ (hPa)}}{\text{Atmospheric Pressure (hPa)}}$$

## MEASUREMENT PROCEDURE :

1. For leak checking of the pump insert a fresh sealed detector tube into pump. Follow instructions provided with the pump operating manual.
2. Break tips off a fresh detector tube in the tube tip breaker of the pump.
3. Insert the tube into the pump inlet with arrow **G** on the tube pointing toward pump.
4. Make certain pump handle is all the way in. Align guide marks on pump body and handle.
5. Pull the handle all the way out until it locks on 1 pump stroke (100ml). Wait 2 minutes and confirm the completion of the sampling.
6. Read concentration at the interface of the stained-to-unstained reagent.
7. If atmospheric correction is needed, refer to the "Corrections for Pressure".

## INTERFERENCES :

Substance	Concentration	Interference	Change color by itself
Acetylene	1/50 times or higher	Plus error	Produces blackish brown stain
Sulfur dioxide	1/50 times or higher	Plus error	Produces blackish brown stain
Nitrogen dioxide	40 ppm or higher	Plus error	Produces reddish stain
Hydrogen sulfide	1/5 times or higher	Plus error	Produces blackish brown stain

## DANGEROUS AND HAZARDOUS PROPERTIES :

Threshold Limit Value-Time Weighted Average by ACGIH (2001) : 25 ppm

## DISPOSAL INSTRUCTION :

Reagent of the tube does not use toxic substances. On disposing the tube regardless of whether 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.

Manufacturer : Gastec Corporation  
6431 Fukaya, Ayase-City, 252-1103, Japan

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