

# GASTEC Instructions for No.1La Carbon Monoxide 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 guarantees.

### ⚠ 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).
3. The sampling time represents the time necessary to draw the air sample through the tube. The tube must be positioned in the desired sampling area for the entire sampling time or until the flow finish indicator indicates the end of the sample.

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

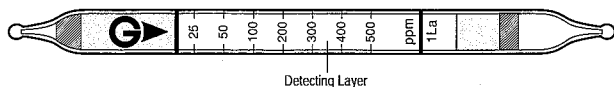
1. Use Gastec Gas Sampling Pump together with Gastec Detector Tubes only for the purposes specified in the instruction manual of the detector tube.
2. Use this tube within the temperature range of 0 - 40°C (32 - 104°F).
3. Use this tube within the relative humidity range of 0 - 90%
4. This tube may be interfered with 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	8 - 12.5 ppm	12.5 - 25 ppm	25 - 500 ppm	500 - 1,000 ppm
Number of Pump Strokes	3	2	1	1/2
Correction Factor	1/3	1/2	1	2
Sampling Time	2 minutes per pump stroke			1 minute
Detecting Limit	2ppm (n = 3)			
Color Change	Yellow → Blackish brown			
Reaction Principle	Carbon monoxide reduces potassium palladosulfite to liberate metallic palladium which produces a dark brown stain. $\text{CO} + \text{Na}_2\text{Pd}(\text{SO}_3)_2 \rightarrow \text{Pd} + \text{CO}_2 + \text{SO}_2 + \text{Na}_2\text{SO}_3$			

**Coefficient of Variation : 10% (for 25 to 100 ppm), 5% (for 100 to 500 ppm)**

**\*\* 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 :

Calibration of other Gastec detector Tube No.1La is based on a tube temperature of 20°C (68°F) and not the temperature of the gas being sampled, approximately 50% relative humidity and normal atmospheric pressure.

**Temperature :** Correct for temperature by the table below.

Temperature°C (°F)	0 (32)	10 (50)	20 (68)	30 (86)	40 (104)
Correction Factor	0.9	0.95	1	1.05	1.1

**Humidity :** No correction is required.

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

$$\frac{\text{Tube Reading (ppm)} \times 10^{13} (\text{hPa})}{\text{Atmospheric Pressure (hPa)}}$$

## 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. For lower than 25 ppm measurement, repeat the above sampling procedure 1 - 2 more times until the stain attains to the first calibration mark. For higher than 500 ppm measurement, prepare fresh tube, and take 1/2 pump stroke.
7. Read concentration at the interface of the stained-to-unstained reagent.
8. If correction is needed, multiply the correction factors of temperature and pressure.

## INTERFERENCES :

Substance	Concentration	Interference	Changes color by itself to
Acetylene	≥ 1/50	Plus error	Blackish brown
Ethylene	≤ 2000 ppm	No effect	Few minutes later, whole layer turns to brown
Hydrogen	≥ 5000 ppm	Plus error	Black for whole layer (≥ 1%)
Sulfur dioxide	≥ 1/10	Plus error	Blackish brown
Nitrogen dioxide	≥ 40 ppm	Plus error	Red at 60 ppm
Carbon disulfide	≥ 1/50	Plus error	Blackish brown
Halogens	≥ 1/5	Plus error	Blackish brown
Mercaptans	≥ 1/5	Plus error	Blackish brown
Hydrogen sulfide	≥ 1/5	Plus error	Blackish brown

The table of this interference gases primarily expresses the interference of each coexisting gas in the gas concentration range, equivalent to the gas concentration. Therefore, the test result may be given positive result by the other substances not listed in the table. For more information is needed, please contact us or our distributors in your territory.

## DANGEROUS AND HAZARDOUS PROPERTIES :

Threshold Limit Value-Time Weighted Average by ACGIH (2004) : 25 ppm  
Explosive Range : 12.5-74%

## DISPOSAL INSTRUCTION :

Reagent of the tube does not use toxic substances. When 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  
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