

# GASTEC No.1LM

## Instructions for Carbon Monoxide Detector Tube

### FOR SAFE OPERATION :

Carefully read this manual and the instruction manual of your Gastec Gas Sampling Pump.

#### ⚠ 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 you do not observe the following precautions, you may suffer injuries or damage to the product.

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, observe the following.

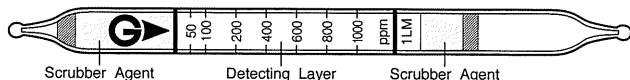
1. Use Gastec Gas Sampling Pump together with Gastec Detector Tubes only for the purposes specified in the instruction manual of the detector tube.
2. Use this tube within the temperature range of 0 - 40°C (32 - 104°F).
3. Use this tube within the relative humidity range of 0 - 90%.
4. This tube may be interfered with by the coexisting gases. Please refer to the table "INTERFERENCES" below.
5. This tube may produce double layered colour stain of pale green and pale brown. When pale green stain is found, read concentration at the end of pale green layer. When there is no pale green layer found, read concentration at the end of pale brown stain.
6. Shelf life and storage condition of the tube are marked on the label of the box of tube.

### APPLICATION OF THE TUBE :

Use this tube for detecting Carbon monoxide in hydrogen.

### SPECIFICATION :

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



Measuring Range	25 - 50 ppm	50 - 1000 ppm	1000 - 2000 ppm
Number of Pump Strokes	2	1	1/2
Stroke Correction Factor	1/2	1	2
Sampling Time	45 seconds per pump stroke		30 seconds
Detecting Limit	5 ppm (n = 2)		
Colour Change	White → Pale brown / Pale green (dual layers)		
Reaction Principle	$5CO + I_2O_5 + H_2S_2O_7 \rightarrow I_2$		

**Coefficient of Variation : 10% (for 50 to 200 ppm), 5% (for 200 to 1000 ppm)**

**\*\*Shelf Life : Please refer to the validity date printed on the box of tube.**

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

### CORRECTION FOR TEMPERATURE, HUMIDITY AND PRESSURE :

**Temperature :** No correction is required.

**Humidity :** No correction is 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 checking the leakage of the pump, insert a fresh sealed detector tube into the pump. Follow instructions provided with the pump operating manual.
2. Break tips off a fresh detector tube with 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 the pump handle is all the way in. Align guide mark on the pump body with the guide mark on the handle.
5. Pull handle all the way out until it locks at one pump stroke (100 mL). Wait 45 seconds and confirm the completion of sampling.
6. For smaller measurements less than 50 ppm, repeat the above sampling procedure one more time until the stain reaches to the first calibration mark. For measurements higher than 1000 ppm, prepare a fresh tube and perform a half pump stroke.
7. Read the concentration level at the interface where the stained reagent meets the unstained reagent. This tube may produce double layered colour stain of pale green and pale brown. When pale green stain is found, read concentration at the end of pale green layer. When there is no pale green layer found, read concentration at the end of pale brown stain.
8. If necessary, multiply the readings by the correction factors of pump strokes and atmospheric pressure respectively.

### INTERFERENCES :

Substance	Interference	Changes colour by itself to
Hydrogen	No	No discolouration
Acetylene, Olephines	+	Pale brown
Propane, Butane, Hexane	+	Pale brown

This table of interference gases primarily expresses the interference of each coexisting gas in the concentration range, that is 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 Gastec representatives.

**DANGEROUS AND HAZARDOUS PROPERTIES :**

Threshold Limit Value-Time Weighted Average by ACGIH (2016) : 25 ppm

**INSTRUCTIONS ON DISPOSAL :**

The reagent of the tube uses a small amount of selenium and hexavalent chromium. When disposing the tube regardless of whether it has been used or not, follow the rules and regulations of your local government.

**WARRANTY :**

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

Manufacturer : Gastec Corporation  
8-8-6 Fukayanaka, Ayase-City, Kanagawa 252-1195, Japan  
<http://www.gastec.co.jp/>  
Telephone +81-467-79-3910 Facsimile +81-467-79-3979

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