

GASTEC Instructions for No.1M Carbon Monoxide Middle 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.

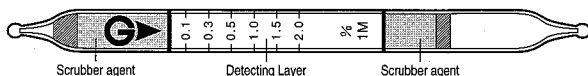
1. When breaking the tube ends, keep away from eyes.
2. Do not touch the broken glass tubes, pieces and reagent with bare hand(s).
3. The sampling time represents the time necessary to draw the air sample through the tube.
The tube must be positioned in the desired sampling area for the entire sampling time or until the flow finish indicator indicates the end of the sample.

△ NOTES : For maintaining performance and reliability of the test 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	0.05 - 0.1 %	0.1 - 2.0 %	2.0 - 4.0 %
Number of Pump Strokes	2	1	1/2
Correction Factor	1/2	1	2
Sampling Time	1.5 minutes per pump stroke		
Detecting Limit	0.01 % (n = 2)		
Color Change	White → Pale brown		
Reaction Principle	Carbon monoxide reduces iodine pentoxide to liberate iodine, which is pale brown.		

Coefficient of Variance : 10% (for 0.1 to 0.5%), 5% (for 0.5 to 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 :

Calibration of the Gastec detector Tube No.1M 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 : Temperature correction is not required for 0 to 40°C (32 to 104°F).

Humidity : Humidity correction is not required for relative humidity range 0 - 90% .

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

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

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 1.5 minutes and confirm the completion of the sampling.
6. For less than 0.1 % measurement, take one more pump stroke. If the stain exceeded 5 % after 1 pump stroke, prepare fresh tube then take 1/2 pump stroke sampling.
7. Read concentration at the interface of the stained-to-unstained reagent.
8. If correction is needed, multiply the "Correction factor of Pump stroke and Pressure".

INTERFERENCES :

Substance	Concentration	Interference	Change color by itself
Acetylene	≥ 0.1 %	Plus error	Produce blackish brown stain.
Olefins	≥ 2/3 times	"	Produce pale brown stain.
Butane	≥ 0.3 %	"	Produce pale brown for whole layer
Propane	≥ 10 %	"	Produce pale brown for whole layer
Hexane	≥ 0.1 %	"	Produce pale 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 substance not listed in the table. For more precise information is needed, please contact us or our distributors in your territory.

APPLICATION FOR OTHER GASES :

Tube 1M can also be used for other substances as below :

Substance	Correction Factor	Pump Strokes	Measuring Range
Gasoline	1	1	0.1 - 2 %

CORRECTION FACTOR :

Detector tubes are primarily designed to measure specific gases. But it is also possible to measure other substances of similar chemical properties with the aid of a correction factor or chart. Therefore, please make use of the correction factor/chart measuring ranges as a reference. For more precise factor please contact your Gastec distributor.

DANGEROUS AND HAZARDOUS PROPERTIES :

Threshold Limit Value-Time Weighted Average by ACGIH (2002) : 25 ppm

DISPOSAL INSTRUCTION :

Reagent of the tubes use chromium and selenium. 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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