

GASTEC

No.13M

Instructions for Carbon Disulphide 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. Using non-Gastec parts or components in Gastec's detector tube and pump system or using a non-Gastec detector tube with a Gastec pump or using a Gastec detector tube with a non-Gastec pump may damage your detector tube and pump system, or may cause serious injuries, or death to the end-user. It will also void all warranties, and guarantees regarding performance and data accuracy.

⚠ CAUTION : If you do not observe the following precautions, you may suffer injuries or damage the product.

1. When breaking the tube ends, keep away from eyes.
2. Do not touch the broken glass tubes, broken 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 sampling.

△ NOTES : For maintaining performance and reliability of the test results, observe the following.

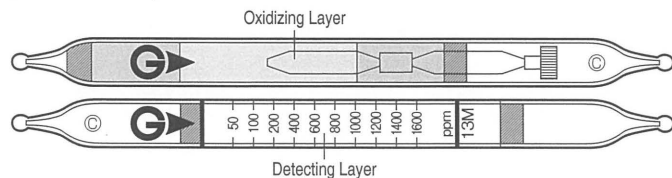
1. Use Gastec Gas Sampling Pump together with Gastec Detector Tubes only for the purposes specified in the instruction manual of the detector tube.
2. Use this tube within the temperature range of 0 – 40°C (32 - 104°F).
3. Use this tube within the relative humidity range of 0 - 90%.
4. This tube may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

APPLICATION OF THE TUBE :

Use this tube for detecting Carbon Disulphide in the air or in industrial areas and for determining the environmental atmospheric condition.

SPECIFICATION :

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



Measuring Range	15 – 50 ppm	50 – 1600 ppm	1600 – 5120 ppm
Number of Pump Strokes	2	1	1/2
Stroke Correction Factor	0.30	1	3.2
Sampling Time	1.5 minutes per pump stroke		45 seconds
Detecting Limit	10 ppm (n=2)		
Colour Change	Purple → Yellow		
Reaction Principle	$CS_2 + I_2O_5 + H_2S_2O_7 \rightarrow SO_2 + CO_2$ $SO_2 + BaCl_2 + H_2O \rightarrow BaSO_3 + 2HCl$ $HCl + Base \rightarrow Chloride$		

Coefficient of Variation: 10% (for 50 to 400ppm), 5% (for 400 to 1600 ppm)

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

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

CORRECTION FOR TEMPERATURE, HUMIDITY AND PRESSURE :

Temperature : Correct for temperature with the table below.

Temperature °C (°F)	0 °C (32°F)	5 °C (41°F)	10 °C (50°F)	15 °C (59°F)	20 °C (68°F)	25 °C (77°F)	30 °C (86°F)	35 °C (95°F)	40 °C (104°F)
Correction Factor	2.15	1.58	1.35	1.11	1.00	0.91	0.79	0.73	0.66

Humidity : No correction is required between 0 - 90% R.H.

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

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

* This value is after other correction(s), if any, are applied.

MEASUREMENT PROCEDURE :

1. For checking the leakage of the pump, insert a freshly sealed detector tube into the pump. Follow the instructions provided with the pump operation manual.
2. Break the tips off the fresh primary tube and analyser tube by snapping off each tube end in the tube tip breaker of the pump.
3. Connect the © marked ends with rubber tubing after snapping off each end.
4. Insert the analyser tube securely into pump inlet with the arrow (G➡) on the tube pointing toward the pump.
5. Make certain the pump handle is all the way in. Align the guide marks on the pump body with the guide marks on the handle.
6. Pull the handle all the way out until it locks at one pump stroke (100 mL). Wait 1.5 minutes and confirm the completion of the sampling.
7. For smaller measurements less than 50 ppm, repeat the above sampling procedure one more time until the stain reaches the first calibration mark. For measurements higher than 1600 ppm, prepare a fresh tube and perform a half pump stroke.
8. Read the concentration level at the interface where the stained reagent meets the unstained reagent.
9. If temperature correction is necessary, obtain the true concentration by using the temperature correction factor. Afterwards multiply the correction factor of pump stroke if necessary.
10. If pressure correction is necessary, use the pressure correction formula.

INTERFERENCES :

Substance	Concentration	Interference	Changes colour by itself to
Sulphur dioxide		+	Yellow
Hydrogen sulphide		+	Yellow
Carbonyl sulphide		+	Yellow
Lower class HCs	$\geq 1,000$ ppm	+	Yellow

Up to 1000 ppm of lower class hydrocarbons are trapped in the white (oxidizing) layer in the pretreatment tube.

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 show positive results due to other substances not listed in the table. If 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 (2022): 1 ppm

Explosive Range : 1.3 – 50 %

INSTRUCTIONS ON DISPOSAL :

The reagent of the primary tube uses a small amount of selenium and hexavalent chromium. The reagent of the analyser tube does not use toxic substance. 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.

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IM0013ME4
Printed in Japan
23E1Z