GASTEC No.45S Instructions for Hydrogen Sulphide & Sulphur Dioxide 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.

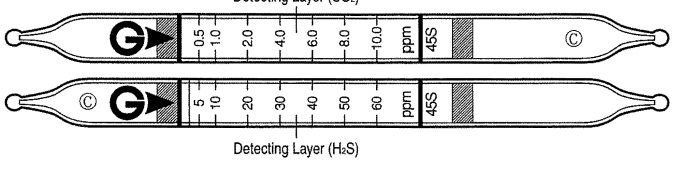
1. Use Gastec Gas Sampling Pump together with Gastec Detector Tubes only for the purposes specified in the instruction manual of the detector tube.
2. Use this tube within the temperature range of 0 - 40℃ (32 - 104℉).
3. Use this tube within the relative humidity range of 20 - 80%.
4. This tube may be interfered with by the coexisting gases. Please refer to the table "INTERFERENCES" below.
5. If the sample gas is dry, SO_2 tube may be discoloured to yellowish green at its inlet even if there is no SO_2.
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 the detection of Hydrogen sulphide and Sulphur dioxide in air or industrial areas and environmental atmospheric condition.

SPECIFICATION :

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



Name of Gas	Sulphur dioxide (SO_2)			Hydrogen sulphide (H_2S)		
Measuring Range (ppm)	0.25 – 0.5	0.5 – 10.0	10.0 – 20.0	1.25 – 2.5	(2.5) – 60	60 – 120
Number of Pump Strokes	2	1	1/2	2	1	1/2
Correction Factor	1/2	1	2	1/2	1	2
Sampling Time	2 minutes per pump stroke		1 minute	2 minutes per pump stroke		1 minute
Detecting Limit	0.05 ppm (n=2)			0.05 ppm (n=2)		
Colour Change	Yellowish green → Yellow			White → Brown		
Reaction Principle	(SO_2) $SO_2 + BaCl_2 + H_2O \rightarrow BaSO_3 + 2HCl$ HCl + Base → Chloride (H_2S) $H_2S + Pb(CH_3COO)_2 \rightarrow PbS + 2CH_3COOH$					

Coefficient of Variation : (SO_2) 10% (for 0.5 to 2.0 ppm), 5% (for 2.0 to 10.0 ppm)
: (H_2S) 10% (for 2.5 to 20 ppm), 5% (for 20 to 60 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 fresh detector tubes (SO_2 & H_2S) with the tube tip breaker of the pump.
3. Connect © marked ends with rubber tubing after breaking each end.
4. Insert the H_2S tube into the pump inlet with arrow (G►) on the tube pointing toward pump.
5. Make certain the pump handle is all the way in. Align guide mark on the pump body with the guide mark on the handle.
6. Pull handle all the way out until it locks at one pump stroke (100 mL). Wait two minutes and confirm the completion of sampling.
7. For smaller measurements less than 0.5 ppm for SO_2 and 2.5 ppm for H_2S, repeat the above sampling procedure one more time until the stain reaches to the first calibration mark.
   For measurements higher than 10 ppm for SO_2 and 60 ppm for H_2S, prepare a pair of fresh tubes and perform a half pump stroke.
8. Read concentration level at the interface where the stained reagent meets the unstained reagent.
9. If necessary, multiply the readings by the correction factors of pump strokes and atmospheric pressure respectively.

INTERFERENCES :

(1) Sulphur dioxide tube

Substance	Concentration	Interference	Changes colour by itself to
Nitrogen dioxide	≧ 5 ppm	+	Pale purple
Carbon monoxide, Nitric oxide		No	No discolouration

(2) Hydrogen sulphide tube

Substance	Concentration	Interference	Changes colour by itself to
Mercaptans		No	No discolouration

This table of interference gases primarily expresses the interference of each coexisting gas in the gas 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 (2015) : H_2S : 1 ppm
Threshold Limit Value-Short Term Exposure Limit (2015) : SO_2 : 0.25 ppm H_2S : 5 ppm

INSTRUCTIONS ON DISPOSAL :

The reagent of the SO_2 tube does not use toxic substances. The reagent of the H_2S tube uses a small amount of lead. 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 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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