GASTEC Instructions for No.13 Carbon Disulphide Detector Tube

FOR SAFE OPERATION :

Read this manual and the instruction manual of your Gastec Gas Sampling Pump carefully.

\triangle 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).
- $\bigtriangleup \text{NOTES}$: For maintaining performance and reliability of the test results.
- 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%.
- This tube may be interfered with by the coexisting gases. Please refer to the "INTERFERENES".
- 5. 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 Carbon Disulphide 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.)



The Minimum Scale (2.5ppm) is not printed on the tube and is indicated as a Scale Line only.

Measuring Range	0.63 - 1.25 ppm	1.25 - 2.5 ppm	(2.5) - 50 ppm	50 - 100 ppm	
Number of Pump Strokes	4	2	1	1/2	
Correction Factor	0.25	0.5	1	2.0	
Sampling Time	3 mi	nutes per pump s	troke	1.5 minutes	
Detecting Limit	0.3 ppm (n = 4)				
Colour Change	Blue → Yellow				
Reaction Principle	Carbon disulphide is oxidized by nascent oxygen, which is generated by the reaction of chromic acid and sulphuric acid to sulphur dioxide. Sulphur dioxide neutralizes barium chloride, discolouring pH indicator to yellow. CS ₂ + CrO ₃ + H ₂ S ₂ O ₇ → SO ₂ + CO ₂ SO ₂ + BaCl ₂ + H ₂ O → BaSO ₃ + 2HCl HCl + Base → Chloride				

Coefficient of Variation : 10% (for 2.5 to 10 ppm), 5% (for 10 to 50 ppm) **Shelf Life : Please refer to the Validity Date printed on the box of tube. **Store the tubes under dark and cool place.

CORRECTION FOR TEMPERATURE, HUMIDITY AND PRESSURE :

Calibration of the Gastec detector Tube No.13 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)	5 (41)	10 (50)	15 (59)	20 (68)	25 (77)	30 (86)	35 (95)	40 (104)
Correction Factor	1.19	1.17	1.07	1.00	1.00	0.90	0.90	0.90	0.90

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

Pressure : To correct for pressure, use the formula below

Tube Reading* (ppm) × 1013 (hPa)

Atmospheric Pressure (hPa)

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

MEASUREMENT PROCEDURE :

- 1. For leak checking of the pump insert a fresh sealed detector tube into pump. Follow instructions provided with the pump operation manual.
- 2. Break tips off a fresh primary tube and secondary tube by bending each tube end in the tube tip breaker of the pump.
- 3. Connect © marked ends with rubber tubing after breaking each end.
- 4. Insert secondary tube securely into pump inlet with arrow (G►) on the tube pointing toward pump.
- 5. Make certain pump handle is all the way in. Align guide marks on pump body and handle.
- 6. Pull handle all the way out until it locks on 1 pump stroke (100ml). Wait 3 minutes and confirm the completion of the sampling.
- For lower than 2.5 ppm measurement, repeat the above sampling procedure 1 or 3 more times until the stain attains to the first calibration mark. For higher than 50 ppm measurement, prepare fresh tube and take 1/2 pump stroke.

- 8. Read the concentration level at the interface where the stained reagent meets the unstained reagent.
- If temperature correction is necessary, obtain the true concentration by using the temperature correction factors. 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
Ammonia		No	No discolouration
Hydrogen cyanide	≦200 ppm	No	No discolouration
Sulphur dioxide	≧1/5	+	Yellow

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 (2023) : 1 ppm Explosive Range : 1.3 – 50 %

INSTRUCTIONS ON DISPOSAL :

Reagent of the tube contains a small amount of chromic acid. 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.

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