GASTEC No.135 Instructions for Methyl Chloroform (1,1,1-Trichloroethane) Detector Tube

FOR SAFE OPERATION :

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

⚠ 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).

△NOTES : For maintaining performance and reliability to the test result

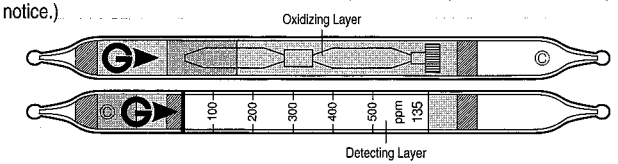
1. Use Gastec Gas Sampling pump togther with Gastec Detector Tubes only for the purposes specified in the instruction manual of the detector tube.
2. Use this tube within the temperature range of 0 - 40℃(32 - 104℉).
3. Use this tube within the relative humidity range of 0 - 90%.
4. This tube may be interfered by the coexisting gases. Please refer to the "INTERFERENCES".
5. If this tube is exposed under the direct sunlight, whole layer of the tube may change to pale green or brown, however, this color change does not give any effect on tube reading.
6. Shelf life and storage condition of the tube is marked on the label of the box of tube.

APPLICATION OF THE TUBE :

Use this tube for the detection of Methyl Chloroform in air or 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	100 - 500 ppm	500 - 2000 ppm
Number of Pump Stroke	1	1 / 2
Correction Factor	1	4
Sampling Time	3 minutes per pump stroke	
Detecting Limit	50 ppm (n = 1)	
Color Change	White → Reddish Orange	
Reaction Formula	1,1,1–Trichloroethane reacts with oxidizing agent to produce intermediate products then it react with detecting agent to produce reddish orange stain.	

**** Shelf Life : Please refer to the Validity Date printed on the box of tube.**
**** Store the tubes under dark and cool piace.**

CORRCTION FOR TEMPERATURE, HUMIDITY AND PRESSURE :

Temperature: Since the tube is affected by the temperature, multiply the correction factor to the tube reading.

Temperature ℃ (℉)	0 (32)	10 (50)	20 (68)	30 (86)	40 (104)
Correction Factor	2.3	1.4	1.0	0.7	0.5

Humidity : Humditiy correction is not required.

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

$$\frac{\text{Tube Reading (mg/m}^3\text{)} \times 1013\ \text{(hPa)}}{\text{Atmospheric Pressure (hPa)}}$$

MEASUREMENT PROCEDURE :

1. For leak checking of the pump insert a fresh sealed detector tube into pump. Follow instructions provided with the pump 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. Connet Ⓒ marked ends with rubber tubing after breaking each end.
4. Insert analyzer 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.
   Repeat the above sampling procedure one more time.
   Read concentration at the interface of the stained-to-unstained reagent.
7. In case the discoloration exceeded higher than 500 ppm, prepare fresh tube and take sample at 1/2 pump stroke.
8. Read concentration at the interface of the stained-to unstained reagent.
9. If atmospheric correction is needed, multiply the correction factor of pump stroke, pressure to the tube reading respectively.

INTERFERENCES :

Substance	Concentration	Interference	Change color by itself
Chlorine, Bromine, Iodine		Plus error	Discolor reddish orange stain
Chloroform, Dichloromethane		Plus error	Discolor reddish orange stain
Carbon tetrachroride		None	No effect
Methyl bromide		Plus error	Discolor reddish orange stain
Trichloroethylene, Tetrachloroethylene		Plus error	Discolor reddish orange stain

DANGERROUS AND HAZARDOUS PROPERTIES:

Threshold Limit Value-Time Weighted Average by ACGIH (2000): 350 ppm (7-8 hours)
Threshold Limit Value-Short Term Exposure Limit Valure by ACGIH (2000): 450 ppm (15 minutes)

APPLICATION FOR OTHER SUBSTANCES :

Substance	Correction	No. of pump strokes	Measuring range
Chlorobromomethane	Factor : 0.22	1	22 - 110 ppm
1,1-Dichloromethane	Factor : 0.9	1	400 - 2000 ppm
1,1,2,2-Trichloroethane	Factor : 4.0	1	22 - 110 ppm

Tube 135 Reading (n=2)	100	200	300	400	500
1,1,2–Trichloroethane (ppm)	220	350	480	610	750

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. A correction factor is figure which is multiplied by the concentration interpreted from the color starting on the detector tube. The correction may also be presented as a chart on tube if the correction relartionship is nonlinear. Therefore, please make use of the correction factor / chart measuring range as a reference. Moreover, this factor may vary slightly between production batches. For a more precise factor please contact your Gastec distributor.

DISPOSAL INSTRUCTION :

Reagent of the tube is used a small amount of lead. On disposing the tube regardless of 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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