GASTEC No.234L Instructions for Methyl Isothiocyanate 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 guarantees.

⚠ 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.**

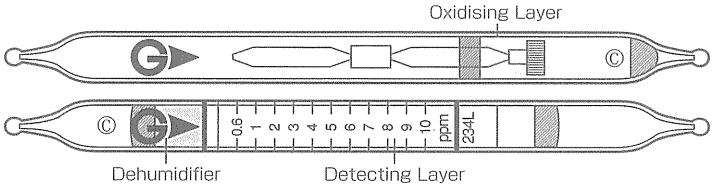
1. Use Gastec Gas Sampling Pump together with Gastec Detector Tubes only for the purposes specified in the instruction manual of the detector tube.
2. Use this tube within the temperature range of 0 - 40℃ (32 - 104℉).
3. Use this tube within the relative humidity range of 0 - 90%.
4. This tube may be interfered with by the coexisting gases. Please refer to the table "INTERFERENCES" below.
5. After gas sampling has been completed, the colour near the zero point of detecting layer reagent turns orange. This does not affect the reading of the detector tube.
6. When using the detector tube in direct sunlight, keep the detector tube in the shade until the time of use. In direct sunlight the detector tube detecting layer reagent turns from pink to yellow, and the correct reading cannot be made.
7. Shelf life and storage conditions of the tube are marked on the label of the box of tube.

APPLICATION OF THE TUBE :

Use this tube for the detection of Methyl Isothiocyanate in air or the industrial areas and environmental atmospheric condition.

SPECIFICATION :

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



The minimum scale value (0.3ppm) is not printed on the tube, but only the scale line is printed.

Measuring Range	0.07 – 0.3 ppm	(0.3) – 10 ppm	10 – 25 ppm
Number of Pump Strokes	2	1	1/2
Correction Factor	0.24	1	2.5
Sampling Time	2 minutes per pump stroke		
Detecting Limit	0.010 ppm (n=2)		
Colour Change	Pink → Yellow		
Reaction Principle	$CH_3NCS + V_2O_5 + H_2SO_4 \rightarrow SO_2$ SO_2 + Base → Reaction product		

Coefficient of Variation : 10% (for 0.3 to 3 ppm), 5% (for 3 to 10 ppm)
****Shelf Life: Please refer to the validity date printed on the box of tubes.**
****Store the tubes in a dark and cool place.**

CORRECTION FOR TEMPERATURE, HUMIDITY AND PRESSURE :

Temperature : Correct for temperature by the table below:

Temperature ℃(℉)	0 (32)	5 (41)	10 (50)	15 (59)	20 (68)	25 (77)	30 (86)	35 (95)	40 (104)
Correction Factor	2.16	2.03	1.64	1.36	1.00	1.00	0.87	0.76	0.72

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

Pressure : To correct for pressure, use the formula below

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

* 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 instructions provided with the pump operating manual.
2. Break tips off a fresh primary tube and analyser tube by using the tube tip breaker of the pump.
3. Connect © marked ends with rubber tubing after breaking the tips of each end.
4. Insert the analyser tube securely into pump inlet with arrow (➤) 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 two minutes and confirm the completion of the sampling.
7. For smaller measurements less than 0.3 ppm, repeat the above sampling procedure one more time until the stain reaches the first calibration mark. For measurements higher than 10 ppm, prepare a fresh tube and perform a half pump stroke.

8.Read concentration at the interface of the stained-to-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 strokes if necessary.
10.If pressure correction is necessary, use the pressure correction formula.

INTERFERENCES :

Substance	Concentration	Interference	Changes colour by itself to
Carbon dioxide	≦70%	No	Slightly orange for whole layer (≧40%)
Sulphuryl fluoride	≦10 ppm	No	No discolouration

The table of this 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.

INSTRUCTIONS ON DISPOSAL :

The reagent of the primary tube does not use toxic substances. The reagent of the analyser tube does not use toxic substances. 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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