

GASTEC

No.159

Instructions for Tetrahydrofuran 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, pieces or 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 to the test results.

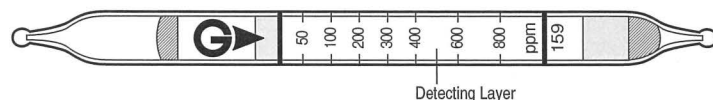
1. Use Gastec Gas Sampling Pump together with Gastec Detector Tubes only for the purposes specified in the instruction manual of the detector tube.
2. Use this tube within the temperature range of 0 - 40°C (32 - 104°F).
3. Use this tube within the relative humidity range of 0 - 90%.
4. This tube may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

APPLICATION OF THE TUBE :

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

SPECIFICATION :

(As a result of Gastec's commitment to continued improvement, specifications are subject to change without notice)



Measuring Range	25 - 50 ppm	50 - 800 ppm
Number of Pump Strokes	2	1
Correction Factor	0.5	1
Sampling Time	2 minutes per pump stroke	
Detecting Limit	3 ppm (n = 2)	
Colour Change	Pale vermillion → Pale Blue	
Reaction Principle	$C_4H_8O + Cr^{6+} + H_2SO_4 \rightarrow Cr^{3+}$	

Coefficient of Variation : 15% (for 50 to 200 ppm), 10% (for 200 to 800 ppm)

****Shelf Life : Please refer to the Validity Date printed on the tube box.**

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

CORRECTION FOR TEMPERATURE, HUMIDITY AND PRESSURE :

Temperature : Correct for temperature with the table below.

Tube Reading (ppm)	True Concentration (ppm)								
	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)
800	3650	2900	1550	1250	800	720	520	470	410
600	2650	2100	1100	900	600	530	430	380	330
400	1650	1300	650	500	400	350	310	270	230
300	1200	950	500	350	300	260	240	210	190
200	750	600	300	200	200	170	160	150	130
100	350	250	130	100	100	90	85	80	75
50	150	100	55	50	50	45	45	40	40

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

Pressure : To correct for pressure, use the formula below

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

* 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 pump. Follow instructions provided with the pump operating manual.
2. Break tips off a fresh detector tube with the tube tip breaker in the pump.
3. Insert the tube into the pump inlet with arrow (➔) on the tube pointing toward the pump.
4. Make certain pump handle is all the way in. Align the guide marks on the pump body with the guide marks on the handle.
5. Pull the handle all the way out until it locks on one pump stroke (100 mL). Wait 2 minutes and confirm the completion of the sampling.
6. For smaller measurements less than 50 ppm, repeat the above sampling procedure one more time.
7. Read the concentration level at the interface where the stained reagent meets the unstained reagent.
8. If temperature correction is necessary, obtain the true concentration by using the temperature correction table. Afterwards multiply the correction factor of pump stroke if necessary.
9. If pressure correction is necessary, use the pressure correction formula.

INTERFERENCES :

Substance	Interference	Changes colour by itself to
Alcohols	+	Pale blue

The table of these 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 give a positive result from other substances not listed in the table. If more information is needed, please contact us or our distributors in your territory.

APPLICATION FOR OTHER SUBSTANCES :

Tube 159 can also be used for other substances as below:

1,4-Dioxane (ppm)	25 50 75 100 120 144
Tube 159 Reading (n=2)	50 100 200 400 600 800

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. Therefore, please make use of the correction factor/chart measuring ranges as a reference. For a more precise factor please contact your Gastec distributor.

DANGEROUS AND HAZARDOUS PROPERTIES :

Threshold Limit Value-Time Weighted Average by ACGIH (2023) : 50 ppm

Threshold Limit Value-Short Term Exposure Limit by ACGIH (2023) : 100 ppm

DISPOSAL INSTRUCTION :

Reagent of the tube uses a small amount of hexavalent chromium. When 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.

Manufacturer : Gastec Corporation
 8-8-6 Fukayanaka, Ayase-City, Kanagawa 252-1195, Japan
<https://www.gastec.co.jp/>
 Telephone +81-467-79-3910 Facsimile +81-467-79-3979

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