GASTEC No.17LL Instructions for Hydrogen Fluoride 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 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 damage your detector tube and pump system, or may cause serious injury, or death to the end-user. It will also voids all warranties; and guarantees reading performance and data accuracy.

⚠ CAUTION : If not observed, injuries to the operator or damage to the product may result.

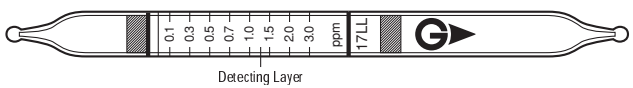
1. When breaking the tube ends, keep away from eyes.
2. Do not touch the broken glass tubes, pieces and reagent with bare hand(s).
3. The sampling time represents the time necessary to draw the air sample through the tube. The tube must be positioned in the desired sampling area for the entire sampling time or until the flow finish indicator indicates the end of the sample.

△ NOTES : For maintaining performance and reliability of the test results.

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 10 - 35℃(50 - 95℉).
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 "INTERFERENCES" below.
5. Shelf life and storage conditions of the tube are marked on the label of the box of tube.

APPLICATION OF THE TUBE : Use of this tube for the detection of Hydrogen fluoride in the 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	0.05 - 3.0 ppm	3.0 - 6.9 ppm	6.9 - 24 ppm
Number of Pump Strokes	5	3	1
Correction Factor	1	2.3	8.0
Sampling Time	1 minute per pump stroke		
Detecting Limit	0.025 ppm (n = 5)		
Colour Change	Yellow → Brown		
Reaction Principle	Hydrogen Fluoride reacts with indicator to produce brown stain.		

Coefficient of Variation : 10% (for 0.05 to 1.0 ppm), 5% (for 1.0 to 3.0 ppm)
**** Shelf Life : Please refer to the Validity Date printed on the box of tube.**
**** Store the tubes in dark and cool place.**

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 G► on the tube pointing toward pump.
4. Make certain pump handle is all the way in. Align guide marks on pump body and handle.
5. Pull the handle all the way out until it locks on one pump stroke (100 mL). Wait one minute and confirm the completion of the sampling. Repeat the above sampling procedure four more times.
6. For measurements higher than 3 ppm, prepare a fresh tube and perform three pump strokes. For measurements higher than 6.9 ppm, prepare a fresh tube and perform one pump stroke.
7. Read concentration at the interface of the stained-to-unstained reagent.
8. If necessary, multiply the correction factors of humidity pump strokes and pressure.

CORRECTION FOR TEMPERATURE, HUMIDITY AND PRESSURE :

Temperature & Humidity: To correct for Humidity, use the following chart.

Relative Humidity	Temperrature					
	10℃ (50℉)	15℃ (59℉)	20℃ (68℉)	25℃ (77℉)	30℃ (86℉)	35℃ (95℉)
20%	0.75	0.60	0.50	0.45	0.40	0.35
30%	1.00	0.85	0.60	0.60	0.55	0.45
40%	1.35	1.10	0.75	0.70	0.70	0.60
50%	1.80	1.50	1.00	0.90	0.85	0.70
60%	2.5	2.00	1.30	1.20	1.15	0.90
70%	—	2.60	1.75	1.60	1.35	1.20
80%	—	—	2.30	2.00	1.70	1.40

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

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

INTERFERENCES :

Substance	Concentration	Interference	interference gas only
Nitric acid	≧ 1.0 ppm	+	Pale reddish violet
Hydrogen Chloride	≧ 0.1 ppm	+	Reddish violet
Hydrogen Peroxide	10 ppm	No	No

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 (2009) : 0.5 ppm
Threshold Limit Value-Short Time Exposure Limit by ACGIH (2009) : C 2 ppm

DISPOSAL INSTRUCTION :

Reagent of the 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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