

GASTEC No.17 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. 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 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 of the test results, observe the following.

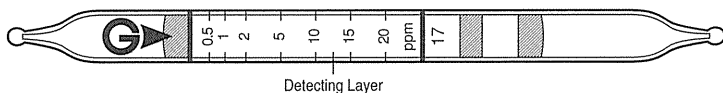
1. Use Gastec Gas Sampling Pump together with Gastec Detector Tubes only for the purposes specified in the instruction manual of the detector tube.
2. Use this tube within the temperature range of 0 - 40°C (32 - 104°F).
3. Use this tube within the relative humidity range of 30 - 80%.
4. This tube may be interfered with by the coexisting gases. Please refer to the table "INTERFERENCES" below.
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 detecting Hydrogen fluoride in the air or in industrial areas and for determining the environmental atmospheric condition.

SPECIFICATION :

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



Measuring Range	0.25 - 0.5ppm	0.5 - 20ppm	20 - 100ppm
Number of Pump Strokes	7	4	1
Correction Factor	1/2	1	5
Sampling Time	45 seconds per pump stroke		
Detecting Limit	0.1 ppm (n = 7)		
Colour Change	Yellow → Brown May produce "deep pink" colour at higher concentrations		
Reaction Principle	HF + Indicator → Chemical reaction compound		

Coefficient of Variation: 10% (for 0.5 to 5 ppm), 5% (for 5 to 20 ppm)

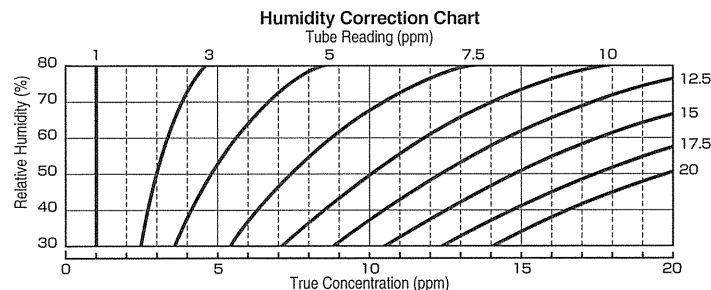
****Shelf Life: Please refer to the validity date printed on the box of tubes.**

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

CORRECTION FOR TEMPERATURE, HUMIDITY AND PRESSURE :

Temperature : No correction is required.

Humidity : Correct for humidity by the chart below (e.g. when the humidity is 60% R.H. and tube reading is 7.5 ppm, the true concentration is 9 ppm):



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

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

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

MEASUREMENT PROCEDURE :

1. For checking the leakage of the pump, insert a fresh sealed detector tube into the pump. Follow instructions provided with the pump operating manual.
2. Break tips off a fresh detector tube with the tube tip breaker of the pump.
3. Insert the tube into the pump inlet with arrow (G) on the tube pointing toward pump.
4. Make certain the pump handle is all the way in. Align the guide mark on the pump body with the guide mark on the handle.
5. Pull the handle all the way out until it locks at one pump stroke (100 mL). Wait 45 seconds and confirm the completion of the sampling. Repeat the above sampling procedure three more times.
6. For smaller measurements less than 0.5 ppm, repeat the above sampling procedure three more times until the stain reaches the first calibration mark.
For measurements higher than 20 ppm, prepare a fresh tube and perform one pump stroke.

7. Read concentration level at the interface where the stained reagent meets the unstained reagent.
8. If humidity correction is necessary, obtain the true concentration by using the humidity correction chart. Afterwards multiply the correction factor of pump stroke if necessary.
9. If pressure correction is necessary, use the pressure correction formula.

INTERFERENCES:

Substance	Concentration	Interference	Changes colour by itself to
Hydrogen chloride, Nitric acid	$\geq 1/5$	+	Brown
Chlorine, Nitrogen dioxide	$\geq 1/10$	+	Brown

This table of 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 give a positive result from other substances not listed in the table. If more information is needed, please contact us or your Gastec representatives.

APPLICATION FOR OTHER SUBSTANCES :

Tube 17 can be used for Fluorine detection. Obtain a true concentration by following the correction factor.

Substance	Correction factor	No. of pump strokes	Temperature	Absolute humidity	Colour change
Fluorine	2.5	1	20°C(68°F)	9mg/L	Brown
Fluorine	1.0	1	20°C(68°F)	3mg/L	Brown ring stain

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. The correction factor is a number which is multiplied by the concentration as interpreted from the colour on the detector tube. The correction factor may also be presented as a chart on the tube if the correction relationship is nonlinear. Therefore, please make use of the correction factor/chart measuring ranges as a reference. For a more precise factor please contact your Gastec representatives.

DANGEROUS AND HAZARDOUS PROPERTIES :

Threshold Limit Value—Time Weighted Average by ACGIH (2018): 0.5 ppm

Threshold Limit Value—Ceiling by ACGIH (2018): 2 ppm

INSTRUCTIONS ON DISPOSAL :

The reagent of the tube does not use toxic substances. When disposing the tube regardless of whether it has been used or not, follow the rules and regulations of your 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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