

GASTEC Instructions for No.132HA Trichloroethylene 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 guaranties.

⚠ 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.

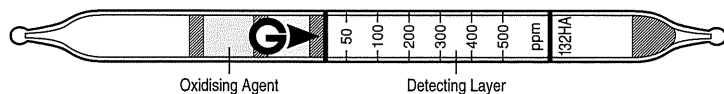
1. Use Gastec Gas Sampling Pump together with Gastec Detector Tubes only for the purposes specified in the instruction manual of the detector tube.
2. Use this tube within the temperature range of 0 - 40°C (32 - 104°F).
3. Use this tube within the relative humidity range of 0 - 90%.
4. This tube may be interfered with by the coexisting gases. Please refer to the 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 the detection of Trichloroethylene 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)



Measuring Range	20 - 50 ppm	50 - 500 ppm	500 - 1300 ppm
Number of Pump Strokes	2	1	1/2
Correction Factor	0.4	1	2.6
Sampling Time	45 seconds per pump stroke		30 seconds
Detecting Limit	4 ppm (n=2)		
Colour Change	Yellow → Reddish purple		
Reaction Principle	$\text{Cl}_2\text{C}:\text{CHCl} + \text{PbO}_2 + \text{H}_2\text{SO}_4 \rightarrow \text{HCl}$ $\text{HCl} + \text{Base} \rightarrow \text{Chloride}$		

Coefficient of Variation : 10% (for 50 to 100 ppm), 5% (for 100 to 500 ppm)

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

****Store the tubes in the refrigerator to keep at 10°C (50°F) or below.**

CORRECTION FOR TEMPERATURE, HUMIDITY AND PRESSURE :

Temperature : Correct for temperature by the table below :

Temperature °C(°F)	0(32)	5(41)	10(50)	15(59)	20(68)	25(77)	30(86)	35(95)	40(104)
Correction Factor	1.4	1.25	1.15	1.08	1.0	0.9	0.8	0.7	0.65

Humidity : No correction is required.

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

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

MEASUREMENT PROCEDURE :

1. For leak checking of the pump insert a fresh sealed detector tube into pump. Follow instructions provided with the pump operating manual.
2. Break tips off a fresh detector tube in 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 guide mark on the pump body with the guide mark on the handle.
5. Pull handle all the way out until it locks at one pump stroke (100 mL). Wait 45 seconds and confirm the completion of the sampling.
6. For smaller measurements less than 50ppm, repeat the above sampling procedure one more time until the stain reaches to the first calibration mark.
For measurements higher than 500 ppm, prepare a fresh tube and perform a half pump stroke.
7. Read concentration level at the interface where the stained reagent meets the unstained reagent.
8. If necessary, multiply the readings by the correction factors of temperature, pump strokes and atmospheric pressure respectively.

INTERFERENCES :

Substance	Concentration	Interference	Changes colour by itself to
Nitric oxide, Nitrogen dioxide		No	No discolouration
Hydrogen chloride, Chlorine, Bromine		+	Reddish purple
Acetone	≦ 200 ppm	No	No discolouration
1,1,1-Trichloroethane		+	Reddish purple at 3000 ppm
Unsaturated halogenated hydrocarbons		+	Reddish purple
Aromatic hydrocarbons	≧ 100 ppm	-	No discolouration

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 be given positive result by the other substances not listed in the table. For more information is needed, please contact us or Gastec representatives.

APPLICATION FOR OTHER SUBSTANCES :

Tube 132HA can also be used for other substances as below :

Substance	Correction factor	No. of pump strokes	Measuring range
1,2-Dichloroethylene	1.6	1	80 – 800 ppm
1,3-Dichloropropene	0.9	2	45 – 450 ppm

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 more precise factor please contact your Gastec representatives.

DANGEROUS AND HAZARDOUS PROPERTIES :

Threshold Limit Value-Time Weighted Average by ACGIH (2015) : 10 ppm
 Threshold Limit Value-Short Term Exposure Limit by ACGIH (2015) : 25 ppm

INSTRUCTIONS ON DISPOSAL :

The reagent of the tube uses a small amount of lead. 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 tube, please feel free to contact your Gastec representatives.

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