GASTEC No.134 Instructions for Carbon Tetrachloride 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 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.**

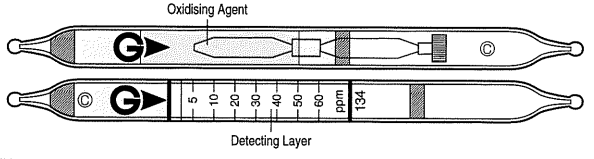
1. Use Gastec Gas Sampling Pump together with Gastec Detector Tubes only for the purposes specified in the instruction manual of the detector tube.
2. Use this tube within the temperature range of 0 - 40℃ (32 - 104℉).
3. Use this tube within the relative humidity range of 0 - 90%.
4. This tube may be interfered with by the coexisting gases. Please refer to the "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 Carbon tetrachloride 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	0.5 - 2.5 ppm	(2.5) - 60 ppm
Number of Pump Strokes	2 - 5	1
Correction Factor	1/2 - 1/5	1
Sampling Time	1 minute per pump stroke	
Detecting Limit	0.2 ppm (n = 5)	
Colour Change	White → Yellow	
Reaction Principle	$CCl_4 + I_2O_5 + H_2S_2O_7 \rightarrow COCl_2$ $COCl_2 + (CH_3)_2NC_6H_4CHO \rightarrow (CH_3)_2NC_6H_4CHCl_2 + CO_2$ $(CH_3)_2NC_6H_4CHCl_2 + (C_6H_5)_2NH \rightarrow$ Chemical reaction products	

Coefficient of Variation: 15% (for 2.5 to 20 ppm), 10% (for 20 to 60 ppm)
**** Shelf Life : Please refer to the Validity Date printed on the tube box.**
**** Store the tubes in the refrigerator to keep at 10℃ (50℉) or below.**

CORRECTION FOR TEMPERATURE, HUMIDITY AND PRESSURE :

Temperature: No correction is required.
Humidity: No correction is required.
Pressure: To correct for pressure, use the formula below.

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

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 operation manual.
2. Break tips off a fresh primary tube and analyser tube using the tube tip breaker of the pump.
3. Connect the © marked ends with rubber tubing after snapping off each end.
4. Insert the analyser tube securely into pump inlet with the arrow (G►) 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.
6. Pull the handle all the way out until it locks at one pump stroke (100 mL). Wait 1 minute and confirm the completion of the sampling.
7. For smaller measurements less than 2.5 ppm, repeat the above sampling procedure 1 – 4 more times until the stain reaches the first calibration mark.
8. Read concentration level at the interface where the stained reagent meets the unstained reagent.
9. If necessary, multiply the readings by the correction factors of pump stroke and atmospheric pressure.

INTERFERENCES :

Substance	Concentration	Interference	Interference gas only
Hydrogen chloride	≧ 100ppm	+	Yellow
Chlorine, Bromine	≧ 50ppm	+	Yellow
Vinyl chloride, Methylene chloride		No	No discolouration
Chloroform		No	No discolouration
Methyl bromide	≧ 100ppm	+	Yellow
Tetrachloroethylene		No	No discolouration
1,1,1-Trichloroethane	≧ 100ppm	+	Yellow
Trichloroethylene		No	No discolouration

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 Gastec representatives.

APPLICATION FOR OTHER SUBSTANCES :

Tube 134 can also be used for other substances as below.

Substance	Correction Factor	No. of Pump Strokes	Measuring Range
Chloropicrin	1.0	1	2.5 - 60 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): 5 ppm
Threshold limit Value-Short Term Exposure Limit by ACGIH (2015): 10 ppm

DISPOSAL INSTRUCTION :

Reagent of the primary tube uses a small amount of hexavalent chromium. Reagent of the analyser tube does not use toxic substances. 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.

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