

GASTEC Instructions for No.134L 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. 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.

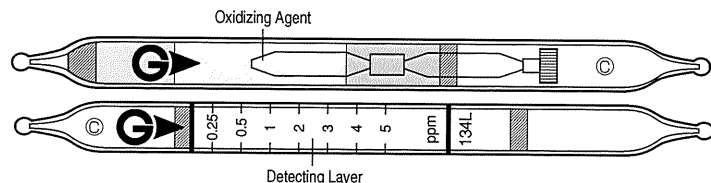
1. Use Gastec Gas Sampling Pump together with Gastec Detector Tubes only for the purposes specified in the instruction manual of the detector tube.
2. Use this tube within the temperature range of 0 - 40°C (32 - 104°F).
3. Use this tube within the relative humidity range of 0 - 90%.
4. This tube may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

APPLICATION OF THE TUBE :

Use this tube for the detection of Carbon tetrachloride 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	0.25 - 5 ppm	5 - 11 ppm
Number of Pump Strokes	2	1
Correction Factor	1	2.2
Sampling Time	2 minutes per pump stroke	
Detecting Limit	0.04 ppm (n=2)	
Colour Change	White → Yellow	
Reaction Principle	$CCl_4 + I_2O_5 + H_2S_2O_7 \rightarrow COCl_2$ $COCl_2 + (CH_3)_2NC_6H_4CHO \rightarrow (CH_3)_2NC_6H_4CHCl_2 + CO_2$ $(CH_3)_2NC_6H_4CHCl_2 + (C_6H_5)_2NH \rightarrow \text{Reaction product (Yellow)}$	

Coefficient of Variation : 10% (for 0.25 to 1 ppm), 5% (for 1 to 5 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 : 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 operating manual.
2. Break tips of a fresh primary tube and analyser tube by using the tube tip breaker of the pump.
3. Connect © marked ends with rubber tubing after breaking the tips of each end.
4. Insert the analyser tube securely into pump inlet with 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 with the guide marks on the handle.
6. Pull the handle all the way out until it locks at one pump stroke (100 mL). Wait two minutes and confirm the completion of the sampling. Repeat the above sampling procedure one more time.
7. For measurements higher than 5 ppm, prepare a fresh tube and perform one pump stroke.
8. Read concentration at the interface of the stained-to-unstained reagent.
9. If necessary, multiply the readings by the correction factors of pump strokes and atmospheric pressure respectively.

INTERFERENCES :

Substance	Concentration	Interference	Interference gas only
Hydrogen chloride		No	No discolouration
Chlorine, Bromine	$\geq 3 / 10$	+	No discolouration (≤ 0.4 ppm)
Methyl bromide	≥ 2.5 times	+	Pale yellow (≥ 2.5 ppm)
1,1,1-Trichloroethane	≥ 14 ppm	+	No discolouration (≤ 17 ppm)

The table of this 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 134L can also be used for other substances as below.

Substance	Correction Factor	No. of Pump Strokes	Measuring range
Chloropicrin	1.1	2	0.28 – 5.5 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 (2014): 5 ppm

Threshold limit Value-Short Term Exposure Limit by ACGIH (2014): 10 ppm

INSTRUCTIONS ON DISPOSAL :

The reagent of the primary tube uses a small amount of hexavalent chromium. The reagent of the analyser 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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