GASTEC No.121 Instructions for Benzene 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.

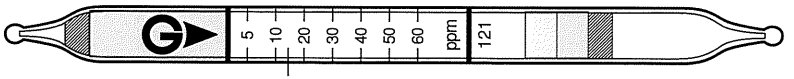
1. Use Gastec Gas Sampling Pump together with Gastec Detector Tubes only for the purposes specified in the instruction manual of the detector tube.
2. Use this tube within the temperature range of 0 - 40℃ (32 - 104℉).
3. Use this tube within the relative humidity range of 0 - 90%.
4. This tube may be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



Detecting Layer

Measuring Range	2.5 – 5 ppm	5 – 60 ppm	60 – 120 ppm
Number of Pump Strokes	4	2	1
Correction Factor	1/2	1	2
Sampling Time	1.5 minutes per pump stroke		
Detecting Limit	0.5 ppm (n = 4)		
Colour Change	White → Dark green		
Reaction Principle	$C_6H_6 + I_2O_5 + H_2S_2O_7 \rightarrow I_2$		

Coefficient of Variation: 10% (for 5 to 20 ppm), 5% (for 20 to 60 ppm)
****Shelf Life: Please refer to the validity date printed on the box of tube.**
****Store the tubes in the cool and dark place.**

CORRECTION FOR TEMPERATURE, HUMIDITY AND PRESSURE :

This tube is calibrated at 20℃ and 1013hPa. The calibration gas is prepared at RH50%. If used in other conditions, please follow below correction guide.

Temperature : No correction is required.

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 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 detector 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 1.5 minutes and confirm the completion of sampling. Repeat the above sampling procedure one more time.
6. For smaller measurements less than 5 ppm, repeat the above sampling procedure two more times until the stain reaches to the first calibration mark.
   For measurements higher than 60 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 necessary, multiply the readings by the correction factors of pump strokes and atmospheric pressure respectively.

INTERFERENCES :

Substance	Concentration	Interference	Change colour by itself
Aromatic hydrocarbons		+	Dark green
Esters	≧2000 ppm	+	No discolouration
Alcohols, Ketones	≦1 %	No	No discolouration
Aliphatic hydrocarbons		No	Pale 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 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 GASES :

Tube 121 can also be used for other substances as below :

Substance	Correction Factor	Pump Strokes	Measuring Range
Diisobutylene	9	1	45 – 540 ppm
α -Pinene	19	3	95 – 1140 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): 0.5 ppm

Threshold Limit Value-Short Term Exposure Limit by ACGIH (2015): 2.5 ppm

INSTRUCTIONS ON DISPOSAL :

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

Manufacturer : Gastec Corporation
8-8-6 Fukayanaka, Ayase-City, Kanagawa 252-1195, Japan
http://www.gastec.co.jp/
Telephone +81-467-79-3910 Facsimile +81-467-79-3979

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