GASTEC No.113 L

Instructions for Isopropyl Alcohol Low Range Detector Tube

FOR SAFE OPERATION :

Read this manual and the instruction manual of your Gastec Gas Sampling Pump carefully.

⚠ 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 not observed, injuries to the operator or damage to the product may result.

1. When breaking the tube ends, keep away from eyes.
2. Do not touch the broken glass tubes, piece 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 to the test result

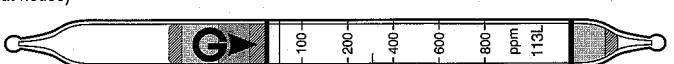
1. Use Gastec Gas Sampling Pump together with Gastec Detector Tubes only for the purposes specified in the instruction manual of the detector tube.
2. Use this tube under the temperature range of 0 - 40℃ (32 - 104℉).
3. Use this tube under the relative humidity range of 20 - 90%.
4. This tube may be interfered by the coexisting gases. Please refer to the "INTERFERENCES".
5. Shelf life and storage condition of the tube is marked on the label of the box of tube.

APPLICATION OF THE TUBE :

Use this tube for the detection of Isopropyl Alcohol in air or the industrial areas and environmental atmospheric condition.

SPECIFICATION :

(As a result of Gastec's commitment to continued improvement, specifications are subject to change without notice)



Detecting Layer

Measuring Range	25 - 50 ppm	50 - 800 ppm
Number of Pump Stroke	2	1
Correction Factor	1/2	1
Sampling Time	3 minutes per pump stroke	
Detecting Limit	5 ppm (n = 2)	
Color Change	Pink → Pale blue	
Reaction Principle	Isopropyl alcohol reduces potassium dichromate to from chromic sulfate, which is blue in color $C_3H_8OH + K_2Cr_2O_7 + H_2SO_4 \rightarrow Cr_2(SO_4)_3$	

Coefficient of Variation : 15%(for 50 to 200 ppm), 10%(for 200 to 800 ppm)
**** Shelf Life : Please refer to the Validity Date printed on the box of tube.**
**** Store the tube in the dark and cool place.**

CORRECTION FOR TEMPERATURE, HUMIDITY AND PRESSURE:

Calibration of the Gastec detecter Tube No. 113L is based on a tube temperature of 20℃ (68℉) and not the temperature of the gas being sampled, approximatery 50% relative humidity and normal atmospheric pressure.

1. Temperature :

Tube Reading (ppm)	True concentration				
	0℃(32℉)	10℃(50℉)	20℃(68℉)	30℃(86℉)	40℃(104℉)
800	1800	1050	800	680	620
600	1300	770	600	540	500
400	700	470	400	380	360
200	300	230	200	190	180
100	120	110	100	100	100
50	50	50	50	50	50

2. Humidity : Humidity Correction is required for relative humidity range of 20 - 90%.
3. Pressure : To correct for pressure, multiply by the tube reading by

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

MEASUREMENT PROCEDURE :

1. For leak tight check 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 securely into pump inlet with arrow (G►) on the tube pointing toward pump.
4. Make certain pump handle is all the way in. Align guide marks on pump body and handle.
5. Pull the handle all the way out until it locks on 1 pump stroke (100ml). Wait 3 minutes.
6. For lower than 100 ppm measurement, repeat the above sampling procedure one more time.
7. Read concentration at the interface of the stained-to-unstained reagent.
8. If atmospheric correction is needed, refer to the "Correction for Pressure"

INTERFERENCES :

Substance	Concentration	interference	Change color by itself
Alcohols		Plus error	Produce similar stain by themselves

DANGEROUS AND HAZARDOUS PROPERTIES :

Threshold Limit Value-Time Weighted Average by ACGIH (2001) : 200 ppm
Threshold Limit Value-Short Term Exposure Limit by ACGIH (2001) : 400 ppm
Explosive range in air : 4.3 - 19%

APPLICATION FOR OTHER GASES:

Tube 113L can also be used for other substances as below:

Substance	Correction Factor	Pump Strokes	Measuring Range
Divinyl methoxysilane	0.05	2	2.5 - 40ppm
Ethylene glycol MEE	1.25	2	62.5 - 1,000ppm
Ethylene glycol MEEAc	0.12	3	6 - 96ppm
1-Methoxy-2-propanol	1.0	4	50 - 800ppm
Propyl alcohol	1.3	1	65 - 1040ppm
Vinyl trimetoxysilane	0.05	2	2.5 - 40ppm

Tube 113L Reading / Substance	Pump stroke	100	200	400	600	800
Ethylene Glycol MBE	2	60	160	640	1000	—
Ethylene Glycol MME	1	30	80	350	500	900
Ethylene Glycol MMEAc	2	50	100	350	750	1300
	4	20	—	—	—	—

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 a more precise factor please contact your Gastec distributor.

DISPOSAL INSTRUCTION :

Reagent of the tube uses chromic acid as toxic substances. On 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.

Manufacturer : Gastec Corporation
6431 Fukaya, Ayase-City, 252-1103, Japan

IM00113LE1
Printed in Japan
01E17