

GASTEC Instructions for No.112L Ethanol 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.

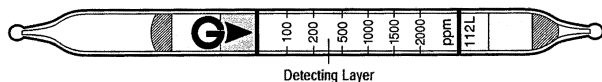
1. When breaking the tube ends, keep away from eyes.
2. Do not touch the broken glass tubes, broken pieces and reagent with bare hand(s).
3. The sampling time represents the time necessary to draw the air sample through the tube. The tube must be positioned in the desired sampling area for the entire sampling time or until the flow finish indicator indicates the end of the sampling.

⚠ 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 20 - 90%.
4. This tube may be interfered with by the coexisting gases. Please refer to the table "INTERFERENCES" below.
5. In less than 20% humidity atmosphere tubes will indicate lower reading.
6. The shelf life and storage condition of the tube are marked on the label of the tube box.

APPLICATION OF THE TUBE : Use this tube for detecting Ethanol in the air or in industrial areas and for determining the environmental atmospheric condition.

SPECIFICATION : (Because of Gastec's commitment to continued improvement, specifications are subject to change without notice.)



Measuring Range	50 - 100 ppm	100 - 2000 ppm
Number of Pump Strokes	2	1
Stroke Correction Factor	1/2	1
Sampling Time	2 minutes per pump stroke	
Detecting Limit	15 ppm (n = 2)	
Colour Change	Pale vermilion → Pale blue	
Reaction Principle	$C_2H_5OH + Cr^{6+} + H_2SO_4 \rightarrow Cr^{3+}$	

Coefficient of Variation: 10% (for 100 to 500 ppm), 5% (for 500 to 2000 ppm)

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

**** Store the tubes in a dark and cool place.**

CORRECTION FOR TEMPERATURE, HUMIDITY AND PRESSURE :

Temperature : Correct for temperature by the table below:

Tube Reading (ppm)	Temperature correction									
	0°C (32°F)	5°C (41°F)	10°C (50°F)	15°C (59°F)	20°C (68°F)	25°C (77°F)	30°C (86°F)	35°C (95°F)	40°C (104°F)	
2000	—	—	6500	4200	2000	1400	900	800	750	
1500	—	6900	4200	2700	1500	1100	700	630	550	
1000	5600	3600	2200	1300	1000	700	500	450	400	
500	1900	1300	950	700	500	400	250	240	220	
200	600	400	350	250	200	190	180	160	140	
100	220	160	120	110	100	100	100	85	75	

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 pump. Follow instructions provided with the pump operating manual.
2. Break tips off a fresh detector tube with the tube tip breaker in the pump.
3. Insert the tube into the pump inlet with arrow on the tube pointing toward the pump.
4. 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.
5. 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.
6. For smaller measurements less than 100 ppm, repeat the above sampling procedure one more time until the stain reaches the first calibration mark.
7. Read the 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.

INTERFERENCES :

Substance	Concentration	Interference	Interference gas only
Alcohols		+	Pale blue
Acetone	≧ 1000 ppm	No	No discolouration up to 1000ppm
Ethyl Acetate	≧ 500 ppm	No	No discolouration up to 500ppm
Toluene	≧ 300 ppm	No	No discolouration up to 300ppm
Benzene	≧ 70 ppm	No	No discolouration

This table of interference gases primarily expresses the interference of each coexisting gas in the concentration range, that is equivalent to the gas concentration. Therefore, the test result may show positive results due to other substances not listed in the table. If more information is needed, please contact us or our distributors in your territory.

DANGEROUS AND HAZARDOUS PROPERTIES :

Threshold Limit Value-Short Term Exposure Limit by ACGIH (2016):1,000 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 the quality of the tubes, please feel free to contact your Gastec representatives.

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