

# GASTEC No.91LL

## Instructions for Formaldehyde Extra Low Range Detector Tube

### FOR SAFE OPERATION :

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

**⚠ 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, pieces and reagent with bare hand(s).

**△ NOTES : For maintaining performance and reliability of the test result**

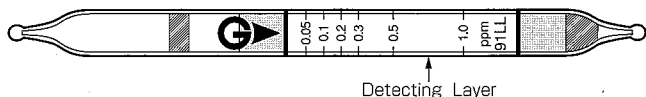
1. Use Gastec Gas Sampling pump together with Gastec Detector Tubes only for the purposes specified in the instruction manual of the detector tube.
2. Use this tube within the temperature range of 10 - 35°C (50 - 95°F).
3. Use this tube within the relative humidity range of 15 - 90%.
4. This tube may be interfered by the coexisting gases. Please refer to the "INTERFERENCES".
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 detection of Formaldehyde in industrial areas and environmental atmospheric monitoring.

### SPECIFICATION :

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



Measuring Range	0.05 - 1.0 ppm
Number of Pump Strokes	n = 5
Correction Factor	1
Sampling Time	1.5 minutes per pump stroke
Detecting Limit	0.03 ppm (n = 5)
Color Change	Yellowish Brown → Reddish Brown
Reaction Principle	$3 \text{HCHO} + (\text{NH}_2\text{OH})_2\text{H}_3\text{PO}_4 \rightarrow \text{H}_3\text{PO}_4$ $\text{H}_3\text{PO}_4 + \text{Base} \rightarrow \text{Phosphoric Acid Salt}$

**\*\* Shelf Life : Please refer to the Validity Date printed on the box of tube.**

**\*\* Store the tubes under dark and cool place.**

### Correction for Temperature, Humidity and Pressure :

**Temperature :** Since the tube is affected by the temperature, multiply the correction factor to the tube reading.

Temperature °C	10	12	14	16	18	20	25	30	35
(°F)	50	53.6	57.2	60.8	64.4	68	77	86	95
Correction Factor	4.0	2.6	1.8	1.4	1.2	1.0	0.8	0.6	0.4

**Humidity :** Humidity correction is not required.

**Pressure :** To correct for pressure, multiply the tube reading by  

$$\frac{\text{Tube Reading (mg/m}^3) \times 1013 \text{ (hPa)}}{\text{Atmospheric Pressure (hPa)}}$$

### MEASUREMENT PROCEDURE :

1. For leak checking 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 immediately 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 handle all the way out until it locks on 1 pump stroke (100ml). Wait 1.5 minute. Repeat the above sampling procedure one more time.
6. Read concentration at the interface of the stained-to-unstained reagent.
7. If atmospheric correction is needed, refer to the "Corrections for Temperature, and Pressure".

### INTERFERENCES :

Substance	Concentration	Interference	Change color by itself
Ammonia		Minus error	Faint dull yellow color to whole layer
Nitric Oxides		No effect	Paale pink discoration around zero
Aldehydes	1/3 times	Plus error	Faint reddish brown to whole layer
Ketones	1:1	Plus error	Faint reddish brown to whole layer
Toluene	Less than 10ppm	No effect	No discoloration

**The prelayer removes the effect of nitrogen dioxide. When the prelayer becomes wholly discolored, the zero mark of tube discolor faint dull pink color regardless of the formaldehyde concentration, however this dose not interfere the tube reading.**

### Disposal Instruction :

Reagent of the tube does not use 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.

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