

# GASTEC Instructions for No.103 Lower Class Hydrocarbons 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.

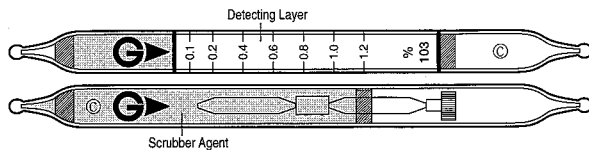
1. When breaking the tube ends, keep away from eyes.
2. Do not touch the broken glass tubes, pieces and reagent with bare hand(s).
3. The sampling time represents the time necessary to draw the air sample through the tube. The tube must be positioned in the desired sampling area for the entire sampling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

### △ NOTES : For maintaining performance and reliability of the test 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°C (32 - 104°F).
3. Use this tube under the relative humidity range of 0 - 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 is marked on the label of the box of tube.
6. Connect the detector tube and scrubber tube by rubber tubing then connect the end of the scrubber tube to the pump. Do not connect up side down.
7. This package contains 9 detector tubes, 1 scrubber tube and rubber tubing. The scrubber tube and rubber tubing can be used up to 9 times. Do not discard the scrubber tube until all detector tubes are wholly used.

**APPLICATION OF THE TUBE :** Use of this tube for the detection of Lower Class Hydrocarbons 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.)



Measuring Range	0.05 - 0.1 %	0.1 - 1.2 %	1.2 - 2.4 %
Number of Pump Strokes	2	1	1/2
Correction Factor	1/2	1	2
Sampling Time	2 minutes per pump stroke		
Detecting Limit	0.01 % (n=2)		
Color Change	Yellowish brown → Greenish brown		
Reaction principle	Lower class hydrocarbons reduce chromic acid to produce greenish brown in color.		

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

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

## CORRECTION FOR TEMPERATURE, HUMIDITY AND PRESSURE :

**Temperature :** Temperature correction is not required.

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

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

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

## MEASUREMENT PROCEDURE :

1. For leak checking 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 tubes and a scrubber tube in the tube tip breaker of the pump.
3. Connect the both tubes marked with © using the rubber tubing supplied.
4. Insert the scrubber tube into the pump inlet with arrow (➔) on the tube pointing toward pump.
5. Make certain pump handle is all the way in. Align guide marks on pump body and handle.
6. Pull the handle all the way out until it locks on 1 pump stroke (100ml). Wait 2 minutes and confirm the completion of the sampling.
7. For lower than 0.1% measurement, repeat the above sampling procedure one more time. For higher than 1.2% measurement, prepare fresh tube, then pull 1/2 pump stroke.
8. Read concentration at interface of the stained-to-unstained reagent.
9. If atmospheric correction is needed, refer to the "Corrections for Pressure, and Pump strokes.

## INTERFERENCES :

Substance	Concentration	Interference	Change color by itself
Carbon monoxide		No effect	No discoloration
Methane, Ethane		No effect	No discoloration
Other hydrocarbons		Plus error	Produce similar stain

## APPLICATION FOR OTHER GASES :

Tube 103 can also be used for other substance as below:

Substance	Correction Factor	No. of Pump Strokes	Measuring Range
Acetylene	1.5	1/2, 1, 2	0.075 - 3.6%
Butane, Heptane, Isobutane	0.7	1/2, 1, 2	0.035 - 1.68%
Ethylene	7.0	1/2, 1, 2	0.35 - 16.8%
Hexane	0.5	1/2, 1, 2	0.025 - 1.2%
Isopentane	0.9	1/2, 1, 2	0.045 - 2.16%
Pentane	0.75	1/2, 1, 2	0.0375 - 1.8%
Propane	1.0	1/2, 1, 2	0.05 - 2.4%

**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 tubes use toxic chromic acid. On disposing the tube regardless of 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 tube, please feel free to contact your Gastec representatives.