

GASTEC Instructions for No.21LA Carbonyl Sulfide 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.

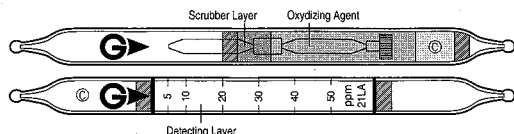
1. When breaking the tube ends, keep away from eyes.
2. Do not touch the broken glass tubes, pieces and reagent with bare hand(s).
3. The sampling time represents the time necessary to draw the air sample through the tube. The tube must be positioned in the desired sampling area for the entire sampling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

△ NOTES : For maintaining performance and reliability 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 within the temperature range of 10 - 40°C (50 - 104°F).
3. Use this tube within the relative humidity range of 0 - 90%.
4. This tube may be interfered by the coexisting gases. Please refer to the "INTERFERENCES".
5. If this tube is exposed under the direct sunlight, whole layer of the tube will be resulted to white and cannot use for gas detection.
6. 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 Carbonyl sulfide in air or 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	2 - 5 ppm	5 - 50 ppm	50 - 125 ppm
Number of Pump Strokes	2	1	1/2
Correction Factor	0.4	1	2.5
Sampling Time	3 minutes / pump stroke		
Detecting Limit	0.8 ppm (2 pump stroke)		
Color Change	Bluish Purple → White		
Reaction Formula	COS is oxidized by iodine pentoxide and sulfuric acid to generate SO ₂ in primary tube. The SO ₂ reacts with iodine to breach the reagent to white by iodine - starch reaction. $\text{COS} + \text{I}_2\text{O}_5 + \text{H}_2\text{SO}_4 \rightarrow \text{SO}_2 + \text{CO}_2$ $\text{SO}_2 + \text{I}_2 + \text{H}_2\text{O} \rightarrow 2\text{HI} + \text{H}_2\text{SO}_4$		

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

** Store the tubes in the refrigerator to keet at 10°C (50°F) or below.

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 (°F)	0 (32)	10 (50)	20 (68)	30 (86)	40 (104)
Correction Factor	1.9	1.45	1.0	0.8	0.8

Humidity : Humidity correction is not 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 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 primary tube and secondary tube by bending each tube end in the tube tip breaker of the pump.
3. Connet © marked ends with rubber tubing after breaking each end.
4. Insert analyzer tube securely into 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 handle all the way out until it locks on 1 pump stroke (100ml). Wait 3 minutes.
7. For lower than 5 ppm measurement, repeat the above sampling procedure one more time until the stain attained to the first calibration mark.
8. Read concentration at the interface of the stained-to-unstained reagent.
9. If atmospheric correction is needed, refer to the "Corrections for Temperature, and pressure".

INTERFERENCES :

Substance	Concentration	Interference	Change color by itself
Carbon monoxide	≥ 500 ppm	Discolors to black	Discolors to black at 500 ppm
Sulfur dioxide		Plus error	Discolor to white
Carbon disulfide			
Carbon dioxide		No effect	No discoloration
Nitrogen dioxide	≤ 2 ppm	Plus error	Discolors to brown at 2 ppm
Hydrogen sulfide	≤ 1,000 ppm	No effect at 1 pump stroke	*1
Propane	≤ 1,000 ppm	No effect	Produce black stain at the top of the discolored area.

*1 : In case the primary tube is totally discolors, analyzer tube will give white discoloration by the effect of hydrogen sulfide.

DISPOSAL INSTRUCTION : Reagent of the tube is used a small amount of 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 detection and quality of the tubes, please feel free to contact your Gastec representatives.

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