

GASTEC Instructions for No.191L Acrylonitrile 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.

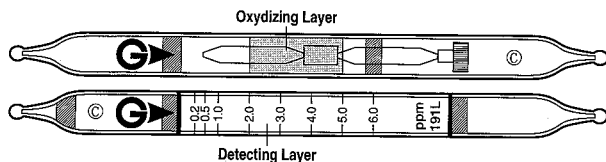
1. When breaking the tube ends, keep away from eyes.
2. Do not touch the broken glass tubes, pieces and reagent with bare hand(s).
3. The sampling time represents the time necessary to draw the air sample through the tube. The tube must be positioned in the desired sampling area for the entire sampling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

△ 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.

APPLICATION OF THE TUBE : Use this tube for the detection of Acrylonitril for 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	Oxydizing Layer		Detecting Layer
	0.1 - 0.2 ppm	0.2 - 6.0 ppm	
Number of Pump Strokes	4	2	1
Correction Factor	1/2	1	3
Sampling Time	3 minutes per pump stroke		
Detecting Limit	0.05 ppm (n=4)		
Color Change	Yellow → Pink		
Reaction Formula	Acrylonitrile decomposed by acid to liberate hydrogen cyanide which react with mercuric chloride to generate hydrogen chloride. The generated hydrogen chloride discolors indicator to pink.		

** 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

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

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 tubes and analyzer tube in the tube tip breaker of the pump.
3. Connect both tubes with rubber tubing supplied in the box of tubes.
4. Insert the analyzer tube securely into pump inlet with arrow (G) 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. Repeat the above sampling procedure one more time.
7. Read concentration at the interface of the stained-to-unstained reagent.
8. If the stain dose not attain to the first calibration mark, take two more pump strokes and correct the tube reading by 1/2. If the tube exceeded the highest calibration mark after 2 pump strokes, prepare fresh tube. Take 1 pump stroke and multiply the correction factor of 3.
9. If atmospheric correction is needed, refer to the "Corrections for Temperature, pump stroke and Pressure respectively".

INTERFERENCES :

Substance	Concentration	Interference	Change color by itself
Hydrogen chloride,		No effect	No discoloration
Hydrogen cyanide		No effect	No discoloration
Nitrils (≥C3)		Plus error	Discolor pink stain
Acetone cyanohidrin		Plus error	Discolors pink stain
Alcohols, Esters, Ketones		No effect	No discoloration
Aromatic hydrocarbons		No effect	No discoloration

DANGEROUS AND HAZARDOUS PROPERTIES :

Threshold Limit Value-Time Weighted Average by ACGIH (2000) : 2 ppm (7-8 hours)

APPLICATION FOR OTHER GASES :

Substance	Correction Factor	No. of Pump Strokes	Measuring Range
n-Butyronitrile	30	1	6 - 180 ppm
2-Methyl-3-butenitrile	2.0	2	0.4 - 12 ppm
2-Pentenenitrile	1.2	2	0.24 - 7.2 ppm
3-Pentenenitrile	2.0	2	0.4 - 12 ppm

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. A correction factor is figure which is multiplied by the concentration interpreted from the color starting on the detector tube. The correction may also be presented as a chart on tube if the correction relationship is nonlinear. Therefore, please make use of the correction factor/chart measuring ranges as a reference. Moreover, this factor may vary slightly between production batches. For a more precise factor please contact your Gastec distributor.

DISPOSAL INSTRUCTION :

Reagent of the tubes use toxic chromic acid and inorganic mercury. 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.

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