

# GASTEC Instructions for No. 11HA Nitrogen Oxides 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 results

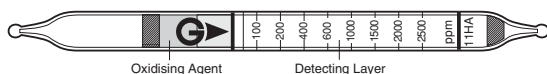
1. Use Gastec Gas Sampling Pump together with Gastec Detector Tubes only for the purposes specified in the instruction manual of the detector tube.
2. Use this tube within the temperature range of 0 - 40°C (32 - 104°F).
3. Use this tube within the relative humidity range of 20 - 90%.
4. This tube may be interfered with by the coexisting gases. Please refer to the "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 of this tube for the detection of Nitrogen Oxides 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	50 - 2,500 ppm
Number of Pump Strokes	1
Correction Factor	1
Sampling Time	1 minute per 1 pump stroke
Detecting Limit	10 ppm (n=1)
Colour Change	White → Green
Reaction Principle	$\text{NO} + \text{Cr}^{6+} + \text{H}_2\text{SO}_4 \rightarrow \text{NO}_2$ $\text{NO}_2 + (\text{C}_6\text{H}_5)_2\text{NH} \rightarrow \text{C}_6\text{H}_5\text{NHC}_6\text{H}_5\text{NO}$

**Coefficient of Variation: 10% (for 50 to 400 ppm), 5% (for 400 to 2500 ppm)**

**\*\*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 :** No correction is required.

**Humidity :** No correction is required for 20 - 90% R.H.

**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 detector tube in the tube tip breaker of the pump.
3. Insert the tube into the pump inlet with arrow  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 the handle all the way out until it locks on 1 pump stroke (100 mL). Wait 1 minute and confirm the completion of the sampling.
6. Read concentration at the interface of the stained-to-unstained reagent.
7. If atmospheric correction is needed, multiply the correction factors of pressure.

## INTERFERENCES :

Substance	Concentration	Interference	Change colour by itself to
Hydrogen chloride	≥ 500 ppm	Unclear demarcation	Bluish purple at 100 ppm
Ozone	≥ 200 ppm	Unclear demarcation (2 layers)	Brown
Sulphur dioxide, Hydrogen sulphide		No	No

## Oxidising Agent

Nitric oxide is oxidised to form nitrogen dioxide. If organic solvent of high concentration is coexisting, oxidising agent is deteriorated to produce minus error for Nitric oxide concentration.

The table of this interference gases primarily expresses the interference of each coexisting gas in the gas range, equivalent to the gas concentration. Therefore, the test result may be given positive result by the other substances not listed in the table. For more information is needed, please contact us or our distributors in your territory.

## DANGEROUS AND HAZARDOUS PROPERTIES :

TLV-TWA by ACGIH (2007) : NO<sub>2</sub>: 3 ppm & NO: 25 ppm

TLV-STEL by ACGIH (2007) : NO<sub>2</sub>: 5 ppm

## DISPOSAL INSTRUCTION :

Reagent of the tube uses toxic Chromium. When dispose of 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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