

# GASTEC Instructions for No.163TP Ethylene Oxide Detector Tube

## FOR SAFE OPERATION :

Carefully read this manual and the instruction manual of your Air Sampling Pump.

**⚠ CAUTION :** If you do not observe the following precautions, you may suffer injuries or damage the product.

1. When breaking the tube ends, keep away from eyes.
2. Do not touch the broken glass tubes, pieces or reagent with bare hand(s).

**△NOTES :** For maintaining performance and reliability of the test results, observe the following.

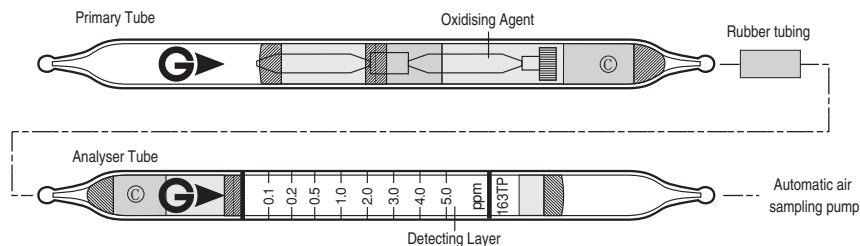
1. Recommend to use Gastec Gas Sampling device Model GSP-300FT-2 or GSP-501FT together with Gastec Detector Tubes only for the purposes specified in the instruction manual of the detector tube.
2. Use this tube within the temperature range of 0 - 40°C (32 - 104°F).
3. Use this tube within the relative humidity range of 10 - 90%.
4. This tube may be interfered with by the coexisting gases. Please refer to the table "INTERFERENCES" below.
5. Shelf life and storage condition of the tube are marked on the label of the box of tube.

## APPLICATION OF THE TUBE :

Use this tube for detecting Ethylene oxide in the air or in industrial areas and for determining the environmental atmospheric condition.

## SPECIFICATION :

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



|                    |                                                                                                                                                                                |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Measuring Range    | 0.1 - 5.0 ppm                                                                                                                                                                  |
| Sampling Rate      | 50 mL/min                                                                                                                                                                      |
| Correction Factor  | 1                                                                                                                                                                              |
| Sampling Time      | 10 minutes                                                                                                                                                                     |
| Detecting Limit    | 0.05 ppm (500 mL)                                                                                                                                                              |
| Colour Change      | Yellow → Pale orange                                                                                                                                                           |
| Reaction Principle | Ethylene oxide reacts with oxidiser to form formaldehyde. Formaldehyde reacts with hydroxylamine phosphate to liberate. Phosphoric acid to produce pale orange discolouration. |

**Coefficient of Variation : 10% (for 0.1 to 1 ppm), 5% (for 1 to 5 ppm)**

**\*\*Shelf Life : Please refer to the validity date printed on the box of tubes.**

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

## CORRECTION FOR TEMPERATURE, HUMIDITY AND PRESSURE :

**Temperature :** Correct for temperature by the table below :

| Tube Reading (ppm) | True Concentration (ppm) |            |              |             |             |             |              |             |              |
|--------------------|--------------------------|------------|--------------|-------------|-------------|-------------|--------------|-------------|--------------|
|                    | 0 °C (32°F)              | 5°C (40°F) | 10 °C (50°F) | 15°C (59°F) | 20°C (68°F) | 25°C (77°F) | 30 °C (86°F) | 35°C (94°F) | 40°C (104°F) |
| 5                  | 13.0                     | 10.0       | 8.0          | 6.4         | 5           | 4.0         | 3.2          | 2.2         | 1.4          |
| 4                  | 11.0                     | 8.4        | 6.6          | 5.2         | 4           | 3.2         | 2.4          | 1.7         | 1.1          |
| 3                  | 10.0                     | 7.0        | 5.2          | 4.2         | 3           | 2.4         | 1.8          | 1.2         | 0.9          |
| 2                  | 8.2                      | 5.4        | 4.0          | 2.8         | 2           | 1.7         | 1.2          | 0.9         | 0.7          |
| 1                  | 5.0                      | 3.3        | 1.9          | 1.3         | 1           | 0.9         | 0.7          | 0.6         | 0.5          |
| 0.5                | 2.0                      | 1.2        | 0.7          | 0.6         | 0.5         | 0.45        | 0.4          | 0.35        | 0.3          |
| 0.2                | 0.5                      | 0.3        | 0.25         | 0.22        | 0.2         | 0.2         | 0.2          | 0.15        | 0.1          |
| 0.1                | 0.25                     | 0.15       | 0.1          | 0.1         | 0.1         | 0.1         | 0.1          | 0.1         | 0.08         |

**Humidity :** No correction is required between 10 - 90% R.H.

**Pressure :** To correct for pressure, use the formula below

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

\* This value is after other correction(s), if any, are applied.

## MEASUREMENT PROCEDURE :

**If automatic air sampling pump Model GSP-300FT-2 or GSP-501FT is used**

1. Prior to operation please confirm if black colour inlet rubber tube holder is equipped with the pump.
2. Break tips off a fresh primary tube and an analyser tube with the tube tip holder supplied.
3. Connect © marked ends with rubber tubing after breaking each end.
4. Insert the analyser tube into the pump inlet with arrow (➔) on the tube pointing toward pump.
5. Set the flow metre at 50 mL/min and timer to "10 minutes" of the pump. Press the start switch of the pump to start the sampling.
6. After the sampling, remove the detector tube from the pump.
7. Read concentration level at the interface where the stained reagent meets the unstained reagent.

8. If temperature correction is necessary, obtain the true concentration by using the temperature correction table.
9. If pressure correction is necessary, use the pressure correction formula.

**INTERFERENCES :**

| Substance    | Concentration | Interference | Changes colour by itself to |
|--------------|---------------|--------------|-----------------------------|
| Formaldehyde | 0.6 ppm       | +            | Pale orange                 |
| Acetaldehyde | 2.0 ppm       | +            | Pale orange                 |
| Ketones      | 15 ppm        | +            | Pale orange                 |
| Alcohols     | 300 ppm       | –            | No discolouration           |

This table of interference gases primarily expresses the interference of each coexisting gas in the gas concentration range, that is equivalent to the gas concentration. Therefore, the test result may give a positive result from other substances not listed in the table. If more information is needed, please contact us or your Gastec representatives.

**DANGEROUS AND HAZARDOUS PROPERTIES :**

Threshold Limit Value-Time Weighted Average by ACGIH (2024) : 1 ppm

**INSTRUCTIONS ON DISPOSAL :**

The reagent of the tube does not use toxic substances. When disposing the tube regardless of whether it has been used or not, follow the rules and regulations of your local government.

**WARRANTY :**

If you have any questions regarding gas detection and quality of the tubes, please feel free to contact your Gastec representatives.

Manufacturer : Gastec Corporation  
8-8-6 Fukayanaka, Ayase-City, Kanagawa 252-1195, Japan  
<https://www.gastec.co.jp/>  
Telephone +81-467-79-3910 Facsimile +81-467-79-3979

IM01163TPE4  
Printed in Japan  
24F-Z