

GASTEC Instructions for No.113L Isopropyl Alcohol Detector Tube

FOR SAFE OPERATION :

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

⚠ 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 guarantees.

⚠ 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).
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, observe the following.

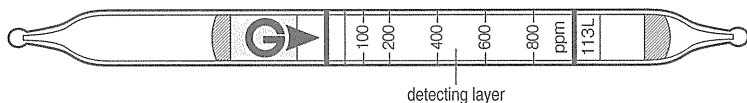
1. Use Gastec Gas Sampling Pump together with Gastec Detector Tubes only for the purposes specified in the instruction manual of the detector tube.
2. Use this tube within the temperature range of 0 – 40°C (32 - 104°F).
3. Use this tube within the relative humidity range of 20 - 90%.
4. This tube may be interfered with by the coexisting gases. Please refer to the table "INTERFERENCES" below.
5. In less than 20% humidity atmosphere tubes will indicate lower reading.
6. 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 Isopropyl Alcohol 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 | 20 – 50 ppm | (50) – 800 ppm |
| Number of Pump Strokes | 2 | 1 |
| Correction Factor | 0.4 | 1 |
| Sampling Time | 2 minutes per pump stroke | |
| Detecting Limit | 15 ppm (n=2) | |
| Colour Change | Pale vermilion → Pale blue | |
| Reaction Principle | $\text{CH}_3\text{CH}(\text{OH})\text{CH}_3 + \text{Cr}^{6+} + \text{H}_2\text{SO}_4 \rightarrow \text{Cr}^{3+}$ | |

Coefficient of Variation : 10% (for 50 to 200 ppm), 5% (for 200 to 800 ppm)

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

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

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 (41°F) | 10°C (50°F) | 15°C (59°F) | 20°C (68°F) | 25°C (77°F) | 30°C (86°F) | 35°C (95°F) | 40°C (104°F) |
| 800 | 1850 | 1500 | 1150 | 950 | 800 | 750 | 720 | 690 | 650 |
| 600 | 1200 | 1000 | 820 | 700 | 600 | 550 | 540 | 510 | 480 |
| 400 | 650 | 590 | 520 | 450 | 400 | 380 | 360 | 340 | 320 |
| 200 | 260 | 250 | 250 | 220 | 200 | 190 | 180 | 170 | 160 |
| 100 | - | - | - | 110 | 100 | 95 | 90 | 85 | 80 |
| 50 | - | - | - | - | 50 | 45 | 40 | 40 | 40 |

Humidity : No correction is required.

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

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

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

MEASUREMENT PROCEDURE :

1. For checking the leakage of the pump, insert a fresh sealed detector tube into the pump. Follow instructions provided with the pump operating manual.
2. Break tips off a fresh detector tube with the tube tip breaker of the pump.
3. Insert the tube into the pump inlet with arrow (G) on the tube pointing toward pump.
4. Make certain the pump handle is all the way in. Align the guide mark on the pump body with the guide mark on the handle.
5. Pull the handle all the way out until it locks at one pump stroke (100 mL). Wait two minutes and confirm the completion of the sampling.
6. For smaller measurements less than 50 ppm, repeat the above sampling procedure one more time until the stain reaches the first calibration mark.
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. Afterwards multiply the correction factor of pump stroke if necessary.
9. If pressure correction is necessary, use the pressure correction formula.

INTERFERENCES :

| Substance | Concentration | Interference | Changes colour by itself to |
|---------------|---------------|--------------|----------------------------------|
| Alcohols | | + | Pale blue |
| Acetone | ≤ 1200 ppm | No | No discolouration up to 1200 ppm |
| Ethyl acetate | ≤ 450 ppm | No | No discolouration up to 450 ppm |
| Toluene | ≤ 230 ppm | No | No discolouration up to 230 ppm |
| Benzene | ≤ 75 ppm | No | 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.

APPLICATION FOR OTHER SUBSTANCES :

Tube 113L can also be used for the other substances as below :

| Conversion Scale | |
|----------------------|-------------------------|
| Propyl alcohol (ppm) | 130 160 215 330 440 560 |
| Tube Reading (n=1) | 50 100 200 400 600 800 |

| Conversion Scale | |
|------------------------------|-------------------------|
| Vinyl trimethoxysilane (ppm) | 6.5 10.0 15.0 20.0 25.0 |
| Tube Reading (n=2) | 50 100 200 400 600 800 |

| Conversion Scale | |
|-----------------------------|-------------------------|
| Divinyl methoxysilane (ppm) | 6.5 10.0 15.0 20.0 25.0 |
| Tube Reading (n=2) | 50 100 200 400 600 800 |

| Conversion Scale | |
|--|----------------------------|
| Ethylene glycol monomethyl ether (ppm) | 75 190 300 420 530 650 760 |
| Tube Reading (n=2) | 200 400 600 800 |

| Conversion Scale | |
|---------------------------------------|------------------------------|
| Ethylene glycol monoethyl ether (ppm) | 110 260 410 560 700 850 1000 |
| Tube Reading (n=2) | 200 400 600 800 |

| Conversion Scale | |
|---------------------------------------|------------------|
| Ethylene glycol monobutyl ether (ppm) | 200 465 730 1000 |
| Tube Reading (n=2) | 200 400 |

| Conversion Scale | |
|--|---------------------------|
| Ethylene glycol monomethyl ether acetate (ppm) | 300 370 500 760 1030 1300 |
| Tube Reading (n=2) | 50 100 200 400 600 800 |

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 representatives.

DANGEROUS AND HAZARDOUS PROPERTIES :

Threshold Limit Value-Time Weighted Average by ACGIH (2018): 200 ppm
 Threshold Limit Value-Short Term Exposure Limit by ACGIH (2018): 400 ppm

INSTRUCTIONS ON DISPOSAL :

The reagent of the tube uses a small amount of hexavalent chromium. 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.

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IM00113LE3
 Printed in Japan
 19D1Z