

# GASTEC Instructions for No. 6LLP Pipeline Dew Point 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. Using non-Gastec parts or components in Gastec's detector tube and pump system or using a non-Gastec detector tube with a Gastec pump or using a Gastec detector tube with a non-Gastec pump may damage your detector tube and pump system, or may cause serious injuries, or death to the end-user. It will also void all warranties, and guarantees regarding performance and data accuracy.

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

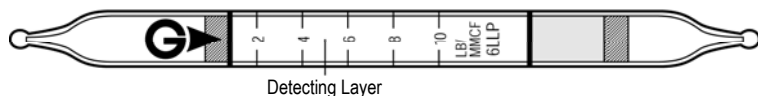
1. When breaking the tube ends, keep away from eyes.
2. Do not touch the broken glass tubes, broken pieces and reagent with bare hand(s).
3. The sampling time represents the time necessary to draw the air sample through the tube. The tube must be positioned in the desired sampling area for the entire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

### ! NOTES: For maintaining performance and reliability of the test 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. This tube may be interfered with by the coexisting gases. Please refer to the table "INTERFERENCES" below.
4. The shelf life and storage condition of the tube are marked on the label of the tube box.

**APPLICATION OF THE TUBE:** This tube is limited to measuring the humidity in a natural gas pipeline

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



|                          |   |
|--------------------------|---|
| Measuring Range          | 2 - 10 LB/MMCF  |
| Number of Pump Strokes   | 2   |
| Stroke Correction Factor | 1   |
| Sampling Time            | 1.5 minutes per pump stroke   |
| Detecting Limit          | 2 LB/MMCF (n = 2)   |
| Colour Change            | Yellow → Green  |
| Reaction Principle       | $\text{H}_2\text{O} + \text{Mg}(\text{ClO}_4)_2 \rightarrow \text{Mg}(\text{ClO}_4)_2 \cdot \text{H}_2\text{O}$ |

**\*\*LB/MMCF stands for pound per million cubic feet. 1 mg/L corresponds to 62.3 LB/MMCF:**

**Coefficient of Variation: 10% (for 2 to 4 LB/MMCF), 5 % (for 4 to 10 LB/MMCF)**

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

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

## CORRECTION FOR TEMPERATURE, HUMIDITY AND PRESSURE:

**Temperature:** Since temperatures affect the tube, multiply the correction factor by the tube reading.

|                    |                |        |        |        |         |
|--------------------|----------------|--------|--------|--------|---------|
| Temperature°C (°F) | 0(32) - 20(68) | 25(77) | 30(86) | 35(95) | 40(104) |
| Correction Factor  | 1.0            | 0.98   | 0.95   | 0.93   | 0.9     |


**Humidity:** No correction is required.

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

$$\frac{\text{Tube Reading (LB/MMCF)} \times 1013 \text{ (hPa)}}{\text{Atmospheric Pressure (hPa)}}$$

## MEASUREMENT PROCEDURE:

### ! CAUTION: Since Tube 6LLP is highly sensitive to ambient humidity, you must be very careful when operating the tube.

- ① Do not leave the tube exposed to air more than 10 seconds after breaking off the tips.
  - ② Immediately place the tube into the sampling site. If some stains are observed prior to sampling, the tube must be discarded and replaced by a new one.
1. To check the pump for leakage, insert a fresh, sealed detector tube into the pump. Follow the instructions provided with the pump operating manual.
  2. The Gastec Detector Tube No. 6LLP is highly sensitive to ambient humidity. Be very careful when breaking off the tips for sampling.
  3. Break off the tip at the top end of a fresh detector tube using the tube tip breaker in the pump.
  4. Insert the tube immediately into the pump inlet with the arrow (  ) on the tube pointing toward the pump. Then, immediately break off the bottom end tip and position the tube and pump toward the sampling site. Please note that once the tube is stained around the zero mark, the tube cannot be used for detecting the Pipe Line Dew Point.
  5. Pull the handle all the way out until it locks at the one pump stroke (100mL). Wait 1.5 minutes. Repeat the above sampling procedure one more time.
  6. Immediately after the sampling, read the concentration at the interface of the stained-to-unstained reagent.
  7. If necessary, multiply the readings by the correction factors of the temperature and atmospheric pressure respectively.

## INTERFERENCES:

| Substance                           | Concentration | Interference | Interference gas only |
|-------------------------------------|---------------|--------------|-----------------------|
| Sulphur dioxide                     | ≦ 15 ppm      | No           | No discolouration     |
| Nitrogen dioxide, Hydrogen sulphide | ≦ 30 ppm      | No           | No discolouration     |
| Hydrogen cyanide                    | ≦ 40 ppm      | No           | No discolouration     |
| Methyl ethyl ketone                 | ≦ 70 ppm      | No           | No discolouration     |
| Ethyl acetate                       | ≦ 100 ppm     | No           | No discolouration     |
| Acrylonitrile                       | ≦ 40 ppm      | No           | No discolouration     |
| Acetaldehyde                        | ≦ 50 ppm      | No           | No discolouration     |
| Methanol                            | ≦ 50 ppm      | +            | Green                 |
| Triethylene glycol                  |               | No           | No discoloration      |

This table of interference gases primarily expresses the interference of each coexisting gas in the concentration range, that is equivalent to the gas concentration. Therefore, the test result may show positive results due to other substances not listed in the table. If more information is needed, please contact us or our distributors in your territory.

**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 the quality of the tubes, please feel free to contact your Gastec representatives.

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