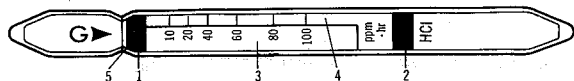


# #14D GASTEC PASSIVE DOSIMETER TUBE FOR HYDROGEN CHLORIDE

The Gastec Passive Dosimeter Tube No. 14D provides the measurement of mean value of HYDROGEN CHLORIDE in air by the principle of diffusion sampling. No air sampling equipment such as aspiration pump, motor driven air sampler is needed for the measurement. The Calibration marks printed on each tube indicates PPM × Hour and averaged concentration can be available by dividing the sampling time measured.

## PERFORMANCE :



- 1 & 2 Upper and Lower End Plug Packing  
3 Diffuser  
4 Analyzing Reagent  
5 Score

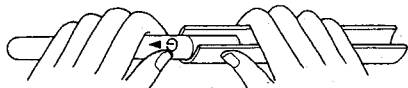
|                   |                 |               |            |            |
|-------------------|-----------------|---------------|------------|------------|
| Calibration Scale | 10—100 ppm·hour |               |            |            |
| Color Change      | Yellow—Purple   |               |            |            |
| Measuring Range   | 1—10 ppm        | 1.25—12.5 ppm | 2.5—25 ppm | 10—100 ppm |
| Sampling Hours    | 10              | 8             | 4          | 1          |

\*Minimum detectable concentration

## SHELF LIFE:

Please refer to the term of validity on a Tube Box Label.

## OPERATING PROCEDURE :



1. Prepare Passive Dosimeter Tube and Dosi-Tube holder No. 710.
2. Record the measurement starting time on the peel off numbering label in each box of the tube and put the label on the tube.
3. Break the tube at the score of the tube with Gastec Passive Dosi-Tube Holder. Insert a part of the tube in the tube holder where the tube can be broken at the score and break the tube carefully. Remove the broken part of the tube and discard it carefully from the tube holder.
4. Insert the analyzing tube end into the tube holder. For personal sampling, put the dosi-tube holder to the shirt collar of the personnel or workplace where the measurement is required.
5. To protect the tube holder of shirt collar from dropping during operation, support the tube holder with string through a small hole of the tube holder.
6. Measurement concentration can be obtained from an hour sampling. 4—10 hours sampling time is recommended.
7. When the sampling is finished, record the time of the label of the tube and calculate the actual sampling time.
8. The averaged gas concentration can be obtained by the following formula:

$$\text{Average Concentration (ppm)} = \frac{\text{Dosi-Tube Reading (ppm·hours)}}{\text{Actual Sampling Time}}$$

## CORRECTION FOR TEMPERATURE, HUMIDITY AND PRESSURE :

Calibration of the Gastec Passive Dosimeter Tube No. 14D is based on a tube temperature of 20°C (68°F) and approximately 50% relative humidity and normal atmospheric pressure.

To correct for temperature of 0—40°C (32—104°F) and relative humidity range of 30—80%, apply the following correction table:

Temperature and Humidity Correction Table

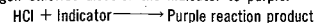
|                   |      |      |      |      |       |
|-------------------|------|------|------|------|-------|
| Temperature       | 0°C  | 10°C | 20°C | 30°C | 40°C  |
| Relative Humidity | 32°F | 50°F | 68°F | 86°F | 104°F |
| 30%               | 0.7  | 0.6  | 0.5  | 0.45 | 0.45  |
| 40%               | 0.9  | 0.8  | 0.7  | 0.65 | 0.6   |
| 50%               | 1.2  | 1.1  | 1.0  | 0.9  | 0.8   |
| 60%               | 1.6  | 1.5  | 1.3  | 1.2  | 1.1   |
| 70%               | 1.9  | 1.8  | 1.7  | 1.6  | 1.4   |
| 80%               | 2.4  | 2.3  | 2.2  | 2.0  | 1.7   |

## CALIBRATION AND ACCURACY :

The Gastec Passive Dosimeter Tube No. 14D is carefully calibrated as an integral part of the manufacturing process. Calibration and accuracy test are performed using combinations of dynamic diffusion tube method and gas chromatographic technique.

## DETECTION PRINCIPLE :

Hydrogen Chloride discolor the indicator to purple.



## INTERFERENCES :

| Interferent       | Concentration    | Result     | Comment                                 |
|-------------------|------------------|------------|---|
| Hydrogen fluoride | 1:1 conc. of HCl | Plus error | Produce similar stain by itself         |
| Nitric Acid       | 1/5 conc. of HCl | Plus error | Produce similar stain by itself         |
| Chlorine          | 1/5 conc. of HCl | Plus error | Bleach the reagent to discolor to white |

## APPLICATION FOR OTHER SUBSTANCES :

Gastec passive-dosi-tube No. 14D can also be used for measuring following substances in air. Obtain true concentration from the table below:

| Name of substance | Correction Factor | Measuring Range |
|-------------------|-------------------|-----------------|
| Hydrogen fluoride | 2.5               | 2.5—250 ppm     |
| Nitric acid       | 0.8               | 0.8—80 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 a 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.

## DANGEROUS AND HAZARDOUS PROPERTIES :

Threshold Limit Value-Time Weighted Average by ACGIH (1997) : 5 ppm (7—8 hours)

STORE THE TUBES AT DARK AND COOL PLACE.