

# GASTEC No.27

## Instructions for Polytec IV Qualitative Analysis Test 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.

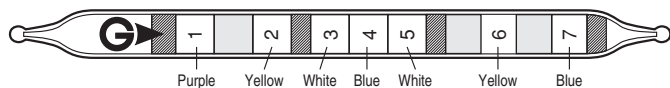
1. Use Gastec Gas Sampling Pump together with Gastec Detector Tubes only for the purposes specified in the instruction manual of the detector tube.
2. Use this tube within the temperature range of 0 - 40°C (32 - 104°F).
3. Use this tube within the relative humidity range of 0 - 90%.
4. Use this tube within the atmospheric pressure range of 911.7hPa – 1114.3hPa.
5. The sensitivity of reaction layer 2 is affected by humidity conditions. For example, if humidity is lower than RH50% this layer discolours at the concentration lower than specified in the table 1. And if humidity is higher than RH50% this layer discolours at the concentration higher than specified in the table 1.
6. The shelf life and storage condition of the tube are marked on the label of the tube box.

### APPLICATION OF THE TUBE :

Use this tube for the Qualitative Analysis for Unknown Gases 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	Qualitative
Number of Pump Stroke	1
Sampling Time	30 sec. per pump stroke
Colour Change	Refer to Table 1
Reaction Principle	<ol style="list-style-type: none"> <li>1 Neutralising reaction</li> <li>2 Reaction with indicator</li> <li>3 Reaction with copper sulphate</li> <li>4 Reaction with barium chloride and indicator.</li> <li>5 Reaction with o-tolidine</li> <li>6 Reduction reaction</li> <li>7 Neutralising reaction</li> </ol>

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

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

### MEASUREMENT PROCEDURE :

1. For checking the leakage of the pump, insert a freshly sealed detector tube into pump. Follow instructions provided with the pump operating manual.
2. Break tips off a fresh detector tube with the tube tip breaker in the pump.
3. Insert the tube into the pump inlet with arrow on the tube pointing toward the pump.
4. Make certain the pump handle is all the way in. Align the guide marks on the pump body with the guide marks on the handle.
5. Pull the handle all the way out until it locks at one pump stroke (100 mL). Wait 30 seconds and confirm the completion of the sampling.
6. After the sampling, the colour stain indicates the existence of the substance(s) shown in the table below.

**Table 1 Colour Change of Each Layer**

Substance	Conc. (ppm)	Colour Change						
		1 (Purple)	2 (Yellow)	3 (White)	4 (Blue)	5 (White)	6 (Yellow)	7 (Blue)
Ammonia	≥25 ≥150	Yellow (inlet) Yellow (WL)	—	—	—	—	—	—
Diethylamine	≥25 ≥150	Yellow (Inlet) Yellow (WL)	—	—	—	—	—	—
Hydrogen Chloride	≥5 ≥150	—	Red(Inlet) Red(WL)	—	—	—	—	—
Hydrogen Sulphide	≥10 ≥120 ≥200 ≥800	—	—	Brown (Inlet) Brown (WL) Brown (WL) Brown (WL)	—	—	BB(Inlet) BB (WL)	—
Chlorine	≥5 ≥20 ≥50	—	—	—	Yellow (Inlet) Yellow (WL) Yellow (WL)	Yellow (Inlet) Yellow (WL)	—	—
Sulphur Dioxide	≥10 ≥50	—	—	—	Yellow (Inlet) Yellow (WL)	—	—	—
Nitrogen Dioxide	≥5 ≥30	—	—	—	Purple (WL) Purple (WL)	YO (Inlet) YO (WL)	—	—
Carbon Monoxide	≥25 ≥100	—	—	—	—	—	BB (Inlet) BB (WL)	—
Hydrogen	≥50000 ≥100000	—	—	—	—	—	Gray(WL) BB (WL)	—
Phosphine	≥50 ≥700	—	—	—	—	—	BB (Inlet) BB (WL)	—
Acetylene	≥200 ≥2000	—	—	—	—	—	BB (Inlet) BB (WL)	—
Ethylene	≥10000	—	—	—	—	—	BB (Inlet)	—
Propylene	≥10000 ≥50000	—	—	—	—	—	Gray((Inlet) Gray (WL)	—
Methyl Mercaptan	≥200 ≥1000	—	—	—	—	—	YO (Inlet) YO (WL)	—
Carbon Dioxide	≥5000 ≥20000	—	—	—	—	—	—	Brown (Inlet) Brown (WL)

Note: WL: Whole layer; BB: Blackish brown; YO: Yellowish orange;

(1) Amines stain layer 1 similarly to Ammonia.

(2) Olefins stain layer 6 similarly to Carbon Monoxide.

(3) (Inlet) means the approximate gas concentration discolour the inlet of the layer.

(4) (Whole layer) means the approximate gas concentration discolour the reagent of the layer.

**INSTRUCTIONS ON DISPOSAL :**

The reagent of the tube does not use toxic substance. 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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