

51H

GASTEC

**FLUOROCHLOROCARBONS HIGH RANGE DETECTOR TUBE
CALIBRATED FOR TRICHLOROFLUOROETHANE R-113**

The Gastec Detector Tube No. 51H provides a rapid, fully quantitative analysis of the concentration of TRICHLOROTRIFLUOROETHANE in air with an accuracy tolerance of $\pm 25\%$ utilizing the Gastec Multi-Stroke Gas Sampling Pump in conjunction with Model 840 Gastec Pyrotec Pyrolyzer.

PERFORMANCE:

Calibration Scale	250—2,000 ppm (based on 1 pump stroke)	
Measuring Range	250—2,000 ppm	2,000—6,000 ppm
Number of Pump Strokes	1	1/2
Correction Factor	Tube Reading \times 1	Tube Reading \times 3
Detecting Limit*	50 ppm	—
Sampling Time	1.5 minutes per pump stroke	
Color Change	White—Red	
Shelf Life	2 years	

* Minimum detectable concentration

MEASUREMENT PROCEDURE:

The Gastec Fluorochlorocarbons Detector tube No. 51H is used with Gastec Pyrotec Pyrolyzer that pyrolyzes halogenated hydrocarbons and measure the decomposed substances by the detector tube.

- Remove the inlet clamping nut from the Model 800 Gastec Gas Sampling Pump. Set the Pyrotec Pyrolyzer to the Sampling Pump.
- Push the power switch of the Pyrotec Pyrolyzer on and confirm that the battery of the Pyrotec Pyrolyzer is sufficient for use.
If the pilot lamp of the power switch does not light, replacement of the batteries is needed.
- Break tips off a fresh primary and analyzer tube by bending each tube end in the tube tip breaker of pump.
- Connect the primary tube securely into the rubber inlet of the Pyrotec Pyrolyzer with the arrow on the tube pointing toward the Pyrotec body. Also connect the analyzer tube to the rubber inlet of the sampling pump positioned on the center of Pyrotec Pyrolyzer with the arrow on the tube pointing toward the pump.
- Assemble for Teflon U-Tube with plastic hexagon screw and analyzer tube.
- Make certain the pump handle is all the way in. Align the guide marks on handle and pump body.
- Pull the handle all the way out until it locks on 1 pump stroke (100 ml).
Wait 1.5 minutes until staining stops.
- Read concentration at the interface of the stained-to-unstained reagent.
- If the stain exceeds the highest calibration mark (2,000 ppm) with 1 pump stroke, use 1/2 pump stroke (50 ml). Obtain true concentration by multiplying the tube reading by 3.
- After sampling, put the power switch of the Pyrotec Pyrolyzer off. To remove the remaining gas in the Pyrolyzer, connect used tubes with it and take 4 pump strokes in the fresh air.

APPLTICION FOR OTHER FLUOROCHLOROCARBONS & GASES :

Name of Gases	Chemical Formula	Factor n=1	Measuring Range
R-11 Trichloromonofluoromethane	CCl ₃ F	1.1	275—2,200 ppm
R-12 Dichlorodifluoromethane	CCl ₂ F ₂	1.3	325—2,600 ppm
R-22 Monochlorodifluoromethane	CHClF ₂	4.0	1,000—8,000 ppm
R-112 Tetrachlorodifluoroethane	CCl ₂ FCCl ₂ F	0.5	125—1,000 ppm
R-113 1,1,2-Trichloro-1,2,2-trifluoroethane	CClF ₂ -CCl ₃ F	1.0	250—2,000 ppm
R-113b 1,1,1-Trichloro-2,2,2-trifluoroethane	CCl ₃ -CF ₃	0.8	200—1,600 ppm
R-114 Dichlorotetrafluoroethane	CClF ₂ -CClF ₂	1.9	475—3,800 ppm
Halothane 2-Bromo-2-Chloro-1,1,1-trifluoroethane	C ₂ HBrClF ₃	1.9	475—3,800 ppm

※ Halothane gives Green discoloration on Tube 51H.

CORRECTION FOR TEMPERATURE, HUMIDITY AND PRESSURE:

Calibration of the Gastec detector tube No. 51H is based on a tube temperature of 20°C (68°F) and not the temperature of the gas being sampled, approximately 50 % relative humidity and normal atmospheric pressure.

No correction is required for tube temperature of 0—40°C (32—104°F) and for relative humidity range of 0—100%. To correct for pressure, multiply by

760

Atmospheric Pressure (mmHg)

CALIBRATION AND ACCURACY:

The Gastec detector tube No. 51H is carefully calibrated as an integral part of the manufacturing process. Calibration and accuracy test are performed using combinations of standard reference gas of known concentration and dynamic gas flow system and gas chromatographic technique.

DETECTION PRINCIPLE:

Fluorochlorocarbons are pyrolyzed by the Pyrotec Pyrolyzer to produce halogenated gas. Generated halogenated gas reacts with o-toluidine and produce reddish holoquinone.

**INTERFERENCES:**

Other halogenated hydrocarbons produce similar stain by themselves.

DANGEROUS AND HAZARDOUS PROPERTIES:

Threshold Limit Value-Time Weighted Average by ACGIH (1988): 1,000 ppm (7—8 hours)

SEE OPERATING INSTRUCTIONS INCLUDED WITH THE GASTEC MULTI-STROKE GAS SAMPLING PUMP.

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