

ETHYL ETHER DETECTOR TUBE

The Gastec Detector Tube No. 161 provides a rapid, fully quantitative analysis of the concentration of ETHYL ETHER in air with a minimum accuracy of $\pm 25\%$ utilizing the Gastec Multi-Stroke Gas Sampling Pump.

PERFORMANCE :

Calibration Scale	0.04—1.0% (based on 1 pump stroke)
Measuring Range	0.04—1.0%
Number of Pump Stroke	1
Correction Factor	1
Detecting Limit*	0.001%
Sampling Time	2 minutes per pump stroke
Color Change	Orange—Dark Green

* Minimum detectable concentration.

SHELF LIFE :

Please refer to the term of validity of a label of a Detector Tube Box.

MEASUREMENT PROCEDURE :

- Break tips off a fresh detector tube by bending each tube end in the tube tip breaker of the pump.
- Insert the tube securely into the rubber inlet of the pump with the arrow on the tube pointing toward the pump.
- 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 until staining stops.
- Read concentration at the interface of the stained-to-unstained reagent.
- To unlock the pump, turn the handle 1/4 turn in either direction.

CORRECTION FOR TEMPERATURE, HUMIDITY AND PRESSURE :

Calibration of the Gastec detector tube No. 161 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. For tube temperatures other than 20°C, tube reading must be corrected according to the Temperature Correction Factor below. No humidity correction is required. Moisture in the sample is controlled in the prelayer. Tube reading is proportional to absolute pressure.

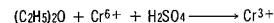
Temperature Correction Factor 161

Temperature	0°C (32°F)	10°C (50°F)	20°C (68°F)	30°C (86°F)	40°C (104°F)
Correction Factor	1.25	1.1	1.0	0.9	0.8

CALIBRATION AND ACCURACY :

The Gastec detector tube No. 161 is carefully calibrated as an integral part of the manufacturing process. Calibration and accuracy test are performed using vapor pressure method and dynamic gas flow system, and gas chromatographic technique.

DETECTION PRINCIPLE :



INTERFERENCES :

Substance	Concentration	Interference	Changes color by itself to
Acetylene	≥ 3000 ppm	+	Dark green (whole layer)
Propane	≥ 2000 ppm	+	
Aromatic hydrocarbons	≥ 500 ppm	+	Dark green
Alcohols, Esters, Ketones		+	
Hydrogen sulfide	≥ 500 ppm	+	Green
Sulfur dioxide	≥ 500 ppm	+	

Water vapor is trapped in the pretreatment (pale brown) layer.

DANGEROUS AND HAZARDOUS PROPERTIES :

Threshold Limit Value-Time Weighted Average (TLV-TWA) by American Conference of Governmental Industrial Hygienists (1996) : 400 ppm (7—8 hours)

Threshold Limit Value-Short Term Exposure Limit (TLV-STEL) by American Conference of Governmental Industrial Hygienists (1996) : 500 ppm (15 minutes)

Flammable Limit : 1.9—48%,

APPLICATION FOR OTHER GASES :

Substance	Correction	No. of pump strokes	Measuring range
Isopropyl ether	Factor : 0.45	2	0.018 to 0.45 %
Methyl ether	Factor : 0.85	1	0.03 to 0.85 %
Tetrahydrofuran	Factor : 1.4	1	0.056 to 1.4 %
Toluene	by scale	1	0.02 to 0.8 %

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.

Toluene High Range $C_6H_5CH_3$ % (1 pump stroke)

Tube Reading (Ethyl Ether %)	0°C (32°F)	10°C (50°F)	20°C (68°F)	30°C (86°F)	40°C (104°F)
1.0	1.4	1.0	0.85	0.7	0.55
0.8	0.85	0.7	0.6	0.5	0.4
0.6	0.55	0.44	0.4	0.35	0.3
0.4	0.3	0.26	0.22	0.2	0.16
0.2	0.13	0.11	0.1	0.09	0.08
0.1	0.07	0.05	0.05	0.05	0.04
0.04	0.03	0.02	0.02	0.02	0.015

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