

# 133M

GASTEC

**TETRACHLOROETHYLENE (PERCHLOROETHYLENE)  
MIDDLE RANGE DETECTOR TUBE**

The Gastec Detector Tube No. 133M provides a rapid, fully quantitative analysis of the concentration of TETRACHLOROETHYLENE (PERCHLOROETHYLENE) in air with an accuracy tolerance of  $\pm 25\%$  at 1, 2 and 5 times TLV and  $\pm 35\%$  at 1/2 TLV-TWA utilizing the Gastec Multi-Stroke Gas Sampling Pump.

**PERFORMANCE :**

Calibration Scale	5—100 ppm (based on 1 pump stroke)		
Measuring Range	2—5 ppm	5—100 ppm	100—250 ppm
Number of Pump Strokes	2	1	1/2
Correction Factor	0.4	1	2.5
Detecting Limit*	0.4 ppm	—	—
Sampling Time	1 minute per pump stroke		
Color Change	Yellow—Purple		

\* Minimum detectable concentration.

**SHELF LIFE :**

Please refer to the terms 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 1 minute until staining stops.
- Read concentration at the interface of the stained-to-unstained reagent.
- If the stain exceeds the highest calibration mark by 1 pump stroke sampling, use 1/2 stroke sampling (50 ml) in which case the true concentration is obtained by multiplying the tube reading by 2.5.
- If the stain does not attain the first calibration mark, repeat one more pump stroke and divide the tube reading by 2.5.

**CORRECTION FOR TEMPERATURE, HUMIDITY AND PRESSURE :**

Calibration of the Gastec detector tube No. 133M 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 temperature other than 20°C (68°F), tube reading must be corrected according to the following Temperature Correction Table :

**Temperature Correction Table**

Tube Reading (ppm)	True Concentration (ppm)				
	0°C (32°F)	10°C (50°F)	20°C (68°F)	40°C (104°F)	40°C (104°F)
100	410	155	100	80	65
80	310	125	80	65	50
60	210	95	60	50	40
40	130	60	40	35	25
20	55	30	20	17	15
10	20	13	10	8	7
5	8	6	5	4	3

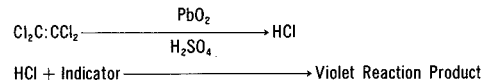
2. No correction is required for relative humidity range of 0—90%.

3. Tube reading is proportional to absolute pressure. To correct for pressure, multiply by

$$\frac{760}{\text{Atmospheric Pressure (mmHg)}}$$

**DETECTION PRINCIPLE :**

Perchloroethylene is decomposed by nascent oxygen generated by oxidizing agent to liberate hydrogen chloride, which discolors Hammett indicator (4-phenylazodiphenylamine) to purple.

**INTERFERENCES :**

Substance	Concentration	Interference	Changes color by itself to
Bromine, Chlorine		+	} Purple
Hydrogen chloride		+	
Unsaturated halogenated hydrocarbons		+	
Aromatic hydrocarbons	$\geq 100$ ppm	—	} No
Acetone	$\geq 200$ ppm	No	
Nitrogen oxides		No	

**DANGEROUS AND HAZARDOUS PROPERTIES :**

Threshold Limit Value-Time Weighted Average by ACGIH (1998) : 25 ppm

Threshold Limit Value-Short Term Exposure Limit by ACGIH (1998) : 100 ppm

**TUBES MUST BE STORED BELOW 10°C (50°F).**

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

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