

Gastec Dosimeter Tubes



Nextteq's Complete Line of Gas Detection Products (Over 600 Applications)

Products include:

**Compressed Gas Monitoring*
Dosimeter Badges**

> Gastec Dosimeter Tubes

Gastec Pump & Tube Systems

**Piston Sampling Pumps &
Detector Tubes**

Polytec Tubes

Field Soil Test Kit

Pyrolyzer System & Tubes

**Continuous Sampling Pump
& Tubes**

Injection Kits & Tubes

Gastec Dosimeter Tubes

Simple, Pre-Calibrated, Direct-Read TWA Monitoring of Airborne Contaminants

Gastec Dosimeter Tubes provide users with a simple way to perform TWA monitoring of airborne contaminants. With Gastec's unique two-layer construction you have a length-of-stain indication proportionate to the amount of gas contaminant present, ending with a distinct line of demarcation. The line of demarcation is read against a pre-calibrated measurement scale which is as easy to read as a thermometer and provides exposure levels in parts per million (PPM) hours.

To perform a sample, simply snap off the scored end of the dosimeter tube and insert it into the tube holder. For a TWA reading, wait until the end of the exposure period, then read the value on the scale that corresponds to the end of the stain length. Dividing this reading by the total length of time that the tube was exposed (expressed in hours) yields the average concentrations of the target contaminant for the period sampled.

Gastec Dosimeter Tubes are always ready to use and operate by direct diffusion exposure, so no cumbersome sampling pumps are needed. With no user calibration, extra equipment, laboratory analysis, lengthy calculations or extensive training required, Gastec Dosimeter Tubes reduce administrative and maintenance time and the possibility of user error.

* Uses Gastec Tubes

Versatile and Economical Sampling System

Gastec Dosimeter Tubes provide an inexpensive way to assess average gas concentrations. With the Gastec system, there is no need to make multiple worksite visits to change the sampling media. Gastec Dosimeter Tubes decrease your costs and risk of error by allowing you to accurately make repeated TWA measurements with the same dosimeter tube.

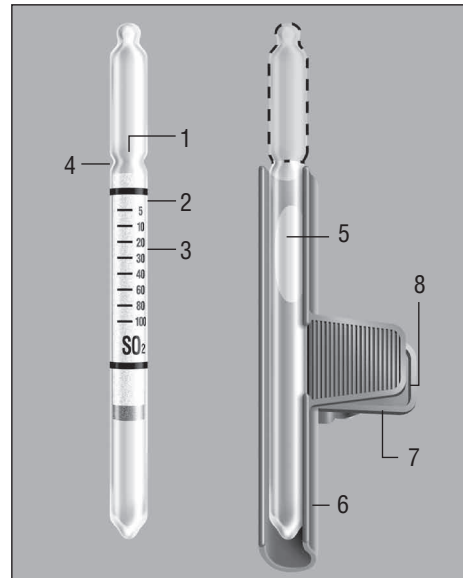
Variety of Measuring Ranges Provides Greater Flexibility

Gastec provides users with three times more applications than competitive dosimeter tube systems. More applications with a variety of measuring ranges means Gastec tubes can cover all of your detection needs.

Accurate and Reliable Personnel and Area Monitoring

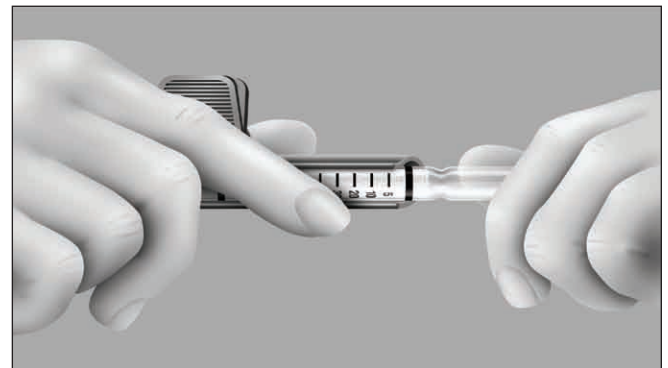
Gastec Dosimeter Tubes are labeled with the application name and part number to provide easy selection and traceability. For guaranteed accuracy and reliability, Gastec calibration scales for dosimeter tubes are printed on each tube for each individual production lot. You avoid problems associated with accuracy or quality that are found with competitive systems that use a common calibration scale for different production lots.

With no ambiguous color comparison charts or wheels, users don't have to worry about errors resulting from inaccurate color matching. New tubes can be issued to each employee at the start of each shift with readings taken at the end of the shift to record an individual's daily exposure, contributing to a comprehensive worker's exposure history. Gastec Dosimeter Tubes are highly sensitive and selective to the targeted chemicals, as opposed to other non-specific testing methods. Dosimeter tubes can monitor TWA gas concentrations in a specific location or they can be worn on lapel clips to monitor an employee's exposure to potentially harmful gases over the course of the workday.



^ **Figure 1**

1. Diffusion Path
2. Indicating Layer
3. Calibration Marks
4. Easy Break End
5. Access Hole for Tube Removal
6. Tube Holder
7. Clip
8. String Attachment for Extra Precaution



^ **Figure 2**

To break the tube, the holder (with the tube inside) should be directed away from the body (e.g. toward the floor).

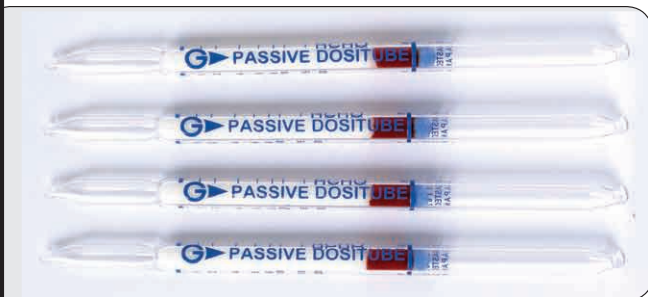




Figure 3

Note the end of the color change and record your reading. Then, simply divide by the number of hours for the TWA (PPM hours/hours worked).



Longer, More Flexible Sampling Periods

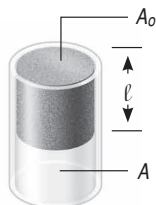
Gastec's unique passive diffusion process provides users with flexible sampling periods ranging from a half-hour to 48 hours, allowing very short exposures for capturing peak events and long exposures for accurate low concentration air quality measurements. The indication can be read and recorded at any time: during the work shift, at the end of the work shift, at the end of an overtime shift, or for some tubes as late as 48 hours after activation.

Comfortable, Easy-to-Wear and Safe Tube Holder (No. 710)

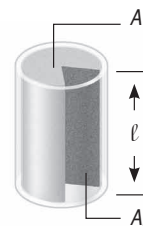
Gastec Dosimeter Tubes are rugged, precision instruments about the size of a fountain pen, which snap securely into the lightweight tube holder. The tube holder is clipped easily to workers' clothing for true breathing zone measurements without the need for sampling pumps. The convenient and reusable tube holder allows for safe tube end removal and secure sampling. Manufactured with a corrosion-resistant, high-impact plastic, this durable and rugged tube holder is designed to withstand the rigors of harsh workplace environments and is available in packs of 1, 3 or 10.

Why our System is Better:

Conventional diffusion tubes have a diffusional cross section area (A) equal to the analyzer cross section area (A_0).



With Gastec's dual layer design, the diffusional cross section area A is much larger than A_0 .



The length of the stain is determined by the equation $l^2 = K \cdot \frac{A}{A_0} \cdot C \cdot T$.

Where: l = Length of stain
 K = Tube reactivity constant
 A = Diffusional cross section area

A_0 = Analyzer cross section area
 C = Concentration
 T = time

With conventional tubes, the ratio of A/A_0 equals one. With Gastec tubes, the ratio of A/A_0 is greater than one. With all other conditions constant, the l value will be larger for the Gastec tube, providing a longer stain per unit of concentration. Therefore, the Gastec tube has greater sensitivity and cleaner lines of demarcation.

Gastec Dosimeter Tubes

Gas or Vapor to be Measured	Chemical Formula	2004 TLV-TWA (ACGIH)	Tube No.	Gastec Tube Name	Measuring Range(ppm)	Shelf Life (year)	Note
Acetaldehyde	CH3CHO	C 25	91D	Formaldehyde	0.1-20	1*	
			151D	Acetone	4-1200	2*	T
			152D	Methyl ethyl ketone	1.2-360	2*	T
Acetic acid	CH3CO2H	10	81D	Acetic acid	0.5-100	2	T
Acetic anhydride	(CH3CO)2O	5	81D	Acetic acid	0.45-90	2	T
Acetone	(CH3)2CO	500	151D	Acetone	5-1500	2*	T
			152D	Methyl ethyl ketone	1.4-420	2*	T
Acetylene dichloride	C1CH:CHCl	200	See 1,2-Dichloroethylene				
Ammonia	NH3	25	3D	Ammonia	2.5-1000	2	T
			3DL	Ammonia	0.1-10	2	T
Benzene	C6H6	0.5	122DL	Toluene	2.4-600	2	
1,3-Butadiene	CH2:CHCH:CH2	2	174D	1,3-Butadiene	1.3-200	2	
1,3-Butadiene, 2-methyl-	CH2:CCH3CH:CH2	N/A	See Isoprene				
2-Butanone	CH3COCH2CH3	N/A	See Methyl ethyl ketone				
Carbon dioxide	CO2	5000	2D	Carbon dioxide	0.02-12%	2	T
Carbon monoxide	CO	25	1D	Carbon monoxide	1.04-2000	2	
			1DL	Carbon monoxide	0.4-400	2*	
Chlorine	Cl2	0.5	8D	Chlorine	0.08-100	2	
			132D	Trichloroethylene	2.4-240	1*	T
Cumene	C6H5CH(CH3)2	50	122DL	Toluene	3.4-850	2	
			174D	1,3-Butadiene	3.9-600	2	T
trans-1,2-Dichloroethylene	C1CH:CHCl	200	132D	Trichloroethylene	6-600	1*	T
			174D	1,3-Butadiene	5-800	2	T
cis-1,2-Dichloroethylene	C1CH:CHCl	200	174D	1,3-Butadiene	5-800	2	T
1,1-Dichloroethylene	C12C:CH2	N/A	See Vinylidene chloride				
Dimethylamine	(CH3)2NH	5	3D	Ammonia	1.9-750	2	T
N,N-Dimethylethylamine	C2H5N(CH3)2	N/A	3D	Ammonia	4-1600	2	T
Ethanol	C2H5OH	1000	112D	Ethanol	100-25000	2	
Ethyl benzene	C6H5CH2CH3	100	122DL	Toluene	2.8-700	2	
Ethylene	(CH2)2	N/A	174D	1,3-Butadiene	1.56-240	2	T
Ethylene dichloride	Cl(CH2)2Cl	10	174D	1,3-Butadiene	3.8-600	2	T
Formaldehyde	HCHO	C 0.3	91D	Formaldehyde	0.1-20	1*	
Formic acid	HC02H	N/A	81D	Acetic acid	0.55-110	2	T
Furfural	Q(CH)3CCOH	2	91D	Formaldehyde	0.3-60	1*	
Hydrazine	N2H2	0.01	3D	Ammonia	1.6-650	2	T
Hydrogen chloride	HCl	C 2	14D	Hydrogen chloride	1-100	2	T H
			132D	Trichloroethylene	1.8-180	1*	T H
			17D	Hydrogen fluoride	0.4-40	2	T H
			14D	Hydrogen chloride	2.5-250	2	T H
Hydrogen cyanide	HCN	C 4.7	12D	Hydrogen cyanide	1-200	2	H
Hydrogen fluoride	HF	C 3	17D	Hydrogen fluoride	1-100	2	T H
			14D	Hydrogen chloride	2.5-250	2	T H
Hydrogen peroxide	H2O2	1	32D	Hydrogen peroxide	0.5-40	2	T
Hydrogen sulfide	H2S	10	4D	Hydrogen sulfide	0.2-200	2	
Isoprene	CH2:CCH3CH:CH2	N/A	174D	1,3-Butadiene	2.6-400	2	T H
Isopropyl benzene	C6H5CH(CH3)2	N/A	See Cumene				
Methylamine	CH3NH2	5	3DL	Ammonia	0.19-19	2	T
Methyl ethyl ketone (MEK)	CH3COC2H5	200	152D	Methyl ethyl ketone	2-600	2*	T
			91D	Formaldehyde	0.125-25	1*	
			151D	Acetone	6.5-1950	2*	T
			151D	Acetone	11.5-3450	2*	T
Methyl isobutyl ketone	CH3COCH2CH(CH3)2	50	152D	Methyl ethyl ketone	4-1200	2*	T
			151D	Acetone	11.5-3450	2*	T
Nitric acid	HNO3	2	14D	Hydrogen chloride	0.8-80	2	T
			17D	Hydrogen fluoride	0.32-32	2	T H
Nitrogen dioxide	NO2	3	9D	Nitrogen dioxide	0.1-30	1*	
			9DL	Nitrogen dioxide	0.01-3	1*	
Perchloroethylene	C12C:CCl2	25	See Tetrachloroethylene				
Styrene	C6H5CH:CH2	20	122DL	Toluene	26-6500	2	
Styrene	C6H5CH:CH2	20	174D	1,3-Butadiene	48-7600	2	
Sulfur dioxide	SO2	2	5DH	Sulfur dioxide	10-600	2	T
			5D	Sulfur dioxide	0.2-100	2	
Tetrachloroethylene	C12C:CCl2	25	133D	Tetrachloroethylene	3-150	1*	T
			132D	Trichloroethylene	1.5-150	1*	T
Toluene	C6H5CH3	50	122DL	Toluene	2-500	2	
Trichloroethylene	C1CH:CCl2	50	132D	Trichloroethylene	3-300	1*	T
Triethylamine	(C2H5)3N	1	3D	Ammonia	5.3-2100	2	T
Trimethylamine	(CH3)3N	5	3DL	Ammonia	0.23-23	2	T
Vinyl chloride	CH2:CHCl	1	174D	1,3-Butadiene	1.56-240	2	T
Vinylidene chloride	CH2:CCl2	5	132D	Trichloroethylene	6-600	1*	T
Xylene	C6H4(CH3)2	100	122DL	Toluene	3.4-850	2	

T: Temperature Correction H: Humidity Correction C: Ceiling Value * Store in Refrigerator Shaded: Correction Factor/Chart



For more information: NEXTTEQ LLC

8406 Benjamin Rd. • Suite J • Tampa, FL 33634 USA • Tel: 813-249-5888 • Toll-free Tel: 877-312-2333
 Fax: 813-249-0188 • Toll-free Fax: 877-312-2444 • Email: info@nextteq.com • www.nextteq.com

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