

WARRANTY EXCLUSIONS AND LIMITATION OF LIABILITY

IF THE USER DOES NOT ACCEPT THE FOLLOWING TERMS, THE USER SHOULD NOT USE THE SAFEAIR BADGES.

Seller warrants that, for the lesser of one (1) year or the shelf-life provided on the Seller's product, its packaging or its literature, its products shall conform to the description of such products as provided on the Seller's product, its packaging or its literature. THIS WARRANTY IS EXCLUSIVE, AND SELLER MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE. Seller's warranties made in connection with this sale shall not be effective if Seller has determined, in its sole discretion, that Buyer has misused the products in any manner, has failed to use the products in accordance with safe industry standards and practices, or has failed to use the products in accordance with Seller's written operating instructions, or other instructions furnished by Seller to Buyer.

Seller's sole and exclusive liability and Buyer's exclusive remedy with respect to products to Seller's satisfaction to be defective or nonconforming shall be replacement of such products without charge or refund of the purchase price, in Seller's sole discretion, upon the return of such products in accordance with Seller's instructions. All claims must be brought within one (1) year of shipment, regardless of their nature.

SELLER SHALL NOT IN ANY EVENT BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES OF ANY KIND RESULTING FROM ANY USE OR FAILURE OF THE PRODUCTS, EVEN IF SELLER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGE INCLUDING, WITHOUT LIMITATION, LIABILITY FOR LOSS OF USE, LOSS OF WORK IN PROGRESS, DOWN TIME, LOSS OF REVENUE OR PROFITS, FAILURE TO REALIZE SAVINGS, LOSS OF PRODUCTS OF BUYER OR OTHER USE OF ANY LIABILITY OF BUYER TO A THIRD PARTY ON ACCOUNT OF SUCH LOSS, OR FOR ANY LABOR OR ANY OTHER EXPENSE, DAMAGE OR LOSS OCCASIONED BY SUCH PRODUCT INCLUDING PERSONAL INJURY OR PROPERTY DAMAGE UNLESS SUCH PERSONAL INJURY OR PROPERTY DAMAGE IS CAUSED BY SELLER'S GROSS NEGLIGENCE.

Warning: Keep out of reach of children, if ingested seek medical attention immediately.



2557 Production Rd.
Virginia Beach, VA 23454
Phone: (757) 431-2260 Fax: (757) 216-6209
e-mail: customerservice@morphtec.com

©1997, Morphix Technologies®
All rights reserved
Publication Number: KM4-19A.3-0606
US Patent Number: 6,284,198



Operating Instructions For Nitrogen Dioxide Monitor (Part Number: 382013)

Technical Summary

Physical Specifications:

Dimensions	(74 ± 1 mm) x (41 ± 1 mm) x (1 mm)
Weight	1.5 g
Refrigerated shelf life	1 year
Color change	yellow to brown

Sampling Parameters:

Exposure level	1.0 ppm-hr
Minimum detectable limit (8 hours)	0.125 ppm
Maximum recommended sampling time	10 hours
Minimum recommended sampling time	15 minutes
Relative humidity range	15% - 90%
Face velocity range	10 – 150 cm/sec
Temperature range	59°F - 95°F
Light effect – UV (direct sunlight)	not recommended
Light effect – visible	no effect
Color stability	12 hours

Applications:

The SafeAir nitrogen dioxide badge may be used for personnel or area monitoring for exposure times ranging from 15 minutes to 10 hours.

Cross Interferences:

Ozone is a known interference. Concentrations of chlorine greater than 0.5 ppm cause a false positive indication. No other interferences are known.

Introduction

Nitrogen dioxide is a yellowish-brown liquid or reddish-brown gas (above 21°C or 70°F) with a pungent, acid-like odor. It is a strong irritant to the pulmonary tract. Contact with liquid state nitrogen dioxide causes severe corrosive action on the skin or eyes. Initial symptoms of inhalation may be moderate and include irritation of the eyes and throat, headache and gradual loss of strength. Severe symptoms may be delayed (possibly five hours) and include cyanosis (blue or purple skin color), increased difficulty in breathing and possible death due to pulmonary edema (abnormal fluid build up in the lungs) in untreated cases. NIOSH exposure limit for nitrogen dioxide is 1 ppm (STEL), whereas the OSHA exposure limit is 5 ppm (ceiling). ACGIH exposure limit is 3 ppm (TWA).

The most important source of nitrogen dioxide is in the combustion of gasoline, kerosene, natural gas, oil and coal. It is also produced in the manufacturing of nitric acid, nitrates and other related industries.

Principle of Operation

The SafeAir nitrogen dioxide badge is a monitoring system designed to indicate the presence of nitrogen dioxide at concentrations below the permissible exposure limit. The SafeAir nitrogen dioxide badge detects the presence of nitrogen dioxide by forming a color change in the shape of an exclamation mark inside the triangle. This indication is produced by a color-forming reaction which occurs when nitrogen dioxide reacts with a flat indicator layer.

Operating Instructions

1. Remove the pouch from the refrigerator and allow it to warm to room temperature.
2. Remove the badge from its protective pouch.
3. For personnel monitoring, attach the badge near the user's breathing zone (i.e. the collar) with the front side exposed to the surrounding atmosphere.
4. For area monitoring, attach the badge to a stand and mount in a centralized area with the front side exposed to the surrounding atmosphere.
5. The exclamation mark appears within the triangle when nitrogen dioxide is present. Please note that the exclamation mark will appear underneath the printed exposure dose (sensitivity).
6. To obtain the average concentration, divide the exposure dose (ppm-hr) by the exposure time in hours (hr).

Storage

The SafeAir nitrogen dioxide badge should be refrigerated in its sealed bag at all times.

Benefits

1. **Accurate Detection:** The SafeAir nitrogen dioxide badge is designed to react selectively with nitrogen dioxide with minimum interference from other substances.
2. **Applications:** The SafeAir badge may be used for personnel screening and for area monitoring or area mapping.
3. **Ease of Use:** The SafeAir badge is a direct-read device that gives immediate, on-site results.

Other Available Monitors

1. **SafeAir Badges:**

Ammonia	Dimethyl Amine	Ozone
Aniline	Formaldehyde	Phosgene
Aromatic Isocyanates	Hydrazine	Sulfur Dioxide
Carbon Dioxide	Hydrides	UDMH
Carbon Monoxide	Hydrogen Chloride	
Chlorine	Hydrogen Sulfide	
Chlorine/Chlorine Dioxide	Mercury	
2. **SafeAir Color Comparators:**

Arsine ¹	Hydrazine	Phosphine ¹
Carbon Dioxide	Hydrogen Chloride	TDI ⁴
Chlorine	MMH ³	UDMH
Chloroformates ²	Phosgene	
Diborane ¹	Phosgene ext. range	

If you require SafeAir monitors for a chemical hazard not listed, please contact Morphix Technologies® for a free compound consultation at (800) 808-2234.

¹ To be used with the SafeAir hydrides badges

² To be used with the SafeAir phosgene badges

³ To be used with the SafeAir hydrazine dual level badges

⁴ To be used with the SafeAir aromatic isocyanates badges