

WARRANTY EXCLUSIONS AND LIMITATION OF LIABILITY

IF THE USER DOES NOT ACCEPT THE FOLLOWING TERMS, THE USER SHOULD NOT USE THE CHROMAIR BADGES AND COLOR COMPARATORS.

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 Road
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: KM3-15A.6-0606

US Patent Number: 5,364,593



Operating Instructions For
Hydrogen Sulfide Monitor
(Part Number: 380009)

Technical Summary

Physical Specifications:

Dimensions	10.5 cm x 5.5 cm x 0.25 cm
Weight	11 g
Refrigerated shelf life	1 year
Color change	light blue to green

Sampling Parameters:

Exposure range for:	
Badge	1 - 240 ppm•hr
Badge used with color comparator	0.4 – 250 ppm•hr
Maximum recommended sampling time	2 days
Minimum recommended sampling time	15 minutes
Relative humidity range	33% - 80%
Face velocity range	10 - 150 cm/sec
Temperature range	16°C - 36°C (61°F - 97°F)
Light effect - UV (direct sunlight)	no effect
Light effect - visible	no effect

Applications:

The ChromAir hydrogen sulfide badge may be used for personnel or area monitoring for exposure times ranging from 15 minutes to 48 hours. For higher resolution, the ChromAir hydrogen sulfide badge may be used in conjunction with the ChromAir hydrogen sulfide color comparator (part number: 384002)

Specificity:

No interference is known.

Introduction

Hydrogen sulfide is a colorless gas with a strong odor resembling rotten eggs. Continuous exposure to low concentrations (15 - 20 ppm) generally causes irritation to the mucous membranes. It may also cause headaches and dizziness. High concentrations (200 - 300 ppm) can result in respiratory arrest leading to unconsciousness. Exposure for more than 30 minutes at concentrations as high as 700 ppm has been fatal. Continuous inhalation of low concentrations may cause loss of the sense of smell which makes the detection of its presence by odor ineffective. OSHA exposure limit for hydrogen sulfide is 20 ppm (TWA). NIOSH exposure limit for hydrogen sulfide is 10 ppm (TWA).

Hydrogen sulfide is a widely spread pollutant. It is emitted as a byproduct in many industries such as oil refineries, production of sulfuric acid, leather, gelatin, artificial silk and sugar. As a product of normal biodegradation of bioproducts, hydrogen sulfide is spread in waste water treatment locations.

Principle of Operation

The ChromAir passive monitor is a patented direct-read autogenic exposimeter. The device is constructed from six cells attached on one side to a flat indicator layer and on the other side to a series of different diffusive resistances. Hydrogen sulfide gas diffuses to the cells through the different diffusive resistances and reacts with the indicator layer, producing color change from light blue to green upon high exposure. The color produced on the indicator layer is a direct measure of the exposure dose. Visual color comparison is achieved by observing the formation of the green threshold color on the individual cell and reading the corresponding exposure dose.

Operating Instructions

1. Remove the pouch from refrigerator and allow it to warm to room temperature.
2. Remove the badge from its protective pouch.
3. Enter all pertinent information on the I.D. label before monitoring is started (i.e. name, location, date and start time).
4. For personnel monitoring, attach the badge near the user's breathing zone (i.e. collar) with the front side exposed to the surrounding atmosphere.
5. For area monitoring, attach the badge to a stand and mount in a centralized area with the front side exposed to the surrounding atmosphere.
6. Check the back side of the badge periodically to determine the exposure dose (ppm•hr).
7. To read the badge, locate the highest level cell with green threshold color.
8. To obtain the average concentration (ppm) in the surrounding atmosphere, divide the exposure dose (ppm•hr) by the exposure time in hours. EXAMPLE: If the sampling time is 2 hours and the badge reads 10 ppm•hr, the average concentration is determined by:

$\frac{10 \text{ ppm}\cdot\text{hr}}{2 \text{ hr}}$ Therefore the average concentration is 5 ppm.

Storage

The ChromAir hydrogen sulfide monitor should be refrigerated in its sealed bag at all times.

Benefits

1. Accurate Measurements: The ChromAir hydrogen sulfide monitor is designed to react selectively with hydrogen sulfide with no interference from other substances. The unique design of the monitor minimizes the effects of different humidities, temperatures and air velocities on the accuracy of measurements.
2. Applications: The ChromAir monitor may be used for personnel screening and for area monitoring or area mapping.
3. Ease of Use: The ChromAir monitor is a direct-read device that gives immediate, on-site results. Use of this device requires minimum training.
4. Cost Effective: The ChromAir hydrogen sulfide monitor offers the user the most inexpensive air sampling solution available.

Other Available Monitors

1. ChromAir Badges:

Acetone	Ethanol	Methanol
Ammonia	Formaldehyde	Methyl ethyl ketone
Carbon monoxide	Glutaraldehyde	Methyl isobutyl ketone
Chlorine	Mercury	Ozone
2. ChromAir Color Comparators:

Ammonia	Formaldehyde
Carbon monoxide	Mercury
Chlorine	

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