

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.

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



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Operating Instructions For
Mercury Monitor
(Part Number: 380018)

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	white to purple

Sampling Parameters:

Exposure range for:	
Badge	0.125 – 1.6 mg/m ³ •hr
Badge used with color comparator	0.12 - 3.2 mg/m ³ •hr
Maximum recommended sampling time	12 hours
Minimum recommended sampling time	15 minutes
Relative humidity range	10% - 85%
Face velocity range	5 - 150 cm/sec
Temperature range	12°C - 39°C (54°F - 102°F)
Mean coefficient of variation	±7.66
Bias at ambient conditions	5.87%
Light effect - UV (direct sunlight)	no effect
Light effect - visible	no effect

Applications:

The ChromAir mercury badge may be used for personnel or area monitoring for exposure times ranging from 15 minutes to 12 hours. For higher resolution, the ChromAir mercury badge may be used in conjunction with the ChromAir mercury color comparator (part number: 384003).

Cross Interferences:

The ChromAir mercury badge was treated in atmospheres containing at least two times the OSHA PEL for the following substances: alcohols (methanol and ethanol), aromatic hydrocarbons (benzene, toluene and xylene), halogenated hydrocarbons (chloroform, methylene chloride and carbon tetrachloride), aldehydes, oxidizers (chlorine and bromine) and carbon monoxide. These substances showed no effect on the performance of the ChromAir mercury badge. Arsine, phosphine and other hydrides cause a positive interference. No other interferences are known.

***Exposure of the back side of the badge to direct sun light may cause the sensor to darken and is therefore not recommended.**

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Introduction

Mercury is a silver-white, heavy, mobile, liquid metal with no specific odor. It is readily absorbed through the skin, the gastrointestinal tract and the respiratory tract. Chronic exposure may cause inflammation of the mouth and gums, kidney damage, muscle tremors, depression and nervousness. Mercury spills and heated mercury are particularly hazardous. OSHA and NIOSH exposure limit for mercury is 0.05 mg/m^3 (TWA).

Mercury is used in barometers, thermometers, hydrometers, pyrometers, and in mercury arc lamps producing ultraviolet rays. It is also used in pharmaceuticals, agricultural chemicals and antifouling paints.

Principle of Operation

The ChromAir passive monitor is a patented direct-read autogenic exposimeter. The device is constructed from five cells attached on one side to a flat indicator layer and on the other side to a series of different diffusive resistances. Mercury vapor diffuses to the cells through the different diffusive resistances and reacts with the indicator layer, producing color change from white to purple. 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 beige 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 ($\text{mg/m}^3 \cdot \text{hr}$).
7. To read the monitor, locate the highest level cell with beige threshold color.
8. To obtain the average concentration (mg/m^3) in the surrounding atmosphere, divide the exposure dose ($\text{mg/m}^3 \cdot \text{hr}$) by the exposure time in hours. Example: If the sampling time is 2 hours and the badge reads $0.5 \text{ mg/m}^3 \cdot \text{hr}$, the average concentration is determined by:

$$\frac{0.5 \text{ mg/m}^3 \cdot \text{hr}}{2 \text{ hr}} \quad \text{Therefore the average concentration is } 0.25 \text{ mg/m}^3.$$

Storage

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

Benefits

1. Accurate Measurements: The ChromAir mercury monitor is designed to react selectively with mercury with minimum 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 mercury 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	Hydrogen sulfide	Ozone
2. ChromAir Color Comparators:

Ammonia	Formaldehyde
Carbon monoxide	Hydrogen sulfide
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.