



Operating Instructions  
Mercury  
(Part Number: 380018)

**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 PEL (permissible exposure limit) in the general industry for mercury is 1 mg/10 m<sup>3</sup>(TWA). NIOSH REL (recommended exposure limit) for mercury is 0.05 mg/m<sup>3</sup>(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 badge is a patented direct-read colorimetric device to indicate the presence of mercury at relevant exposure doses. The badge is constructed from five cells attached on one side to a colorimetric sensor and on the other side to a series of different diffusive resistances. Mercury vapor diffuses through the different diffusive resistances and reacts with the sensor, producing color change from white to purple. The color produced on the sensor is a direct measure of the exposure dose. Observe the formation of the threshold color on the individual cell and read the corresponding exposure dose.

**Physical Specifications:**

Dimensions	10.5 cm x 5.5 cm x 0.25 cm
Weight	11 g
Shelf life (<45°F/7°C)	1 year
Color change	white to purple

**Sampling Parameters:**

Exposure range for:	
Badge	0.125 – 1.6 mg/m <sup>3</sup> •hr
Badge used with color comparator	0.12 - 3.2 mg/m <sup>3</sup> •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)
Light effect - UV (direct sunlight)	not recommended
Light effect - visible	no effect
Known Interferences:	arsine, phosphine (hydrides)

**Operating Instructions**

1. Allow the badge to warm to room temperature prior to removing the badge from its protective pouch.
2. Enter all pertinent information on the label before monitoring is started (i.e. name, location, date and start time).
3. For personnel monitoring, attach the badge near the user's breathing zone (i.e. 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. Check the back side of the badge periodically to determine the exposure dose (mg/m<sup>3</sup>•hr).
6. To read the monitor, locate the highest level cell with threshold color.
7. To obtain the average concentration (mg/m<sup>3</sup>), divide the exposure dose (mg/m<sup>3</sup>•hr) by the exposure time in hours. Example: If the sampling time is 2 hours and the badge reads 0.5 mg/m<sup>3</sup>•hr, the average concentration is determined by:  
$$\frac{0.5 \text{ mg/m}^3 \cdot \text{hr}}{2 \text{ hr}}$$
 Therefore the average concentration is 0.25 mg/m<sup>3</sup>.

**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.

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

