



Operating Instructions for Formaldehyde Monitor Part# 380007-10

Technical Summary

Physical Specifications:

Dimensions	10.5cm x 5.5cm x 0.25cm
Weight	11g
Refrigerated shelf life	1 year
Color Change	yellowish brown to brown

Sampling Parameters:

Exposure range for:	
Badge	0.3 - 12 ppm x hr
Badge used with color comparator	0.3 - 40 ppm x hr
Maximum recommended sampling time	2 days
Minimum recommended sampling time	15 minutes
Relative humidity range	30% - 80%
Face velocity range	5 - 150 cm/sec
Temperature range	16 - 35°C (61 - 95°F)
Mean coefficient of variation	±10.23
Bias at ambient conditions	2.73%
Light effect - UV (direct sunlight)	no effect
Light effect - visible	no effect

Applications:

The ChromAir formaldehyde badge may be used for personnel or area monitoring for exposure times ranging from 15 minutes to 48 hours. For higher resolution, the ChromAir formaldehyde badge may be used in conjunction with the ChromAir formaldehyde color comparator (384001).

Cross Interferences:

Acrolein and the aldehydes that exist in cigarette smoke react with approximately the same sensitivity. It is impossible to monitor formaldehyde in the presence of cigarette smoke. The ChromAir formaldehyde 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), ammonia, carbon monoxide, chlorine, glutaraldehyde, hydrogen sulfide, nitrogen dioxide, phenol and sulfur dioxide. These substances showed no effect on the performance of the ChromAir formaldehyde badge. No other interferences are known.

Introduction:

Formaldehyde is a colorless gas with a pungent, suffocating odor. It is a potent irritant to eyes, nose and throat. The most common effects of low level formaldehyde inhalation are eye, nose and upper respiratory irritation. Chronic symptoms of exposure are itching eyes, dry and sore throat and possi-

ble difficulty in sleeping and unusual thirst after awakening. OSHA exposure limit for formaldehyde is 0.75 ppm (TWA). NIOSH exposure limit is 0.016 ppm (TWA). NIOSH also recommends that formaldehyde be handled as a potential occupational carcinogen in the workplace.

Formaldehyde workplace exposure occurs because of its extensive use as an industrial chemical in the manufacturing of resins for adhesives, plastics, coatings and fabrics. Additional exposure to formaldehyde emissions comes from its use as a fumigant and sterilant. The major source of atmospheric discharge of formaldehyde is from combustion processes, specifically from the photo oxidation of hydrocarbons in auto emissions.

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. Formaldehyde gas diffuses to the cells through the different diffusive resistances and reacts with the indicator layer, producing color change from yellowish brown to brown. 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 brown threshold color on the individual cell and reading the corresponding exposure dose.

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. 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 x hr).
7. To read the badge, locate the highest level cell with brown threshold color.
8. To obtain the average concentration (ppm) in the surrounding atmosphere, divide the exposure dose (ppm x hr) by the exposure time in hours. Example: If the sampling time is 2 hours and the badge reads 4 ppm x hr, the average concentration is determined by dividing 4 ppm x hr by 2 hr. Therefore the average concentration is 2 ppm.

Storage:

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

Benefits:

1. **Accurate Measurements:** The ChromAir formaldehyde monitor is designed to react selectively with formaldehyde 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 the 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 formaldehyde monitor offers the user the most inexpensive air sampling solution available.