



Operating Instructions for Acetone* Monitor Part# 380020-10

Technical Summary

Physical Specifications:

| | |
|-------------------------|-------------------------|
| Dimensions | 10.5cm x 5.5cm x 0.25cm |
| Weight | 11g |
| Refrigerated shelf life | 1 year |
| Color Change | yellow to pink |

Sampling Parameters:

| | |
|-------------------------------------|------------------------|
| Exposure range | 20 - 24,000 ppm x hr |
| Maximum recommended sampling time | 24 hours |
| Minimum recommended sampling time | 1 minute |
| Relative humidity range | 15% - 95% |
| Face velocity range | 10 - 165 cm/sec |
| Temperature range | 10 - 45°C (50 - 113°F) |
| Light effect - UV (direct sunlight) | not recommended |
| Light effect - visible | no effect |

Applications:

The ChromAir acetone badge may be used for personnel or area monitoring for exposure times ranging from 1 minute to 24 hours.

Cross Interferences:

Alcohols, aromatic solvents and aliphatic solvents DO NOT affect the accuracy of measurements. The presence of ammonia inhibits the performance of the monitor. At very high concentrations (more than two times the permissible limit), acrolein and acetic acid may influence the first and second cells. Not other interferences are known.

Introduction:

Acetone is a colorless liquid with a sharp specific odor (the odor threshold is 4 ppb). It is narcotic in mild concentrations with toxic effects on the central nervous system. Chronic exposure causes mucous membrane irritation, heavy eyes and overnight headaches. Acetone is a cumulative poison and can be found in the blood long after exposure. OSHA exposure limit for acetone is 1,000 ppm (TWA). NIOSH exposure limit for acetone is 250 ppm (TWA).

Principle of Operation:

The ChromAir passive monitor is a patented direct read autogenic exposimeter. The device is constructed from three cells attached on one side to a flat indicator layer and on the other side to a series of different diffusive resistances. The third cell is connected to the diffusion path with length of stain properties. Acetone vapor diffuses to the cells through the different diffusive resistances and reacts with the indicator layer producing color change from yellow to pink. After saturation of the

third cell, the color change creeps along the length of stain diffusion path producing a sharp diffusion front. The color produced on the indicator layer, as spots and length of stain, is a direct measure of the exposure dose. Visual color comparison is achieved by: (1) observing the formation of the pink threshold color on the individual cell and reading the corresponding exposure dose, or (2) for doses exceeding 1,500 ppm x hr, reading the length of pink stain from the scale.

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 pink threshold color. If the exposure dose exceeds 1,500 ppm x hr, locate the pink color front in the length of stain diffusion path.
8. For MEK exposure dose, multiply the dose printed on the badge by 0.9.
9. For MIBK exposure dose, multiply the dose printed on the badge by 0.8.
10. 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 acetone monitor should be refrigerated in its sealed bag at all times.

Benefits:

1. Accurate Measurements: The ChromAir acetone monitor is designed to react selectively with acetone 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. The design extends the range of the monitor from 20 to 24,000 ppm x hr and extends the sampling times from 1 minute to 24 hours.
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 acetone monitor offers the user the most inexpensive air sampling solution available.

Note: The three cells are best used for short exposures or grab sampling. The length of stain path is preferable for working environment conditions.

***The acetone badge may be used to monitor for methyl ethyl ketone (MEK) and methyl isobutyl ketone (MIBK) by apply a multiplication factor.**

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