

Introduction

Unsymmetrical dimethyl hydrazine (UDMH) is a fuming, colorless liquid with an amine-like odor. Exposure to UDMH may cause eye, and skin irritation, choking, chest pain, dyspnea, lethargy, nausea, anoxia, convulsions, and liver injury. OSHA exposure limit for UDMH is 0.5 ppm. NIOSH exposure limit for UDMH is 0.06 ppm (ceiling).

UDMH is a hypergolic rocket fuel ingredient, often used as a bipropellant in combination with a strong oxidizer. It is used in virtually all storable liquid rocket engines. Additionally, UDMH is a contaminant and a metabolite and breakdown product of daminozide.

Principle of Operation

The SafeAir UDMH badge is a monitoring system designed to indicate the presence of UDMH at concentrations below the permissible exposure limit. The SafeAir UDMH badge detects the presence of UDMH by forming a color change in the shape of an exclamation mark inside the triangle. This indication is produced by a color-forming reaction, which occurs when UDMH reacts with a flat indicator layer. The SafeAir UDMH badge is a dual level badge. A color change may appear on the front and/or the backside of the badge, depending upon the 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. For personnel monitoring, attach the badge near the user's breathing zone (i.e. the 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. The exclamation mark appears within the triangle when UDMH is present. Please note that the exclamation mark will appear underneath the printed exposure dose (sensitivity).
6. To obtain the average concentration, divide the exposure dose (ppb-hr) by the exposure time in hours (hr).

Storage

The SafeAir UDMH badge should be refrigerated in its sealed bag at all times.

Benefits

1. **Accurate Detection:** The SafeAir UDMH badge is designed to react selectively with UDMH with minimum interference from other substances.
2. **Applications:** The SafeAir badge may be used for personnel screening and for area monitoring or area mapping.
3. **Ease of Use:** The SafeAir badge is a direct-read device that gives immediate, on-site results.

Other Available Monitors

1. **SafeAir Badges:**

| | | |
|---------------------------|-------------------|------------------|
| Aniline | Formaldehyde | Nitrogen Dioxide |
| Aromatic Isocyanates | Hydrazine | Ozone |
| Carbon Dioxide | Hydrides | Phosgene |
| Carbon Monoxide | Hydrogen Chloride | Sulfur Dioxide |
| Chlorine/Chlorine Dioxide | Hydrogen Sulfide | |
| Dimethyl Amine | Mercury | |
2. **SafeAir Color Comparators:**

| | | |
|-----------------------------|---------------------|------------------------|
| Arsine ¹ | Hydrazine | Phosphine ¹ |
| Carbon Dioxide | Hydrogen Chloride | TDI ⁴ |
| Chlorine | MMH ³ | |
| Chloroformates ² | Phosgene | |
| Diborane ¹ | Phosgene ext. range | |

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

¹ To be used with the SafeAir hydrides badges

² To be used with the SafeAir phosgene badges

³ To be used with the SafeAir hydrazine dual level badges

⁴ To be used with the SafeAir aromatic isocyanates badges