

unsym-DIMETHYLHYDRAZINE

Material Safety Data Sheet

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Emergency Telephone Number  
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Effective Date: 10-07-86 Supersedes 09-01-85

PRODUCT IDENTIFICATION:

Synonyms: Hydrazine, 1,1-dimethyl; 1,1-Dimethylhydrazine; UDMH; 1,1-DMH;  
Unsymmetrical Dimethylhydrazine

Formula CAS No.: 57-14-7

Molecular Weight: 60.10

Hazardous Ingredients:  
unsym-Dimethylhydrazine

Chemical Formula: C2H8N2

PRECAUTIONARY MEASURES

EXPOSURE MAY CREATE CANCER RISK. DANGER! POISON. FLAMMABLE LIQUID. MAY BE FATAL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. CAUSES BURNS. CHRONIC EXPOSURE CAN CAUSE ADVERSE LIVER, KIDNEY, AND BLOOD EFFECTS.

Do not breathe vapor.  
Avoid contact with eyes, skin and clothing.  
Use only with adequate ventilation.  
Keep away from heat, sparks and flame.

EMERGENCY FIRST AID

In case of contact, immediately flush eyes or skin with copious amounts of water for at least 15 minutes while removing contaminated clothing and shoes. Assure adequate flushing of the eyes by separating eyelids with fingers. Call a physician. If inhaled, remove to fresh air. If not breathing give artificial respiration, preferably mouth to mouth. If breathing is difficult, give oxygen. Call a physician. If ingested get immediate medical attention.  
SEE SECTION 5.

DOT Hazard Class: Flammable Liquid

Physical Data

Appearance: Clear colorless liquid.

Odor: Sharp ammoniacal or fishy-like amine odor.

Solubility: Miscible in water.

Boiling Point: 63.9 C (147 F) @ 760 mm Hg Vapor Density (Air=1):1.94

Melting Point: -57 C (-71 F) Vapor Pressure (mm Hg):156.8 @ 25 C

Specific Gravity: 0.791 Evaporation Rate:No information found.

Fire and Explosion

SECTION 2

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Information  
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Fire: Flammable liquid. Flash point: 1 C (34 F)  
Autoignition temperature: 249 C (480 F) Flammable  
limits in air, % by volume: 1el: 2%uel: 95%  
Ignites spontaneously in contact with oxidizing  
agents.

Explosion: Above flash point, vapor-air mixtures are  
explosive within flammable limits noted above.

Fire Extinguishing Media: Water spray, dry chemical, alcohol foam, or  
carbon dioxide.

Special Information: In the event of a fire, wear full protective  
clothing and NIOSH-approved self-contained  
breathing apparatus with full facepiece operated  
in the pressure demand or other positive pressure  
mode. Vapors can flow along surfaces to distant  
ignition source and flash back. Dike fire  
control water for later disposal; do not scatter  
material.

Reactivity Data

SECTION 3

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Stability:

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Solutions stored in dark cold conditions and in  
the absence of oxidants are relatively stable.  
Hygroscopic; fumes in air, gradually turns  
yellow.

Hazardous Decomposition  
Products:

Toxic nitrogen compound fumes.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Oxidizing agents, copper, copper alloys, brass,  
iron, iron salts. Dangerous when exposed to heat  
or flame. Dissolves, swells, and disintegrates  
many plastics.

Leak/Spill Disposal Information

SECTION 4

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Spills Evacuate area. Shut off all sources of ignition. Do not touch spilled  
material. Wear self-contained breathing apparatus, rubber boots and heavy  
rubber gloves. Absorb on sand, vermiculite, or other non-combustible absorbent  
material and place in a closed container for disposal. Disposal: Burn in a  
chemical incinerator equipped with an afterburner and scrubber, but exert care  
in igniting as this material is highly flammable.  
Reportable Quantity (RQ)(CWA/CERCLA) : 10 lbs.  
Ensure compliance with local, state and federal regulations.

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Health Hazard Information

SECTION 5

A. Exposure/Health Effects

This compound exhibits high acute toxicity as a result of exposure by all routes. Death or permanent injury may result after very short exposure to small quantities.

- Inhalation: TOXIC! Symptoms of exposure may include irritation to the nose and throat, respiratory distress, nausea, and vomiting. Other effects include headache, facial numbness, twitching, pulmonary edema, blood changes, seizures, and coma.
- Ingestion: TOXIC! Symptoms of exposure are expected to parallel those from inhalation exposure.
- Skin Contact: Corrosive. Causes thermal burns. Readily absorbed through the skin with symptoms paralleling inhalation exposure.
- Eye Contact: Corrosive. Contact causes eye burns. Possible absorption route.
- Chronic Exposure: Chronic exposure may cause pneumonia, liver damage, kidney damage, blood effects. Positive animal studies showed tumors of the lung, liver, and kidneys.

Aggravation of Pre-existing Conditions: No information found.

B. FIRST AID

- Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
- Ingestion: If swallowed, call a physician immediately.
- Skin Exposure: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.
- Eye Exposure: Wash eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

C. TOXICITY (RTECS, 1982)

Oral rat LD50: 122 mg/kg Inhalation rat LD50: 252 ppm/4H Mutation refernces cited Reproductive effects cited Tumorigenic effects cited Carcinogenic Review: Animal Positive IARC 4, 137, 1974 Listed in the NTP 4th Annual Report on Carcinogens: May reasonably be anticipated to be a carcinogen.

Occupational Control Measures

SECTION 6

Airborne Exposure Limits: -OSHA Permissible Exposure Limit (PEL): 0.5 ppm (TWA) (skin) -ACGIH Threshold Limit Value (TLV): 500 ppb (TWA) 1ppm (STEL) (skin) Listed in Appendix A2 as Industrial Substances Suspect of Carcinogenic Potential for Man. -NIOSH recommended standard for exposure to hydrazines: 0.15 mg/m<sup>3</sup>/2 hrs., ceiling concentration -Immediately dangerous to life or health (IDLH): 50 ppm (NIOSH/OSHA, 1978)

Ventilation System: A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, "Industrial Ventilation, A Manual of Recommended Practices", most recent edition, for details.

Personal Respirators (NIOSH Approved) If the TLV is exceeded, wear a supplied air, full-facepiece respirator, airtight hood, or self-contained breathing apparatus.

Skin Protection: Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls to prevent skin contact.

Eye Protection: Use chemical safety goggles and/or a full face shield where splashing is possible. Contact lenses should not be worn when working with this material. Use chemical safety goggles and/or a full face shield where splashing is possible. Contact lenses should not be worn when working with this material.

Storage and Special Information

SECTION 7

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Wear special protective equipment (Sec. 6) for maintenance break-in or where exposures may exceed established exposure levels. Wash hands, face, forearms and neck when exiting restricted areas. Shower, dispose of outer clothing, change to clean garments at the end of the day. Avoid cross-contamination of street clothes. Wash hands before eating and do not eat, drink, or smoke in workplace.

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Addendum to Material Safety Data Sheet

REGULATORY STATUS

This Addendum Must Not Be Detached from the MSDS Identifies SARA 313 substance(s)

Any copying or redistribution of the MSDS must include a copy of this addendum

Hazard Categories for SARA Section 311/312 Reporting

	Acute	Chronic	Fire	Pressure	Reactive		
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	X	X	X				
Product or Components of Product:	SARA EHS Sec. 302 RQ	TPQ	SARA Sec. 313 Chemicals Name List	Chemical Category	CERCLA Sec. 103 RQ lbs	RCRA Sec. 261.33	
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unsym-DIMETHYLHYDRAZINE (57-14-7)	10	1,000	Yes	No	No	No	

SARA Section 302 EHS RQ: Reportable Quantity of Extremely Hazardous Substance, listed at 40 CFR 355.

SARA Section 302 EHS TPQ: Threshold Planning Quantity of Extremely Hazardous substance. An asterisk (\*) following a Threshold Planning Quantity signifies that if the material is a solid and has a particle size equal to or larger than 100 micrometers, the Threshold Planning Quantity = 10,000 LBS.

SARA Section 313 Chemicals: Toxic Substances subject to annual release reporting requirements listed at 40 CFR 372.65.

CERCLA Sec. 103: Comprehensive Environmental Response, Compensation and Liability Act (Superfund). Releases to air, land or water of these hazardous substances which exceed the Reportable Quantity (RQ) must be reported to the National Response Center, (800-424-8802); Listed at 40 CFR 302.4

RCRA: Resource Conservation and Reclamation Act. Commercial chemical product wastes designated as acute hazards and toxic under 40 CFR 261.33

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