

MATERIAL SAFETY DATA SHEET (MSDS)

HEXA METHYL DI SILAZANE - HMDS

1. Product Identification

Synonyms:

1,1,1,3,3,3-hexamethyldisilazane; HMDS; OAP; 1,1,1-trimethyl-N-(trimethylsilyl) Silaramine;
Bis(Trimethylsilyl)Amine

CAS No.:

999-97-3

Molecular Weight:

161.39

Chemical Formula:

$(\text{CH}_3)_3\text{SiNHSi}(\text{CH}_3)_3$

2. Composition/Information on Ingredients

Ingredient: Hexamethyldisilazane

CAS No : 999-97-3 99

Percent Hazardous : 100% Yes

3. Hazards Identification

Emergency Overview

WARNING! FLAMMABLE LIQUID AND VAPOR. MAY BE HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. MAY CAUSE SEVERE IRRITATION OR BURNS TO SKIN, EYES, AND RESPIRATORY TRACT

Health Rating: 2 - Moderate

Flammability Rating: 4 - Extreme (Flammable)

Reactivity Rating: 2 - Moderate

Contact Rating: 3 - Severe (Corrosive)

Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES; CLASS B EXTINGUISHER

Storage Color Code: Red Stripe (Store Separately)

Potential Health Effects

Information on the human health effects from exposure to this substance is limited. However, it is closely related to chemicals that cause severe eye and skin burns.

Inhalation:

Excessive inhalation of vapors can irritate the respiratory tract and possibly lead to fluid accumulation in the lungs. Mild anesthesia has also been reported.



Ingestion:

Toxicity data limited. Not considered a serious hazard although ammonia and hydrous silica compounds may be formed by hydrolysis in the digestive system. Gastrointestinal upset may follow the ingestion of appreciable amounts. Vomiting can present the additional hazard of getting HMDS into the lungs.

Skin Contact:

Moderate irritant, especially to sensitive areas. Alkaline reaction can cause soreness with inflammation in acute cases. May be absorbed through skin.

Eye Contact:

Irritant, may cause severe burns on direct contact with liquid HMDS.

Chronic Exposure:

No information found.

Aggravation of Pre-existing Conditions:

Persons with pre-existing skin disorders or eye problems or impaired respiratory function may be more susceptible to the effects of the substance.

4. First Aid Measures

Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician immediately.

Ingestion:

If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Skin Contact:

Wash exposed area with soap and water. Get medical advice if irritation develops.

Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally.

Get medical attention immediately.

5. Fire Fighting Measures

Fire:

Flash point: 11C (52F) CC

Autoignition temperature: 380C (716F)

HEXAMETHYLDISILAZANE

Flammable limits in air % by volume:

lcl: 0.8; ucl: 16.3

Flammable.

Explosion:

Above flash point, vapor-air mixtures are explosive within flammable limits noted above. Sealed containers may rupture when heated. Contact with strong oxidizers may cause fire. Sensitive to static discharge.

Fire Extinguishing Media:

Dry chemical, alcohol-resistant foam, or carbon dioxide. Do not use water.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face-piece operated in the pressure demand or other positive pressure mode. This highly flammable liquid must be kept from sparks, open flame, hot surfaces, and all sources of heat and ignition. Vapors can flow along surfaces to distant ignition source and flash back. Water spray may be used to extinguish surrounding fire and cool exposed containers. Water spray will also reduce fume and irritant gases.

6. Accidental Release Measures

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer!

7. Handling and Storage

Protect against physical damage. Store in a cool, dry well-ventilated location, away from any area where the fire hazard may be acute. Outside or detached storage is preferred. Separate from incompatibles. Containers should be bonded and grounded for transfers to avoid static sparks. Storage and use areas should be No Smoking areas. Use non-sparking type tools and equipment, including explosion proof ventilation. Do not attempt to clean empty containers since residue is difficult to remove. Do not pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, sparks, flame, static electricity or other sources of ignition: they may explode and cause injury or death. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

None established.

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. 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):

For conditions of use where exposure to the substance is apparent, consult an industrial hygienist. For emergencies, or instances where the exposure levels are not known, use a full-face-piece positive-pressure, air-supplied respirator. WARNING: Air purifying respirators do not protect workers in oxygen-deficient atmospheres.

HEXAMETHYLDISILAZANE

Skin Protection:

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection:

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:

Clear, colorless liquid.

Odor:

Ammonia odor.

Solubility:

Hydrolyses slowly at room temperature.

Specific Gravity:

0.77 @ 25C / 77F

pH:

8.5

% Volatiles by volume @ 21C (70F):

100

Boiling Point:

125C (257F)

Melting Point:

-70C (-94F)

Vapor Density (Air=1):

4.6

Vapor Pressure (mm Hg):

20 @ 20C (68F)

Evaporation Rate (BuAc=1):

< 1 (Ether = 1)

10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products:

May form silicon dioxide, carbon oxides and nitrogen oxides when heated to decomposition. Ammonia or formaldehyde when exposed to heat and water.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Water, methyl alcohol, acids, strong alkalis, and oxidizing agents.

Conditions to Avoid:

Heat, ignition sources, moisture, incompatibles.

11. Toxicological Information

LD50, oral, rat = 850 mg / Kg. LD50, skin, rabbit = 710 uL/Kg. LC50, inhalation, rat = 8700mg / m³ / 4 Hr.
HEXAMETHYLDISILAZANE

12. Ecological Information

Environmental Fate:

No information found.

Environmental Toxicity:

No information found.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved incinerator or disposed in a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Domestic (Land, D.O.T./Water, I.M.O.)

Proper Shipping Name:

FLAMMABLE LIQUID, CORROSIVE, N.O.S. (HEXAMETHYLDISILAZANE)

Hazard Class:

3, 8

UN/NA:

UN2924

Packing Group: II

Information reported for product/size:

340LB

15. Regulatory Information

Hexamethyldisilazane (999-97-3) Yes Yes Yes Yes

HEXAMETHYLDISILAZANE

Hexamethyldisilazane (999-97-3) No No Yes

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No

SARA 311/312: Acute: Yes Chronic: No Fire: Yes Pressure: No

Reactivity: No (Pure / Liquid)

Australian Hazchem Code:

3WE

Poison Schedule:

None allocated.

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings:

Health: **1** Flammability: **3** Reactivity: **1**

Label Hazard Warning:

WARNING! FLAMMABLE LIQUID AND VAPOR. MAY BE HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. MAY CAUSE SEVERE IRRITATION OR BURNS TO SKIN, EYES, AND RESPIRATORY TRACT

Label Precautions:

Avoid breathing vapor.

Keep container closed.

Use only with adequate ventilation.

Avoid contact with eyes, skin and clothing.

Wash thoroughly after handling.

Label First Aid:

If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. In all cases call a physician.