SAFETY DATA SHEET

1. Identification

Product identifier: Hexamethyldisilazane

Other means of identification
Synonyms: Bis(trimethylsilyl)amine
Product No.: N162, 5797, 9362, 9352

Recommended restrictions
Recommended use: For Laboratory, Research or Manufacturing Use.
Restrictions on use: Not determined.

Details of the supplier of the safety data sheet

Manufacturer

Company Name: Avantor Performance Materials, LLC.
Address: 3477 Corporate Parkway
Center Valley, PA 18034

Telephone: Customer Service: 855-282-6867
Fax: 610-673-2610
Contact Person: Environmental Health & Safety
E-mail: info@avantormaterials.com

Emergency telephone number:
CHEMTREC: 1-800-424-9300 within US and Canada

2. Hazard(s) identification

Hazard Classification

Physical Hazards
Flammable liquids Category 2

Health Hazards
Acute toxicity (Oral) Category 4
Acute toxicity (Dermal) Category 3
Acute toxicity (Inhalation - vapor) Category 3
Skin Corrosion/Irritation Category 1C

Unknown toxicity - Health
Acute toxicity, inhalation, vapor 100 %
Acute toxicity, inhalation, dust 100 %
or mist

Environmental Hazards

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Acute hazards to the aquatic environment: Category 3

Unknown toxicity - Environment:
- Acute hazards to the aquatic environment: 0%
- Chronic hazards to the aquatic environment: 100%

Label Elements

Hazard Symbol:

Signal Word: Danger

Hazard Statement:
Highly flammable liquid and vapour.
Harmful if swallowed.
Toxic in contact with skin.
Toxic if inhaled.
Causes severe skin burns and eye damage.
Harmful to aquatic life.

Precautionary Statements

Prevention:
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Take action to prevent static discharges. Wear protective gloves/protective clothing/eye protection/face protection. Wash hands thoroughly after handling. Use only outdoors or in a well-ventilated area. Do not breathe dust/fume/gas/mist/vapours/spray. Avoid release to the environment.

Response: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water (or shower). IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor/physician.

Hazard(s) not otherwise classified (HNOC):
Static accumulating flammable liquid can become electrostatically charged even in bonded and grounded equipment. Sparks may ignite liquid and vapor. May cause flash fire or explosion.

3. Composition/information on ingredients

Substances

<table>
<thead>
<tr>
<th>Chemical Identity</th>
<th>CAS number</th>
<th>Content in percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hexamethydrosilazane</td>
<td>999-97-3</td>
<td>100%</td>
</tr>
</tbody>
</table>

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.
4. First-aid measures

General information: Get medical advice/attention if you feel unwell. Show this safety data sheet to the doctor in attendance.

Ingestion: Rinse mouth. If vomiting occurs, keep head low so that stomach content doesn’t get into the lungs. Get medical attention if symptoms occur.

Inhalation: Move to fresh air. Get medical attention if symptoms persist.

Skin Contact: Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention if irritation persists after washing. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes.

Eye contact: Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention if irritation persists after washing.

Most important symptoms/effects, acute and delayed

Symptoms: Irritating to eyes, respiratory system and skin.

Hazards: None known.

Indication of immediate medical attention and special treatment needed

Treatment: Treat symptomatically. Symptoms may be delayed.

5. Fire-fighting measures

General Fire Hazards: Highly flammable liquid and vapour. In case of fire and/or explosion do not breathe fumes.

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media: Water spray, foam, dry powder or carbon dioxide.

Unsuitable extinguishing media: Avoid water in straight hose stream; will scatter and spread fire.

Specific hazards arising from the chemical: Vapors may cause a flash fire or ignite explosively. Vapors may travel considerable distance to a source of ignition and flashback. Prevent buildup of vapors or gases to explosive concentrations. Heat may cause the containers to explode.

Special protective equipment and precautions for firefighters

Special fire-fighting procedures: Use water spray to keep fire-exposed containers cool. Water may be ineffective in fighting the fire. Fight fire from a protected location. Move containers from fire area if you can do so without risk.

Special protective equipment for fire-fighters: Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

6. Accidental release measures
Personal precautions, protective equipment and emergency procedures:

ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Keep unauthorized personnel away. Keep upwind. Use personal protective equipment. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. See Section 8 of the SDS for Personal Protective Equipment.

Methods and material for containment and cleaning up:

In case of leakage, eliminate all ignition sources. Take precautionary measures against static discharges. Stop leak if possible without any risk. Use Non-sparking tools. Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Clean surface thoroughly to remove residual contamination. Dike far ahead of larger spill for later recovery and disposal.

Notification Procedures:

Prevent entry into waterways, sewer, basements or confined areas. Inform authorities if large amounts are involved.

Environmental Precautions:

Do not contaminate water sources or sewer. Prevent further leakage or spillage if safe to do so. Avoid release to the environment.

7. Handling and storage

Precautions for safe handling:

DO NOT handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Take precautionary measures against static discharges. Ground and bond container and receiving equipment. Use explosion-proof [electrical/ventilating/lighting] equipment. Use non-sparking tools. Wear protective gloves/protective clothing/eye protection/face protection. Use only with adequate ventilation. Wash hands thoroughly after handling. Avoid contact with skin. Avoid contact with eyes. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Do not breathe dust/fume/gas/mist/vapours/spray. Wash contaminated clothing before reuse.

Conditions for safe storage, including any incompatibilities:

Keep away from food, drink and animal feeding stuffs. Keep container tightly closed in a cool, well-ventilated place. Ground container and transfer equipment to eliminate static electric sparks. Comply with all national, state, and local codes pertaining to the storage, handling, dispensing, and disposal of flammable liquids. Store locked up.

8. Exposure controls/personal protection

Control Parameters

Occupational Exposure Limits
None of the components have assigned exposure limits.

Appropriate Engineering Controls
No data available.

Individual protection measures, such as personal protective equipment

General Information:

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. An eye wash and safety shower must be available in the immediate work area. Use explosion-proof ventilation equipment.
Eye/face protection: Wear safety glasses with side shields (or goggles).

Skin Protection
Hand Protection: Chemical resistant gloves

Other: Wear suitable protective clothing.

Respiratory Protection: In case of inadequate ventilation use suitable respirator.

Hygiene measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Provide eyewash station and safety shower.

9. Physical and chemical properties

Appearance
Physical state: Liquid
Form: Liquid
Color: Colorless
Odor: Ammonia-like odor
Odor threshold: No data available.
PH: 8.5 (20 °C)
Melting point/freezing point: -70 °C
Initial boiling point and boiling range: 125 - 126 °C
Flash Point: 14 °C (Closed Cup)
Evaporation rate: < 1 (butyl acetate=1)
Flammability (solid, gas): No data available.

Upper/lower limit for flammability or explosive limits
Flammability limit - upper (%): 25.9 % (V)
Flammability limit - lower (%): 0.3 % (V)
Explosive limit - upper (%): No data available.
Explosive limit - lower (%): No data available.
Vapor pressure: 1.29 hPa (20 °C) 19 hPa (25 °C)
Vapor density: 5.5
Density: 0.77 g/ml (20 °C)
Relative density: 0.77 (20 °C)
Solubility(ies)
Solubility in water: 0.39 g/l (25 °C)
Solubility (other): ethyl ether: Soluble
Partition coefficient (n-octanol/water): 2.62
Auto-ignition temperature: 325 °C
Decomposition temperature: No data available.
Viscosity: 0.90 mm2/s

Other information
Molecular weight: 161.4 g/mol (C6H19NSi2)

10. Stability and reactivity

Reactivity: No dangerous reaction known under conditions of normal use.
Chemical Stability: Material is stable under normal conditions.
Possibility of hazardous reactions: Hazardous polymerization does not occur.

11. Toxicological Information

Information on likely routes of exposure
Inhalation: Toxic if inhaled.
Skin Contact: Toxic in contact with skin. Causes severe skin burns.
Eye contact: Causes serious eye damage.
Ingestion: Harmful if swallowed.

Information on toxicological effects
Acute toxicity (list all possible routes of exposure)
Oral Product: LD 50 (Rat): 847 mg/kg
Dermal Product: LD 50 (Rabbit) 547 - 589 mg/kg
Inhalation Product: LC 50 (Rat, 4 h) 8.7 mg/l

Repeated dose toxicity Product: No data available.

Skin Corrosion/Irritation Product: Toxic in contact with skin. Causes severe skin burns.
Serious Eye Damage/Eye Irritation Product: Causes serious eye damage.
Respiratory or Skin Sensitization Product: Not a skin sensitizer.
Carcinogenicity Product: This substance has no evidence of carcinogenic properties.
IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:
No carcinogenic components identified

US. National Toxicology Program (NTP) Report on Carcinogens:
No carcinogenic components identified

No carcinogenic components identified

- Germ Cell Mutagenicity
  - In vitro
    Product: No mutagenic components identified
  - In vivo
    Product: No mutagenic components identified

- Reproductive toxicity
  Product: No components toxic to reproduction

Specific Target Organ Toxicity - Single Exposure
Product: No data available.

Specific Target Organ Toxicity - Repeated Exposure
Product: No data available.

- Aspiration Hazard
  Product: Not classified

Other effects: None known.

12. Ecological information

Ecotoxicity:

Acute hazards to the aquatic environment:

- Fish
  Product: No data available.
  Specified substance(s):
  Hexamethyldisilazane LC 50 (Oncorhynchus mykiss, 96 h): 271 mg/l
  NOAEL (Danio rerio, 96 h): 56 mg/l
  LC 50 (Pimephales promelas, 96 h): 167 mg/l
  NOAEL (Oncorhynchus mykiss, 96 h): 128 mg/l
  LC 50 (Danio rerio, 96 h): 88 mg/l

Aquatic Invertebrates
Product: No data available.
  Specified substance(s):
  Hexamethyldisilazane EC 50 (Daphnia magna, 48 h): 80 - 186 mg/l
  NOAEL (Daphnia magna, 48 h): 25 mg/l

Chronic hazards to the aquatic environment:

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Fish
Product: No data available.

Aquatic Invertebrates
Product: No data available.

Toxicity to Aquatic Plants
Product: No data available.

Specified substance(s):
Hexamethyldisilazane
EC 50 (Green algae (Scenedesmus acutus), 72 h): 19 mg/l

Persistence and Degradability

Biodegradation
Product: There are no data on the degradability of this product.

BOD/COD Ratio
Product: No data available.

Bioaccumulative potential
Bloconcentration Factor (BCF)
Product: No data available on bioaccumulation.

Partition Coefficient n-octanol / water (log Kow)
Product: Log Kow: 2.62

Mobility in soil: No data available.

Other adverse effects: Harmful to aquatic organisms.

13. Disposal considerations

Disposal Instructions: Discharge, treatment, or disposal may be subject to national, state, or local laws. Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Contaminated Packaging: Since emptied containers retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT
UN Number: UN 3286
UN Proper Shipping Name: Flammable liquid, toxic, corrosive, n.o.s. (Hexamethyldisilazane)
Transport Hazard Class(es)
Class: 3
Label(s): 3, 6.1, 8
Packing Group: II
Marine Pollutant: No
Special precautions for user: Not determined.

IMDG
UN Number: UN 3286
UN Proper Shipping Name: FLAMMABLE LIQUID, TOXIC, CORROSIVE, N.O.S. (HEXAMETHYLDISILAZANE)
Transport Hazard Class(es): Class: 3
Label(s): 3, 6.1, 8
EmS No.: F-E, S-C
Packing Group: II
Marine Pollutant: No
Special precautions for user: Not determined.

IATA
UN Number: UN 3286
Proper Shipping Name: Flammable liquid, toxic, corrosive, n.o.s. (Hexamethyldisilazane)
Transport Hazard Class(es): Class: 3
Label(s): 3, 6.1, 8
Packing Group: II
Marine Pollutant: No
Special precautions for user: Not determined.

15. Regulatory information

US Federal Regulations
TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
None present or none present in regulated quantities.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)
None present or none present in regulated quantities.

CERCLA Hazardous Substance List (40 CFR 302.4): None present or none present in regulated quantities.

Superfund Amendments and Reauthorization Act of 1986 (SARA)
Hazard categories
- Flammable (gases, aerosols, liquids, or solids)
- Acute toxicity (any route or exposure)
- Skin Corrosion or Irritation
- Serious eye damage or eye irritation
- Hazards Not Otherwise Classified (HNOC)

SARA 302 Extremely Hazardous Substance
None present or none present in regulated quantities.

SARA 304 Emergency Release Notification
None present or none present in regulated quantities.

SARA 311/312 Hazardous Chemical
Chemical Identity Threshold Planning Quantity
Hexamethyldisilazane 10000 lbs.

SARA 313 (TRI Reporting)
None present or none present in regulated quantities.
Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):
None present or none present in regulated quantities.

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3):
None present or none present in regulated quantities.

US State Regulations

US. California Proposition 65
No ingredient regulated by CA Prop 65 present.

US. New Jersey Worker and Community Right-to-Know Act
Chemical Identity
Hexamethyldisilazane

US. Massachusetts RTK - Substance List
No ingredient regulated by MA Right-to-Know Law present.

US. Pennsylvania RTK - Hazardous Substances
No ingredient regulated by PA Right-to-Know Law present.

US. Rhode Island RTK
No ingredient regulated by RI Right-to-Know Law present.

International regulations

Montreal protocol
not applicable

Stockholm convention
not applicable

Rotterdam convention
not applicable

Kyoto protocol
not applicable

Inventory Status:

Australia AICS:
On or in compliance with the inventory

Canada DSL, Inventory List:
On or in compliance with the inventory

EINECS, ELINCS or NLP:
On or in compliance with the inventory

Japan (ENCS) List:
On or in compliance with the inventory

Korea Existing Chemicals Inv. (KECI):
On or in compliance with the inventory

Philippines PICCS:
On or in compliance with the inventory

US TSCA Inventory:
On or in compliance with the inventory

New Zealand Inventory of Chemicals:
On or in compliance with the inventory

Japan ISHL Listing:
On or in compliance with the inventory

China Inv. Existing Chemical Substances:
On or in compliance with the inventory

Mexico INSQ:
On or in compliance with the inventory

Taiwan Chemical Substance Inventory:
On or in compliance with the inventory

16. Other Information, including date of preparation or last revision

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NFPA Hazard ID

Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe; RNP - Rating not possible

Issue Date: 03-14-2018
Revision Information: Not relevant.
Version #: 1.1

Source of information: Sources of information used in preparing this SDS included one or more of the following: results from in house or supplier toxicity studies, information from the Toxicology Data Network (TOXNET), European Chemical Agency (ECHA) substance dossiers, IARC Monographs, US National Toxicology Program data, the Agency for Toxic Substances and Disease Registry, other manufacturer's SDSs and other sources, as appropriate.

Further Information: No data available.

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