MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Material name	**HEXAMETHYLDISILAZANE**
Version #	04
Revision date	04-01-2011
CAS #	999-97-3
Product Codes	**J.T.Baker: 5797, 9352, 9362, N152** **Macron: 2478**
Synonym(s)	OAP * 1,1,1,3,3,3-Hexamethyldisilazane * Bis(trimethylsilyl)amine * 1,1,1-trimethyl-N-(trimethylsilyl)silanamine * HMDS
Manufacturer	Avantor Performance Materials, Inc.
Address	222 Red School Lane Phillipsburg, NJ 08865 US
Customer Service	800-582-2537
24 Hour Emergency	908-859-2151
Chemtrec	800-424-9300

2. Hazards Identification

Emergency overview

DANGER

TOXIC. FLAMMABLE LIQUID AND VAPOR.
Causes skin and eye burns. Harmful if inhaled or absorbed through skin. May be harmful if swallowed.

OSHA regulatory status

This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).

Potential health effects

Routes of exposure	Inhalation. Ingestion. Skin contact. Eye contact.
Eyes	Causes eye burns. Do not get this material in contact with eyes.
Skin	Toxic in contact with skin. Causes skin burns. Harmful if absorbed through skin. Do not get this material in contact with skin.
Inhalation	Harmful if inhaled. Inhalation of vapor or mist may cause lung edema. Do not breathe dust/fume/gas/mist/vapors/spray.
Ingestion	May be harmful if swallowed. Irritating. May cause nausea, stomach pain and vomiting. Ingestion may result in vomiting; aspiration (breathing) of vomitus into lungs must be avoided as even small quantities may result in aspiration pneumonitis.

Target organs	Skin. Eyes. RESPIRATORY SYSTEM.
Chronic effects	Harmful if absorbed through skin. Inhalation of vapor or mist may cause lung edema.
Signs and symptoms	Contact with this material will cause burns to the skin, eyes and mucous membranes.
Potential environmental effects	Ecological injuries are not known or expected under normal use.

3. Composition / Information on Ingredients

Components	CAS #	Percent
HEXAMETHYLDISILAZANE	999-97-3	99 - 100

4. First Aid Measures

First aid procedures

Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

Skin contact	Take off immediately all contaminated clothing. Immediately flush skin with plenty of water. Get medical attention immediately. Wash clothing separately before reuse.
Inhalation	If gas/fume/vapor/dust/mist from the material is inhaled, remove the affected person immediately to fresh air. If breathing stops, provide artificial respiration. If breathing is difficult, give oxygen. Call a physician or poison control center immediately.
Ingestion	IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Do not induce vomiting without advice from poison control center. Never give anything by mouth to a victim who is unconscious or is having convulsions. Do not use mouth-to-mouth method if victim ingested the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.
Notes to physician	In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed.
General advice	In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire Fighting Measures

Flammable properties	Flammable by OSHA criteria. Can release vapors that form explosive mixtures at temperatures at or above the flash point. Vapors may travel considerable distance to a source of ignition and flash back. Runoff to sewer may cause fire or explosion hazard. Heat may cause the containers to explode. Contact with strong oxidizers may cause fire. Static discharge: material can accumulate static charges which may cause an incendiary electrical discharge.
Extinguishing media	
Suitable extinguishing media	Carbon dioxide (CO2). Foam. Dry chemical powder. Do not use water as an extinguisher.
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Protection of firefighters	
Specific hazards arising from the chemical	By heating and fire, harmful vapors/gases may be formed.
Protective equipment and precautions for firefighters	Move containers from fire area if you can do so without risk. Cool containers exposed to flames with water until well after the fire is out. Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA. For massive fire in cargo area, use unmanned hose holder or monitor nozzles, if possible. If not, withdraw and let fire burn out. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also consider initial evacuation for 800 meters (1/2 mile) in all directions. ALWAYS stay away from tanks engulfed in flame. Some of these materials, if spilled, may evaporate leaving a flammable residue.
Special protective equipment for fire-fighters	As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.
Specific methods	In the event of fire and/or explosion do not breathe fumes.

6. Accidental Release Measures

Personal precautions	Ensure adequate ventilation. Keep unnecessary personnel away. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire. Ventilate closed spaces before entering them. Wear appropriate protective equipment and clothing during clean-up. Avoid skin contact and inhalation of vapors during disposal of spills.
Environmental precautions	Prevent further leakage or spillage if safe to do so. Do not contaminate water.
Methods for containment	ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Prevent entry into waterways, sewer, basements or confined areas.

Methods for cleaning up	Use only non-sparking tools. Should not be released into the environment. Do not flush to sewer. Large Spills: Dike the spilled material, where this is possible. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Never return spills in original containers for re-use. Following product recovery, flush area with water. Clean up in accordance with all applicable regulations. For waste disposal, see section 13 of the MSDS. J. T. Baker SOLUSORB® solvent adsorbent is recommended for spills of this product.

7. Handling and Storage

Handling	DO NOT handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Do not smoke. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use non-sparking tools and explosion-proof equipment. Do not breathe mist or vapor. Do not get this material in contact with eyes. Do not get this material in contact with skin. When using, do not eat, drink or smoke. Do not use in areas without adequate ventilation. Avoid release to the environment. Wear personal protective equipment. Wash thoroughly after handling.
Storage	Store in a cool, dry place. Store in a well-ventilated place. Keep container tightly closed. Do not handle or store near an open flame, heat or other sources of ignition. Protect from sunlight. Keep in an area equipped with sprinklers. The pressure in sealed containers can increase under the influence of heat. Outside or detached storage preferred. This material can accumulate static charge which may cause spark and become an ignition source. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Keep out of the reach of children. Keep away from food, drink and animal feedingstuffs.

8. Exposure Controls / Personal Protection

Exposure guidelines	No exposure standards allocated.
Engineering controls	Explosion-proof general and local exhaust ventilation. 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. Ensure adequate ventilation, especially in confined areas.
Personal protective equipment	
Eye / face protection	Chemical goggles are recommended. Face-shield. Provide eyewash station and safety shower.
Skin protection	Wear appropriate chemical resistant clothing. Chemical resistant gloves. Do not get this material in contact with skin.
Respiratory protection	Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.
General hygeine considerations	Do not get in eyes. Do not get this material in contact with skin. When using, do not eat, drink or smoke. Wash hands after handling and before eating. Contaminated work clothing should not be allowed out of the workplace. Handle in accordance with good industrial hygiene and safety practice.

9. Physical & Chemical Properties

Appearance	Clear.
Color	Colorless.
Odor	Ammoniacal.
Odor threshold	Not available.
Physical state	Liquid.

Form	Liquid.
pH	8.5
Melting point	-94 °F (-70 °C)
Freezing point	-94 °F (-70 °C)
Boiling point	257 °F (125 °C)
Flash point	57.2 °F (14 °C) Closed Cup
Evaporation rate	<= 1 BuAc
Flammability limits in air, upper, % by volume	16.3
Flammability limits in air, lower, % by volume	0.8
Vapor pressure	1.84 kPa
Vapor density	4.6
Specific gravity	0.7742
Relative density	Not available.
Solubility (water)	Not available.
Partition coefficient (n-octanol/water)	2.62
Auto-ignition temperature	617 °F (325 °C)
Decomposition temperature	Not available.
VOC	100 % v/v
Molecular weight	161.4 g/mol
Molecular formula	C6-H19-N-Si2

10. Chemical Stability & Reactivity Information

Chemical stability	Material is stable under normal conditions.
Conditions to avoid	Heat, flames and sparks. Moisture. Incompatible materials.
Incompatible materials	Strong oxidizing agents. Acids. Peroxides. Amines. Alcohols. Phenols. Alkalies. Isocyanates. Water, moisture.
Hazardous decomposition products	Ammonia. Formaldehyde. Nitrogen oxides (NOx). Carbon oxides.
Possibility of hazardous reactions	Will not occur.

11. Toxicological Information

Toxicological data

Product	Test Results
HEXAMETHYLDISILAZANE (999-97-3)	Acute Dermal LD50 Rabbit: 0.71 ml/kg
	Acute Inhalation LC50 Rat: 8.7 mg/l 4.00 Hours
	Acute Oral LD50 Rat: 847 mg/kg

* Estimates for product may be based on additional component data not shown.

Sensitization	Not classified.
Acute effects	Toxic by inhalation. Toxic in contact with skin. Harmful if swallowed.
Local effects	Causes burns.
Chronic effects	Harmful if absorbed through skin. Inhalation of vapor or mist may cause lung edema. Prolonged exposure may cause chronic effects.
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.
Skin corrosion/irritation	Causes skin burns.

Epidemiology	Not available.
Neurological effects	Not available.
Symptoms and target organs	Contact with this material will cause burns to the skin, eyes and mucous membranes.

12. Ecological Information

Ecotoxicity	This product has no known eco-toxicological effects.
Environmental effects	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Aquatic toxicity	May cause long-term adverse effects in the aquatic environment.
Persistence and degradability	No data is available on the degradability of this product.
Partition coefficient (n-octanol/water)	2.62

13. Disposal Considerations

Waste codes	D001: Waste Flammable material with a flash point <140 F
Disposal instructions	If discarded, this product is considered a RCRA ignitable waste, D001. Do not incinerate sealed containers. Dispose of contents/container in accordance with local/regional/national/international regulations.
Contaminated packaging	Since emptied containers retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport Information

DOT

Basic shipping requirements:

UN number	UN3286
Proper shipping name	Flammable liquid, toxic, corrosive, n.o.s. (HEXAMETHYLDISILAZANE)
Hazard class	3
Subsidiary hazard class	6.1, 8
Packing group	II

Additional information:

Special provisions	IB2, T11, TP2, TP13, TP27

Basic shipping requirements:

Labels required	3, 6.1, 8

Additional information:

Packaging exceptions	150
Packaging non bulk	202
Packaging bulk	243
ERG number	131

IATA

Basic shipping requirements:

UN number	3286
Proper shipping name	Flammable liquid, toxic, corrosive, n.o.s. (HEXAMETHYLDISILAZANE)
Hazard class	3
Subsidiary hazard class	6.1, 8
Packing group	II

Additional information:

ERG code	3CP

IMDG

Basic shipping requirements:

UN number	3286
Proper shipping name	FLAMMABLE LIQUID, TOXIC, CORROSIVE, N.O.S. (HEXAMETHYLDISILAZANE)

Hazard class	3
Subsidiary hazard class	6.1/8
Packing group	II

DOT

IATA

IMDG

15. Regulatory Information

US federal regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

CERCLA/SARA Hazardous Substances - Not applicable.

CERCLA (Superfund) reportable quantity

None

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

Immediate Hazard - Yes
Delayed Hazard - Yes
Fire Hazard - Yes
Pressure Hazard - No
Reactivity Hazard - No

Section 311 hazardous chemical

Yes

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

State regulations

This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

Saf-T-Data	Health: 2 - Moderate (Poison) Flammability: 3 - Severe (Flammable) Reactivity: 2 - Moderate Contact: 4 - Extreme (Corrosive) Lab Protective Equip: DB - GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES; CLASS B EXTINGUISHER Storage Color Code: RS - Red Stripe (Store Separately)

16. Labeling Info

Label Hazard Warning	DANGER TOXIC. FLAMMABLE LIQUID AND VAPOR. Causes skin and eye burns. Harmful if inhaled or absorbed through skin. May be harmful if swallowed.
Label Precautions	Do not get in eyes, on skin, or on clothing. Do not breathe mist or vapor. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.
Label First Aid	Immediately flush eyes with plenty of water for at least 15 minutes. Immediately flush skin with plenty of water. If gas/fume/vapor/dust/mist from the material is inhaled, remove the affected person immediately to fresh air. If the affected person is not breathing, apply artificial respiration. Get medical attention immediately. IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.

17. Other Information

NFPA ratings	Health: 2 Flammability: 3 Instability: 1
Disclaimer	THE INFORMATION PRESENTED IN THIS MATERIAL SAFETY DATA SHEET (MSDS/SDS) WAS PREPARED BY TECHNICAL PERSONNEL BASED ON DATA THAT THEY BELIEVE IN THEIR GOOD FAITH JUDGMENT IS ACCURATE. HOWEVER, THE INFORMATION PROVIDED HEREIN IS PROVIDED “AS IS,” AND AVANTOR PERFORMANCE MATERIALS MAKES AND GIVES NO REPRESENTATIONS OR WARRANTIES WHATSOEVER, AND EXPRESSLY DISCLAIMS ALL WARRANTIES REGARDING SUCH INFORMATION AND THE PRODUCT TO WHICH IT RELATES, WHETHER EXPRESS, IMPLIED, OR STATUTORY, INCLUDING WITHOUT LIMITATION, WARRANTIES OF ACCURACY, COMPLETENESS, MERCHANTABILITY, NON-INFRINGEMENT, PERFORMANCE, SAFETY, SUITABILITY, STABILITY, AND FITNESS FOR A PARTICULAR PURPOSE, AND ANY WARRANTIES ARISING FROM COURSE OF DEALING, COURSE OF PERFORMANCE, OR USAGE OF TRADE. THIS MSDS/SDS IS INTENDED ONLY AS A GUIDE TO THE APPROPRIATE PRECAUTIONARY HANDLING OF THE MATERIAL BY A PROPERLY TRAINED PERSON USING THIS PRODUCT, AND IS NOT INTENDED TO BE COMPREHENSIVE AS TO THE MANNER AND CONDITIONS OF USE, HANDLING, STORAGE, OR DISPOSAL OF THE PRODUCT. INDIVIDUALS RECEIVING THIS MSDS/SDS MUST ALWAYS EXERCISE THEIR OWN INDEPENDENT JUDGMENT IN DETERMINING THE APPROPRIATENESS OF SUCH ISSUES. ACCORDINGLY, AVANTOR PERFORMANCE MATERIALS ASSUMES NO LIABILITY WHATSOEVER FOR THE USE OF OR RELIANCE UPON THIS INFORMATION. NO SUGGESTIONS FOR USE ARE INTENDED AS, AND NOTHING HEREIN SHALL BE CONSTRUED AS, A RECOMMENDATION TO INFRINGE ANY EXISTING PATENTS OR TO VIOLATE ANY FEDERAL, STATE, LOCAL, OR FOREIGN LAWS. AVANTOR PERFORMANCE MATERIALS REMINDS YOU THAT IT IS YOUR LEGAL DUTY TO MAKE ALL INFORMATION IN THIS MSDS/SDS AVAILABLE TO YOUR EMPLOYEES.
Issue date	04-01-2011
This data sheet contains changes from the previous version in section(s):	Exposure Controls / Personal Protection: Engineering controls Chemical Stability & Reactivity Information: Hazardous decomposition products Other Information: Disclaimer