MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Material name HEXAMETHYLDISILAZANE (HMDS)

Version # 07

Revision date 08-06-2010

Product code 430-1499254272R1, 430-1499254392R6, 430-200422, 430-200421, 430-149925446119, 430-149625403220, 430-149925446KX7, 430-062115, 430-064142, 430-064143, 430-064144, 430-064145, 430-064147, 430-064148, 430-064273, 430-064274, 430-064343, 430-064344, 430-140258

Manufacturer/Supplier KMG Electronic Chemicals, Inc.
9555 W. Sam Houston Parkway South
Suite 600
Houston, Texas 77099 US
Phone Number: 713-600-3800

Emergency 866-706-3266

2. Hazards Identification

Physical state Liquid.

Appearance Colorless liquid.

Emergency overview DANGER

Reacts with water. Will be easily ignited by heat, spark or flames.

Corrosive. Causes skin and eye burns. Harmful by inhalation, in contact with skin and if swallowed. EXTREMELY FLAMMABLE LIQUID AND VAPOR.

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 This product causes eye burns. Risk of serious damage to eyes. Do not get this material in contact with eyes.

Skin Causes skin burns. Do not get this material in contact with skin.

Inhalation Causes burns. Do not breathe dust/fume/gas/mist/vapors/spray.

Ingestion Ingestion may produce burns to the lips, oral cavity, upper airway, esophagus and possibly the digestive tract. Do not ingest.

Target organs Eyes. Respiratory system. Skin

Chronic effects Prolonged or repeated contact can result in defatting and drying of the skin which may result in skin irritation and dermatitis (rash).

Signs and symptoms Symptoms may include redness, edema, drying, defatting and cracking of the skin.

Potential environmental effects May cause long-term adverse effects in the environment.

3. Composition / Information on Ingredients

Components	CAS #	Percent
Silanamine, 1,1,1-trimethyl-N-(trimethylsilyl)-	999-97-3	>99

Composition comments All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First Aid Measures

First aid procedures

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

Skin contact Remove and isolate contaminated clothing and shoes. Get medical attention immediately. For minor skin contact, avoid spreading material on unaffected skin. Wash clothing separately before reuse. Immediately flush skin at least 15 minutes with plenty of water.

Inhalation	If breathing is difficult, give oxygen. Immediately call a poison control center or doctor for treatment advise. Move person to fresh air. If breathing has ceased, start mouth-to-mouth artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
Ingestion	Immediately call a poison control center or doctor for treatment advise. Have person sip a glass of water if able to swallow and if told so by a poison control centre or doctor. Do not give anything by mouth to an unconscious person. Do not induce vomiting unless told to do so by a poison control center or doctor. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration.
Notes to physician	In case of shortness of breath, give oxygen. Keep victim warm.
General advice	In case of shortness of breath, give oxygen. If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation immediately. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

5. Fire Fighting Measures

Flammable properties	Flammable by OSHA criteria. Containers may explode when heated. Runoff to sewer may cause fire or explosion hazard.
Extinguishing media	
Suitable extinguishing media	Foam. Dry chemical. Carbon dioxide (CO2).
Unsuitable extinguishing media	Reacts with water. Do not use water as an extinguisher.
Protection of firefighters	
Specific hazards arising from the chemical	Fire may produce irritating, corrosive and/or toxic gases.
Protective equipment and precautions for firefighters	Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask.
Specific methods	In the event of fire and/or explosion do not breathe fumes. In the event of fire, cool tanks with water spray. Use water spray to cool unopened containers.

6. Accidental Release Measures

Personal precautions	Use Personal Protective Equipment recommended in Section 8 of the MSDS. Local authorities should be advised if significant spillages cannot be contained. Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering. Keep unnecessary personnel away. Stay upwind. Keep out of low areas.
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, sewers, basements or confined areas.
Methods for cleaning up	Should not be released into the environment. Large Spills: Dike far ahead of liquid spill for later disposal. 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: Absorb spill with vermiculite or other inert material. Clean contaminated surface thoroughly. Avoid dust formation. After removal flush contaminated area thoroughly with water. Never return spills to original containers for re-use.

7. Handling and Storage

Handling	Use Personal Protective Equipment recommended in section 8 of the MSDS. Handle and open container with care. Use only with adequate ventilation. Avoid prolonged exposure. Do not handle or store near an open flame, heat or other sources of ignition. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Wash thoroughly after handling.
Storage	Keep in a well-ventilated place. Keep container tightly closed. Keep this material away from food, drink and animal feed. Keep out of the reach of children. Use care in handling/storage.

8. Exposure Controls / Personal Protection

Occupational exposure limits	No exposure limits noted for ingredient(s).

Engineering controls	Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Use explosion-proof equipment. Explosion proof exhaust ventilation should be used.
Personal protective equipment	
Eye / face protection	Do not get this material in contact with eyes. Wear face shield if there is risk of splashes. Wear chemical goggles. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.
Skin protection	Do not get this material in contact with skin. Do not get this material on clothing. Wear appropriate chemical resistant gloves. Wear appropriate chemical resistant clothing. Protective shoes or boots. Structural firefighters protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations. Use chemical splash goggles and face shield (ANSI Z87.1 or approved equivalent). Wear chemical protective equipment that is specifically recommended by the Personal Protective Equipment manufacturer.
Respiratory protection	Do not breathe dust/fume/gas/mist/vapors/spray. In case of inadequate ventilation or risk of inhalation of vapors, use suitable respiratory equipment.
General hygiene considerations	Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and immediately after handling the product. When using, do not eat, drink or smoke. Launder contaminated clothing before reuse. Remove and isolate contaminated clothing and shoes.

9. Physical & Chemical Properties

Appearance	Colorless liquid.
Color	Colorless.
Odor	Amine-like.
Odor threshold	Not available.
Physical state	Liquid.
Form	Liquid.
pH	Not available.
Melting point	-115.6 °F (-82 °C)
Freezing point	Not available.
Boiling point	258.8 °F (126 °C)
Flash point	48.2 °F (9 °C)
Evaporation rate	Not available.
Flammability limits in air, upper, % by volume	< 16.3 % v/v
Flammability limits in air, lower, % by volume	> 0.8 % v/v
Vapor pressure	23.08 mmHg at 20 °C
Vapor density	Vapors are heavier than air.
Specific gravity	0.77 (Water=1)
Solubility (water)	Hydrolyses
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Density	0.77 g/cm3 (38.172 lb/ft3)
Molecular weight	161.44 g/mol
Molecular formula	C6H19NSi2

10. Chemical Stability & Reactivity Information

Chemical stability	Stable at normal conditions. Risk of ignition.
Conditions to avoid	Heat, flames and sparks.
Incompatible materials	Alcohols. Acids. Oxidizing agents. Water.
Hazardous decomposition products	Carbon monoxide.

Possibility of hazardous reactions	Hazardous polymerization does not occur.

11. Toxicological Information

Toxicological data

Components	Test Results
Silanamine, 1,1,1-trimethyl-N-(trimethylsilyl)- (999-97-3)	Acute Inhalation LC50 Mouse: 12 mg/l 2 Hours Acute Inhalation LC50 Rat: 8.7 mg/l 4 Hours Acute Oral LD50 Mouse: 850 mg/kg Acute Oral LD50 Rabbit: 1100 mg/kg Acute Oral LD50 Rat: 847 mg/kg Acute Other LD50 Rat: 800 mg/kg

Acute effects	Causes burns.
Local effects	Irritating to eyes.
Sensitization	No data available.
Chronic effects	Not available.
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA. No data available.
Epidemiology	Not available.
Mutagenicity	No data available.
Neurological effects	Not available.
Reproductive effects	No data available.
Teratogenicity	Not available.

12. Ecological Information

Ecotoxicity	Components of this product have been identified as having potential environmental concerns.
Environmental effects	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Persistence and degradability	Not available.
Bioaccumulation / Accumulation	Not available.
Mobility in environmental media	Not available.
Partition coefficient (n-octanol/water)	Not available.

13. Disposal Considerations

Waste codes	D001: Waste Flammable material with a flash point <140 °F
Disposal instructions	Dispose of this material and its container at hazardous or special waste collection point. Do not incinerate sealed containers. Do not allow this material to drain into sewers/water supplies. If discarded, this product is considered a RCRA ignitable waste, D001. Dispose in accordance with all applicable regulations.
Waste from residues / unused products	Dispose of in accordance with local regulations.
Contaminated packaging	Dispose of in accordance with local regulations.

14. Transport Information

DOT

Basic shipping requirements:

UN number	UN3286
Proper shipping name	Flammable liquid, toxic, corrosive, n.o.s. (Silanamine, 1,1,1-trimethyl-N-(trimethylsilyl)-)
Hazard class	3
Subsidiary hazard class	6.1, 8
Packing group	II
Labels required	3, 6.1, 8

Additional information:

Special provisions	IB2, T11, TP2, TP13, TP27
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. (Silanamine, 1,1,1-trimethyl-N-(trimethylsilyl)-)
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., MARINE POLLUTANT (Silanamine, 1,1,1-trimethyl-N-(trimethylsilyl)-)
Hazard class	3
Subsidiary hazard class	6.1,8
Packing group	II
Environmental hazards	
Marine pollutant	No
EmS No.	F-E, S-C

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 (lbs)

None

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - Yes Delayed Hazard - No Fire Hazard - Yes Pressure Hazard - No Reactivity Hazard - Yes
Section 302 extremely hazardous substance	No
Section 311 hazardous chemical	No

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.

16. Other Information

Further information HMIS® is a registered trade and service mark of the NPCA.

HMIS® ratings
Health: 3
Flammability: 3
Physical hazard: 2

NFPA ratings
Health: 3
Flammability: 3
Instability: 0
Special hazards: W

Disclaimer This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.

Issue date 08-06-2010

This data sheet contains changes from the previous version in section(s):
First Aid Measures: Inhalation
First Aid Measures: Notes to physician
First Aid Measures: General advice
Accidental Release Measures: Methods for cleaning up
Disposal Considerations: Waste codes