1,1,1,3,3,3-hexamethyldisilazane

This document is a high-level summary intended to provide the general public with an overview of product safety for this substance. It is not intended to replace the Material Safety Data Sheet (MSDS), which is available from suppliers and should be referred to for full details of recommended safety procedures for each type of use. It is not intended to replace or supersede manufacturer's instructions and warnings for their consumer products containing this substance.

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Substance Name and Chemical Identity

Chemical Name:
1,1,1,3,3,3-hexamethyldisilazane

CAS Number:
999-97-3

Molecular formula:
$C_6H_{19}NSi_2$

Uses and Applications

1,1,1,3,3,3-hexamethyldisilazane is an organic silicon substance that has the following uses:

- Use as an intermediate (starting material) in the production of other organic and inorganic chemicals.
- Use in the electronics industry for semiconductor manufacture.
- Use in the production on surface-modified particles or substrates (non-metal surface treatment).

The substance is not suitable for use by the general public. The applications described generally take place in industrial settings or academic laboratories under highly controlled conditions. Although the end uses of products made from 1,1,1,3,3,3-hexamethyldisilazane will vary, it is expected that due to its highly reactive nature, no residual unreacted material will be present in any of the final products.

1,1,1,3,3,3-hexamethyldisilazane is used in the electronics industry as a primer and adhesion promoter in the manufacture of semiconductors and photovoltaics. In non-metal surface treatment, it is used to modify the surface or particles of amorphous silica before it is sold or further processed for use in applications such as paint, sealants and adhesives.

Physical/chemical properties

1,1,1,3,3,3-hexamethyldisilazane is a highly flammable and highly volatile liquid with a moderate boiling point. It reacts rapidly with water, breaking down to trimethylsilanol and ammonia. The substance is classified for hazardous physicochemical properties under the Globally Harmonized System (GHS) as:

Flammable Liquid Category 2	H225: Highly flammable liquid and vapor	

Property	Value
Physical state	Liquid
Color	Colorless
Odor	Ammonia
Molecular weight	161.4 g/mol
Melting/boiling point	-76.2°C/125–126°C
Density	0.77 g/cm^3
Vapor pressure	10100 Pa at 20°C
Flammability	Flammable
Flash point	11°C at 101.3 kPa
Self-ignition temperature	331°C at 101.3 kPa
Explosive properties	Not explosive

Health Information

1,1,1,3,3,3-hexamethyldisilazane is classified for human health hazards under the Globally Harmonized System (GHS) as:

[PLACEHOLDER – CLASSIFICATION AS CORROSIVE REMOVED, TO BE CONFIRMED]

Acute Toxic Category 4 (Oral)	H 302: Harmful if swallowed	
Acute Toxic Category 4 (Vapor)	H 332: Harmful if inhaled	
Acute Toxic Category 3 (Dermal)	H 311: Toxic in contact with skin’	

Environmental Information

1,1,1,3,3,3-hexamethyldisilazane is classified for environmental hazards under the Globally Harmonized System (GHS) as:

Acute Toxicity (Chronic) Category 3	H412: Harmful to aquatic life with long lasting effects	No pictogram required

Exposure Potential

Consumer exposure: There are no consumer uses of 1,1,1,3,3,3-hexamethyldisilazane. It is expected that there is no residual 1,1,1,3,3,3-hexamethyldisilazane in end-products manufactured using the substance.

Workplace exposure: This refers to potential for worker exposure at manufacturing sites or industrial workplaces, and laboratories (including academic). Due to the corrosive and highly flammable nature of the substance, all aspects of 1,1,1,3,3,3-hexamethyldisilazane handling, including on-site storage and transfer, require highly controlled conditions. Further details are given in the Safety Data Sheet.

Environmental releases: Manufacturing generally occurs under controlled conditions and is typically subject to stringent regulations, with only very small releases to air and wastewater. Environmental exposure can be minimized by applying air and wastewater abatement technologies to remove unreacted substance and reaction products. The use of appropriate measures to manage environmental release is described in the Safety Data Sheet.

Risk Management Recommendations

Consumer and professional risk management: There are no consumer uses of this substance. In a laboratory setting, local exhaust ventilation must be in place and personal protective equipment must be worn with adherence to good laboratory practice.

Industrial risk management: For more detailed information please refer to the Safety Data Sheet for information on protecting workers and limiting environmental exposure at industrial sites. In summary, when using this chemical, there must be adequate ventilation. Suitable respiratory protection must be worn if the product is handled in large quantities in confined spaces. Chemical-resistant clothing and gloves, and safety glasses or other suitable eye protection must be worn. Avoid sources of ignition and keep containers tightly closed, in a dry and cool place.

Conclusions

1,1,1,3,3,3-hexamethyldisilazane is used only under highly controlled conditions at industrial sites. The manufacturing and use of 1,1,1,3,3,3-hexamethyldisilazane does not pose a significant risk to humans or the environment if instructions in the Safety Data Sheet and applicable legal requirements are followed.

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