MATERIAL SAFETY DATA SHEET

Product name: Silquest® A-1589 silane

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: **Silquest® A-1589 silane**

Chemical name: Bis(3-Triethoxysilylpropyl) Disulfane

Supplier:

GE Silicones
3500 South State Route 2
Friendly, WV 26146, USA

Contact numbers:

CHEMTREC (24 hours):	800-424-9300
GE Silicones Emergency Response (24 hours):	800-809-9998
GE Silicones Emergency Response (24 hours):	304-926-8418
For Product Safety Inquiries:	304-652-8446
For MSDS only:	304-652-8155
Customer Service:	800-523-5862

2. COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENT	CAS#	CONCENTRATION
Bis(3-Triethoxysilylpropyl) Disulfane	56706-10-6	< 80.0 %
Related silanes	Mixture	< 40.0 %
Gamma-Mercaptopropyltriethoxysilane	14814-09-6	< 4.0 %
Ethanol	64-17-5	< 0.5 %

Note(s): Additional ethanol may be formed by reaction with moisture.
See Section 15 for chemicals appearing on Federal or State Right-To-Know lists.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

NORMAL PRECAUTIONS COMMON TO SAFE MANUFACTURING PRACTICE SHOULD BE FOLLOWED IN HANDLING AND STORAGE.

4. FIRST AID MEASURES

Swallowing
Rinse mouth with water. Obtain medical attention.

Skin
Wash skin with soap and water.

Inhalation
Remove to fresh air.

Eye contact
Flush eyes thoroughly with water for several minutes. Obtain medical attention if discomfort persists.

Notes to physician
Symptoms vary with the alcohol level of the blood. Mild alcohol intoxication occurs at blood levels between 0.05%-0.15% and approximately 25% of individuals will show signs of intoxication at these levels. Above 0.15% the person is definitely under the influence of ethanol and 50%-95% of individuals at this level are clinically intoxicated. Severe poisoning occurs when the blood ethanol level is 0.3%-0.5%. Above 0.5% the individual will be comatose and death can occur. The unabsorbed ethanol should be removed by gastric lavage after intubating the patient to prevent aspiration. Avoid the use of depressant drugs or the excessive administration of fluids. In the presence of hypoglycemia, administer 5%-10% glucose intravenously, plus thiamine 100 mg intramuscularly. Hemodialysis is indicated if the ethanol concentration in the blood is above 5 mg/ml. Naloxone may be useful to reverse clinical alcoholic coma and 0.4-1.2 mg intravenously may arouse ethanol-intoxicated patients.

5. FIRE-FIGHTING MEASURES

Flash point: 129 °C (265 °F)

Flammable limits

Lower limit:	Not available
Upper limit:	Not available

Special fire fighting procedures
Do not direct a solid stream of water or foam into hot, burning pools: this may cause frothing and increase fire intensity.

Special protective equipment for firefighters
Self-contained breathing apparatus. Body covering protective clothing.

Extinguishing media
Suitable: Large fires:
- alcohol-type foam or universal-type foams
Small fires:
- CO_2
- dry chemical

Unsuitable: None.

Unusual fire and explosion hazards
None

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Avoid contact with eyes and skin. Avoid contact with liquid and vapors. Wear suitable protective equipment.

Environmental precautions
Prevent runoff.

Methods for cleaning up
Cover with absorbent or contain.
Collect for disposal.
Observe government regulations.

7. HANDLING AND STORAGE

HANDLING
Handling precautions
Do not swallow. Do not get in eyes, on skin, on clothing. Avoid breathing vapor, aerosol and mist. Use with adequate ventilation. Wash thoroughly after handling.

STORAGE
Storage requirements
Keep away from heat and flame. Keep container closed.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

PERSONAL PROTECTION
Respiratory protection
May be needed if product is used in a confined or poorly ventilated area.

Hand protection / protective gloves
Recommended order of use:
4H
Butyl
Neoprene
Nitrile (NBR)
PVC-coated

Eye protection
Safety glasses with side shields.

Skin protection
Chemical protective clothing.

Other protective equipment
Eye bath
Safety shower

ENGINEERING CONTROLS
Ventilation
General mechanical room ventilation is satisfactory for normal handling and storage operations.

EXPOSURE LIMITS

Component	Type	Value	Remark
Ethanol	TWA, OSHA	1,000.0 ppm	

	TWA, ACGIH	1,000.0 ppm	

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

Physical state	Liquid
Color	Yellow-brown
Odor	Sulfur

OTHER PROPERTIES

Boiling point	Not available
Melting point	Pour point -35 °C at STP unless specified below. (approximately)
pH	Not available
Specific gravity (H2O=1)	1.0268 at 25 °C (1,013 hPa)
Vapor pressure	< 1.33 hPa (1.00 mmHg) at 20 °C
Vapor density (air=1)	Not determined
Solubility in water	Reacts slowly
Evaporation rate (Butyl Acetate=1)	< 1
Flash point	129 °C (265 °F) Method: Pensky-Martens closed cup ASTM D 93
Upper explosion limits	Not available
Lower explosion limits	Not available
Percent volatiles	Not determined
Molecular weight	Mixture

10. STABILITY AND REACTIVITY

Stability: Stable.

Stability - Conditions to avoid
None known.

Incompatible materials
Acids.
Bases.
Reacts with water or moisture to form:
Ethanol.

Hazardous combustion products
Burning can produce the following combustion products:
Oxides of carbon.
Oxides of sulfur.
Oxides of silicon.
Carbon monoxide is highly toxic if inhaled; carbon dioxide in sufficient concentrations can act as an asphyxiant.
Acute overexposure to the products of combustion may result in irritation of the respiratory tract.

Hazardous polymerization: Will not occur.

Hazardous polymerization - Conditions to avoid
None known.

11. TOXICOLOGICAL INFORMATION

SWALLOWING

Acute effects
This product hydrolyzes in the stomach to form ethanol.
May cause the following effects:
- dizziness, faintness, drowsiness, decreased awareness and responsiveness, euphoria, abdominal discomfort, nausea, vomiting, staggering gait, lack of coordination and coma

Effects of repeated overexposure
Long-term repeated oral exposure to ethanol may result in the development of progressive liver injury with fibrosis.

Test results

Acute toxicity:	LD50 - Rats
	Result: > 2,000 mg/kg

SKIN ABSORPTION

Acute effects
No evidence of harmful effects from available information.

Test results

Acute toxicity:	LD50 - Rats
	Result: > 2,000 mg/kg

INHALATION

Acute effects
May cause irritation of the respiratory tract.
May cause the following effects:
- nasal discomfort and discharge

- chest pain
- coughing

SKIN CONTACT

Acute effects
May cause minor irritation.
May cause the following effects:
- itching
- slight local redness

Effects of repeated overexposure
Skin contact may cause:
- a dermatitis
Prolonged and/or repeated contact may result in:
- defatting of the skin

Test results
Skin irritation: Species: Rabbit
Result: Slight irritation

EYE CONTACT

Acute effects
May cause mild discomfort.
May cause the following effects:
- excess redness of the conjunctivae

Test results
Eye irritation: Species: Rabbit
Result: Minimal irritation

Medical conditions aggravated by overexposure

Repeated exposure to ethanol may aggravate liver injury produced from other causes.

Other effects of overexposure

Repeated ingestion of ethanol by pregnant mothers has been shown to adversely affect the central nervous system of the fetus, producing a collection of effects which together constitute the fetal alcohol syndrome. These include mental and physical retardation, disturbances of learning, motor and language deficiencies, behavioral disorders, and small size head.

MUTAGENICITY

Genetic toxicity in vitro: Test type: Ames bacterial assay
Result: Negative

SIGNIFICANT DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH

The following information is based on ethanol:
The International Agency for Research on Cancer (IARC) has determined that the consumption of alcoholic beverages is causally related to the occurrence of malignant tumors of the oral cavity, pharynx, larynx, esophagus and liver in humans. The carcinogenic response attributed to drinking alcoholic beverages has not been verified in studies with laboratory animals. Established uses of denatured ethanol and non-beverage uses of pure ethanol are not considered to pose any significant cancer hazard.

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12. ECOLOGICAL INFORMATION

All available ecological data have been taken into account for the development of the hazard and precautionary information contained in this Safety Data Sheet.

13. DISPOSAL CONSIDERATIONS

General: Incinerate in a furnace where permitted under appropriate Federal, State, and local regulations.

14. TRANSPORT INFORMATION

DOT Classification

This product is not regulated by DOT.
Freight description road: CHEMICALS, NOIBN

IMDG Classification

This product is not regulated by IMDG.

ICAO Classification

This product is not regulated by ICAO.

15. REGULATORY INFORMATION

Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA) requires notification of the National Response Center of release of quantities of hazardous substances equal to or greater than the reportable quantities (RQ's) in 40CFR302.4.
Components present in this product at a level which could require reporting under the statute are:
**** NONE ****

Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires emergency planning based on Threshold Planning Quantities (TPQ's) and release reporting based on Reportable Quantities (RQ's) in 40CFR355 (used for SARA 302 and 304).
Components present in this product at a level which could require reporting under the statute are:
**** NONE ****

Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires submission of annual reports of release of toxic chemicals that appear in 40CFR372 (for SARA 313). This information must be included in MSDS's that are copied and distributed for this material.
Components present in this product at a level which could require reporting under the statute are:
**** NONE ****

Massachusetts Right-To-Know Substance List (MSL)--Hazardous Substances and Extraordinarily Hazardous Substances on the MSL must be identified when present in products.
Components present in this product at a level which could require reporting under the statute are:
**** NONE ****

Pennsylvania Right-To-Know Hazardous Substance List--Hazardous Substances and Special Hazardous Substances on the list must be identified when present in products.
Components present in this product at a level which could require reporting under the statute are:

***** NONE ****

EPA Hazard Categories (SARA 311, 312): None

California Proposition 65
This product contains no levels of listed substances, which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute.

California SCAQMD Rule 443.1 VOC's
Volatile Organic Components (VOC's) = Substances with vapor pressure of => 0.5 mmHg at 104°C (219.2°F).
This product contains 116 g/liter VOC's.

CHEMICAL INVENTORY

Canada: This product contains a substance not listed on the DSL.

Europe: The ingredients of this mixture are on the EINECS inventory.

United States: The ingredients of this product are listed on the TSCA inventory or are exempt.

Australia: This product, or the components, is listed or exempt from listing on the Australian Inventory of Chemical Substances (AICS).

16. OTHER INFORMATION

RECOMMENDED USES AND RESTRICTIONS
Please consult the product and/or application information bulletins for this product.

HMIS RATING

Health: 1	Flammability: 1	Reactivity: 1	PPI: X

LEGEND

STP	Standard temperature and pressure
W/W	Weight/Weight
0 (HMIS)	Minimal hazard
1 (HMIS)	Slight hazard
2 (HMIS)	Moderate hazard
3 (HMIS)	Serious hazard
4 (HMIS)	Severe hazard
X (HMIS)	Personal protection rating to be supplied by user depending on use conditions

The opinions expressed herein are those of qualified experts within GE Silicones. We believe that the information contained herein is current as of the date of this Safety Data Sheet. Since the use of this information and of these opinions and the conditions of use of this product are not within the control of GE Silicones, it is the user's obligation to determine the conditions of safe use of the products.