

MATERIAL SAFETY DATA SHEET

Product name: Silquest A-1100 silane

MSDS Number: 1503

Revision: 1.4 12/05/2000

Page: 1 of 11

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: Silquest A-1100 silane

Chemical name: Gamma-Aminopropyltriethoxysilane

Supplier: Crompton Corporation
One American Lane
Greenwich, CT 06831-2559, USA

Emergency telephone number: CHEMTREC (24 hours) 800-424-9300
Crompton Corporation Emergency Response (24 hours)
800-809-9998
Crompton Corporation Emergency Response (24 hours)
304-926-8418

For MSDS, Product Safety, or regulatory inquiries, call: Mr. Dana Dalrymple 304-652-8446 / (fax) 304-652-1478

Customer Service: 800-523-5862

2. COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENT	CAS#	CONCENTRATION
Gamma-Aminopropyltriethoxysilane	919-30-2	< 100.0 %
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.

OSI SPECIALTIES
MATERIAL SAFETY DATA SHEET

Product name: Silquest A-1100 silane

MSDS Number: 1503

Revision: 1.4 12/05/2000

Page: 2 of 11

3. HAZARDS IDENTIFICATION

APPEARANCE

Physical state	Liquid
Color	Clear, colorless
Odor	Amine

EMERGENCY OVERVIEW

DANGER!

HARMFUL OR FATAL IF SWALLOWED.
CAUSES EYE AND SKIN BURNS.
CORROSIVE IF SWALLOWED.
HARMFUL IF INHALED.
HARMFUL IF ABSORBED THROUGH SKIN.
ASPIRATION MAY CAUSE LUNG DAMAGE.
MAY CAUSE ALLERGIC SKIN REACTION.
MAY CAUSE DIZZINESS AND DROWSINESS.
MAY CAUSE LIVER AND KIDNEY DAMAGE.

POTENTIAL HEALTH EFFECTS

Swallowing

Acute effects

Toxic.

Causes irritation or chemical burns.

Affects:

- mouth, throat, esophagus and stomach

May cause the following effects:

- discomfort or pain in the mouth, throat, chest and abdomen

- difficulty in swallowing

- diarrhea

- weakness

- thirst

- headache

- loss of consciousness

- dizziness, faintness, drowsiness, decreased awareness and responsiveness, euphoria, abdominal discomfort, nausea, vomiting, staggering gait, lack of coordination and coma

- death

Effects of repeated overexposure

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

Skin absorption

Acute effects

Prolonged and/or widespread contact may result in:

- absorption of potentially harmful amounts of material

OSI SPECIALTIES
MATERIAL SAFETY DATA SHEET

Product name: Silquest A-1100 silane

MSDS Number: 1503

Revision: 1.4 12/05/2000

Page: 3 of 11

May lead to:

- kidney damage

Inhalation

Acute effects

High vapor concentrations may cause a burning sensation in the throat and nose, stinging and watering in the eyes. At concentrations which cause irritation, dizziness, faintness, drowsiness, nausea and vomiting may also occur. Inhalation of aerosols may cause irritant effects including nasal discomfort and discharge, cough, production of sputum, discomfort in the chest, and possibly difficulty in breathing.

Effects of repeated overexposure

Aerosol from undiluted or aqueous material may cause:

- irritation of the respiratory tract
- damage to respiratory tract

Skin contact

Acute effects

Brief contact may cause slight irritation.

May cause the following effects:

- itching
- local redness
- possible swelling

Prolonged contact results in:

- chemical burns
- discomfort or pain
- severe excess redness
- swelling
- tissue destruction
- fissures
- ulceration
- possibly bleeding into the injured area

Effects may cause scar formation.

Effects of repeated overexposure

Skin contact may cause:

- a severe cumulative dermatitis
- allergic skin reaction

Eye contact

Acute effects

Causes severe irritation.

Causes the following effects:

- discomfort
- pain
- excess blinking
- tear production
- marked excess redness of the conjunctivae
- swelling of the conjunctivae
- chemical burns of the cornea

Corneal injury may be severe, extensive, and, if not treated promptly, could result in permanent impairment of vision.

Medical conditions aggravated by overexposure

May aggravate:

OSI SPECIALTIES
MATERIAL SAFETY DATA SHEET

Product name: Silquest A-1100 silane

MSDS Number: 1503

Revision: 1.4 12/05/2000

Page: 4 of 11

- an existing kidney disease
 - an existing liver disease
- Skin contact may aggravate:
- an existing dermatitis
- Aerosol may aggravate:
- an existing chronic or fibrotic lung disease

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.

POTENTIAL ENVIRONMENTAL EFFECTS

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

4. FIRST AID MEASURES

Swallowing

If patient is fully conscious, give two glasses of milk or water at once. Do not induce vomiting. Obtain medical attention immediately.

Skin

Remove contaminated clothing. Wash skin with soap and water. Obtain medical attention if irritation persists. Wash clothing before re-use.

Inhalation

Remove to fresh air.

Eye contact

Immediately flush eyes with water and continue washing for at least 15 minutes. Obtain medical attention without delay, preferably from an ophthalmologist.

Notes to physician

Causes chemical burns of the skin. Causes chemical burns of the eye. Moderately toxic by swallowing. May cause acute kidney injury (renal cortical tubular necrosis) by massive peroral overdose or sustained skin contact. Due to the severely irritating or corrosive nature of the material, swallowing may lead to ulceration and inflammation of the upper alimentary tract with hemorrhage and fluid loss. Also, perforation of the esophagus or stomach may occur, leading to mediastinitis or peritonitis and the resultant complications. The stomach should be evacuated carefully in case of ingestion. This material reacts immediately with water in the acid contents of the stomach to produce ethanol. Although ethanol production may occur, and there is a potential for nephrotoxicity, because of its intensely irritating effects, it is unlikely that large volumes of this material will be acutely ingested. Therefore, the irritant and aspiration hazards from regurgitation are more serious causes for concern. In view of this, it is recommended that emesis should not be induced in the conscious patient, neither mechanically nor pharmacologically. If it is considered necessary to evacuate the stomach contents, this should be undertaken with caution in order to avoid perforation of inflamed or ulcerated areas of the upper alimentary tract, or to avoid aspiration (e.g., gastric lavage in the presence of endotracheal intubation).

MATERIAL SAFETY DATA SHEET

Product name: Silquest A-1100 silane

MSDS Number: 1503

Revision: 1.4 12/05/2000

Page: 5 of 11

5. FIRE-FIGHTING MEASURES

Flash point: 96 °C (205 °F)

Flammable limits

Lower limit: Not available

Upper limit: Not available

Special fire fighting procedures

None.

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:

- CO2

- dry chemical

This material is reactive with water, but the reaction will not significantly increase the fire severity.

Unsuitable: None.

Unusual fire and explosion hazards

None known.

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

OSI SPECIALTIES
MATERIAL SAFETY DATA SHEET

Product name: Silquest A-1100 silane

MSDS Number: 1503

Revision: 1.4 12/05/2000

Page: 6 of 11

Handling precautions

Do not swallow. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated contact with skin. Avoid breathing vapor and mist. Use with adequate ventilation. Wash thoroughly after handling.

STORAGE

Storage requirements

Keep container closed.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

PERSONAL PROTECTION

Respiratory protection

Self-contained breathing apparatus in high vapor concentrations.

Hand protection / protective gloves

Recommended order of use:

4H

Butyl

Neoprene

Nitrile (NBR)

PVC-coated

Eye protection

Monogoggles

Other protective equipment

Chemical apron

Eye bath

Safety shower

ENGINEERING CONTROLS

Ventilation

General (mechanical) room ventilation is expected to be satisfactory where this product is stored and handled in closed equipment.

Special, local ventilation is needed at points where vapors can be expected to escape to the workplace air.

EXPOSURE LIMITS

<u>Component</u>	<u>Type</u>	<u>Value</u>	<u>Remark</u>
Ethanol	TWA, OSHA	1,000.0 ppm	
	TWA, ACGIH	1,000.0 ppm	

OSI SPECIALTIES
MATERIAL SAFETY DATA SHEET

Product name: Silquest A-1100 silane

MSDS Number: 1503

Revision: 1.4 12/05/2000

Page: 7 of 11

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

Physical state	Liquid
Color	Clear, colorless
Odor	Amine

OTHER PROPERTIES

Boiling point	220 °C at STP unless specified below.
Melting point	< -70 °C at STP unless specified below.
pH	Not available
Specific gravity (H ₂ O=1)	0.9500 at 25 °C (1,013 hPa)
Vapor pressure	< 1.33 hPa (1.00 mmHg) at 20 °C
Vapor density (air=1)	Heavier than air
Solubility in water	Reacts rapidly
Evaporation rate (Butyl Acetate=1)	< 1
Flash point	96 °C (205 °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	221.3

10. STABILITY AND REACTIVITY

Stability: Stable.

OSI SPECIALTIES
MATERIAL SAFETY DATA SHEET

Product name: Silquest A-1100 silane

MSDS Number: 1503

Revision: 1.4 12/05/2000

Page: 8 of 11

Stability - Conditions to avoid

Avoid contact with:

Moisture.

Water.

Incompatible materials

Reaction with water or other aqueous media is rapid and exothermic. The addition of small amounts of water (in the range of 2-15%) can produce an exothermic reaction which generates alcohol, to the extent that the resulting solution can reach a temperature which exceeds the flash point of the new solution. If a water solution is desired, add the product to water, and not vice versa.

Hazardous combustion products

Burning can produce the following combustion products:

Oxides of carbon.

Oxides of nitrogen.

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

Test results

Chronic toxicity:

NOAEL - pregnant rats

Result: 100 mg/kg

Remark: Daily dosage

maternal and developmental NOAEL for gamma-Aminopropyltriethoxysilane

SENSITIZATION

Test results:

Species: - Guinea pigs

Result: elicited a delayed contact hypersensitivity response

SIGNIFICANT DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH

Not genotoxic in various in vitro or in vivo studies. No evidence for systemic toxicity by short-term recurrent (9-day) application to the skin of rabbits up to 84.0 mg/kg/day (6 hr/day, occlusive), although a cumulative local irritation occurs.

Recurrent exposure of rats to an aerosol of a hydrolyzate of this material (150 mg/m³) produced inflammatory and irritant effects in the nasal, laryngeal and tracheal mucosae, and inflammatory reactions in the lungs.

A separate laboratory study indicates that contact with a hydrolyzate of this organosilane ester does not result in skin sensitization.

MATERIAL SAFETY DATA SHEET

Product name: Silquest A-1100 silane

MSDS Number: 1503

Revision: 1.4 12/05/2000

Page: 9 of 11

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.

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: DISPOSAL: Biodegradable. Small amounts of waste material can be disposed of in a biological wastewater treatment system. Incinerate in a furnace where permitted under appropriate Federal, State, and local regulations.

14. TRANSPORT INFORMATION

DOT Classification

Proper shipping name: CORROSIVE LIQUID, N.O.S. (gamma-Aminopropyltriethoxysilane)
Class: 8
UN ID #: UN1760
Packing group: II
Freight description road: SIZING, NOI

IMDG Classification

Proper shipping name: CORROSIVE LIQUID, N.O.S. (gamma-Aminopropyltriethoxysilane)
Class: 8
UN ID #: UN 1760
Packing group: II

ICAO Classification

Proper shipping name: CORROSIVE LIQUID, N.O.S. (gamma-Aminopropyltriethoxysilane)
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OSI SPECIALTIES
MATERIAL SAFETY DATA SHEET

Product name: Silquest A-1100 silane

MSDS Number: 1503

Revision: 1.4 12/05/2000

Page: 10 of 11

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 ****

New Jersey Worker and Community Right-To-Know Act (Labeling Requirements)

Chemical name

CAS#

New Jersey TS Number

Gamma-Aminopropyltriethoxysilane

919-30-2

EPA Hazard Categories (SARA 311, 312):

Immediate Health Hazard

Delayed Health Hazard

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 \geq 0.5 mmHg at 104°C (219.2°F).

This product contains 947.22 g/liter VOC's.

CHEMICAL INVENTORY

Canada:

The ingredients of this product are on the DSL.

OSI SPECIALTIES
MATERIAL SAFETY DATA SHEET

Product name: Silquest A-1100 silane

MSDS Number: 1503

Revision: 1.4 12/05/2000

Page: 11 of 11

Europe: 213-048-4

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).

Japan: This product, or the components, is listed or exempt from listing on the Existing and New Chemical Substances (ENCS) list.

Korea: This product is listed on the Existing Chemicals List (ECL).

Philippines: This product, or the components, is listed or exempt from listing on the Philippines Inventory of Chemicals and Chemical Substances (PICCS).

16. OTHER INFORMATION

RECOMMENDED USES AND RESTRICTIONS

Please consult the product and/or application information bulletins for this product.

HMIS RATING

Health: 3	Flammability: 1	Reactivity: 2	PPI: X
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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

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