1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

| Manufacturer Name: | Momentive Performance Materials - Sistersville  
10851 Energy Highway  
FRIENDLY WV 26146 |
| Revised: | 05/20/2014 |
| Prepared by | Product Safety Team |
| CHEMTREC | 1-800-424-9300 |
| MSDS Contact | 1-888-443-9466 |
| Information | 4information@momentive.com |

Chemical Family/Use: Interface additive and adhesion promoter for coatings. Sizing agent for glass fibers used in insulation and reinforcement.

Formula: Gamma-Glycidoxypropyltrimethoxysilane

| HMIS | Health: 2 | Flammability: 1 | Reactivity: 1 |
| NFPA | Health: 2 | Flammability: 1 | Reactivity: 1 |

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

DANGER! Harmful or fatal if swallowed. May cause drowsiness or dizziness. May cause heart muscle damage. May cause damage to the liver and kidneys.

Form: Liquid  
Color: Colorless  
Odor: ester like

POTENTIAL HEALTH EFFECTS

INGESTION

This product hydrolyzes in the stomach to form methanol. Methanol may cause nausea, abdominal pain, vomiting, headache, dizziness, shortness of breath, weakness, fatigue, leg cramps, restlessness, confusion, drunken behavior, visual disturbances, drowsiness, coma, and death. There may be a delay of several hours between swallowing methanol and the onset of signs and symptoms. The effects observed are in part due to acidosis and partially to cerebral edema. Visual effects include blurred vision, diplopia, changes in color perception, restriction of visual fields, complete blindness. Ingestion of moderate quantities of methanol also produces metabolic acidosis. Onset of symptoms may be delayed up to 48 hours. 60-200 ml methanol is fatal dose for most adults. Ingestion of as little as 10 ml methanol has caused blindness. With massive overdoses, liver, kidney and heart muscle injuries have been described.
SKIN
Causes irritation. Causes the following effects: - local redness Increased pigmentation of the skin may occur.

INHALATION
Short-term harmful health effects are not expected from vapor generated at ambient temperature. However, this material is capable of forming methanol if hydrolyzed. Methanol vapor may cause dizziness, drowsiness, disturbances of vision, and tingling, numbness, and shooting pains in the hands and forearms.

EYES
Causes irritation. Causes the following effects: Pain - excess blinking - tear production - marked excess redness of the conjunctivae - swelling of the conjunctivae

MEDICAL CONDITIONS AGGRAVATED
May aggravate: - an existing liver disease - pre-existing upper respiratory tract and lung diseases, such as, but not limited to, bronchitis, emphysema and asthma Allergies. May cause eczema-like skin disorders (dermatitis).

SUBCHRONIC (TARGET ORGAN )
Liver; Kidney

CHRONIC EFFECTS / CARCINOGENICITY
This product or one of its ingredients present at 0.1% or more is NOT listed as a carcinogen or suspected carcinogen by NTP, IARC, or OSHA.

ROUTES OF EXPOSURE
Ingestion; Eye; Dermal

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>PRODUCT COMPOSITION</th>
<th>CAS-No.</th>
<th>WGT. %</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. HAZARDOUS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-glycidyl-oxypropyl-trimethoxy-silane</td>
<td>2530-83-8</td>
<td>60 - 100 %</td>
</tr>
<tr>
<td>Methanol</td>
<td>67-56-1</td>
<td>0.1 - 1 %</td>
</tr>
</tbody>
</table>
B. NON-HAZARDOUS

Note(s): Additional methanol may be formed by reaction with moisture.

4. FIRST AID MEASURES

INGESTION
If conscious, drink plenty of water. Do not induce vomiting. Call a physician or poison control center immediately.

SKIN
Wash off promptly and flush contaminated skin with water. Promptly remove clothing if soaked through and flush skin with water. Wash contaminated clothing before reuse. Get medical attention.

INHALATION
Move the exposed person to fresh air at once. If respiratory problems, artificial respiration/oxygen. Call a physician or poison control center immediately.

EYES
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.

NOTE TO PHYSICIAN
Product may hydrolyse upon contact with body fluids in the gastrointestinal tract to produce additional methanol; therefore, consider the signs/symptoms of methanol poisoning and also observe the known latency period of several days!

5. FIRE-FIGHTING MEASURES

FLASH POINT: 110 °C; 230 °F
METHOD ASTM D 93
FLAMMABLE LIMITS LEL: No data available.
FLAMMABLE LIMITS UEL: No data available.
SENSITIVITY TO MECHANICAL IMPACT: No
SENSITIVITY TO STATIC DISCHARGE
Sensitivity to static discharge is not expected.

EXTINGUISHING MEDIA
All standard extinguishing agents are suitable.

SPECIAL FIRE FIGHTING PROCEDURES
Firefighters must wear NIOSH/MSHA approved positive pressure self-contained breathing
apparatus with full face mask and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

ACTION TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED
Wipe, scrape or soak up in an inert material and put in a container for disposal. Wash walking surfaces with detergent and water to reduce slipping hazard. Wear proper protective equipment as specified in the protective equipment section.

7. HANDLING AND STORAGE

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE
Avoid contact with skin and eyes. Keep out of reach of children. Attention: Not for injection into humans.

OTHER PRECAUTIONS
DANGER! Harmful or fatal if swallowed due to methanol production in the stomach. POLYMERIZATION - HYDROLYSIS The epoxysilane esters are not monomers in the usual sense, but polymeric materials may be produced under certain conditions of catalyzed partial hydrolysis. Polysiloxanes are produced by polymerization of the silyl ester group in the presence of controlled amounts of water and alkali or acid catalyst at ambient temperatures. At slightly higher temperatures (ca. 50 °C), polyglycols or polyglycol ethers are produced via the epoxy functional group under the same conditions of water concentration and alkali or acid catalyst. In as much as both of these reactions are exothermic and may occur simultaneously, the heat evolved may be cumulative and greatly accelerate the rate of reactions. It is imperative, therefore, that unintentional contamination of the epoxysilane esters with water be avoided, and that intentional hydrolysis be properly controlled to avoid hazardous consequences.

STORAGE
Keep container tightly closed. Purge opened containers with bone dry inert gas before resealing.

FURTHER INFORMATION ON STORAGE CONDITIONS
No data available.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS
Provide eyewash station and safety shower.; General (mechanical) room ventilation is expected to be satisfactory if handled at low temperatures or in covered equipment.; Provide adequate ventilation if fumes or vapors are generated.
RESPIRATORY PROTECTION
If exposure limits are exceeded or respiratory irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Supplied air respirators may be required for non-routine or emergency situations. Respiratory protection must be provided in accordance with OSHA regulations (see 29CFR 1910.134).

PROTECTIVE GLOVES
Chemical resistant gloves

EYE AND FACE PROTECTION
Safety glasses with side-shields conforming to EN166

OTHER PROTECTIVE EQUIPMENT
Safety shoes; Wear suitable protective clothing.

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Source</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methanol</td>
<td>67-56-1</td>
<td>ACGIH, TWA</td>
<td>200 ppm</td>
</tr>
<tr>
<td>Methanol</td>
<td>67-56-1</td>
<td>ACGIH, STEL</td>
<td>250 ppm</td>
</tr>
<tr>
<td>Methanol</td>
<td>67-56-1</td>
<td>ACGIH, SKIN_DES</td>
<td>Can be absorbed through the skin.</td>
</tr>
<tr>
<td>Methanol</td>
<td>67-56-1</td>
<td>OSHA Z1, PEL</td>
<td>200 ppm; 260 mg/m3</td>
</tr>
</tbody>
</table>

Absence of values indicates none found

PEL - OSHA Permissible Exposure Limit; TLV - ACGIH Threshold Limit Value; TWA - Time Weighted Average; INTL REL - Internal Recommended Exposure Limit


9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOILING POINT (°C):</td>
<td>290 °C; 554 °F</td>
</tr>
<tr>
<td>VAPOR PRESSURE (20 C) (MM HG):</td>
<td>&lt; 0.75</td>
</tr>
<tr>
<td>VAPOR DENSITY (AIR=1):</td>
<td>No data available.</td>
</tr>
<tr>
<td>FREEZING POINT:</td>
<td>&lt; -70 °C; -94 °F</td>
</tr>
<tr>
<td>PHYSICAL STATE:</td>
<td>Liquid</td>
</tr>
<tr>
<td>ODOR:</td>
<td>ester like</td>
</tr>
<tr>
<td>Color:</td>
<td>Colorless</td>
</tr>
<tr>
<td>EVAPORATION RATE (BUTYL ACETATE=1):</td>
<td>&lt; 1</td>
</tr>
<tr>
<td>SPECIFIC GRAVITY:</td>
<td>No data available.</td>
</tr>
<tr>
<td>DENSITY:</td>
<td>1.07 g/cm3</td>
</tr>
</tbody>
</table>
SILQUEST A-187 SILANE/TSP/18KG
Gamma-Glycidoxypropyltrimethoxysilane

pH: No data available.
SOLUBILITY IN WATER (20 C): Reactive.
VOC EXCL. H2O & EXEMPTS (G/L): 1,065.87 g/l

10. STABILITY AND REACTIVITY

STABILITY
Stable

HAZARDOUS POLYMERIZATION.
POLYMERIZATION - HYDROLYSIS The epoxysilane esters are not monomers in the usual sense, but polymeric materials may be produced under certain conditions of catalyzed partial hydrolysis. Polysiloxanes are produced by polymerization of the silyl ester group in the presence of controlled amounts of water and alkali or acid catalyst at ambient temperatures. At slightly higher temperatures (ca. 50 °C), polyglycols or polyglycol ethers are produced via the epoxy functional group under the same conditions of water concentration and alkali or acid catalyst. In as much as both of these reactions are exothermic and may occur simultaneously, the heat evolved may be cumulative and greatly accelerate the rate of reactions. It is imperative, therefore, that unintentional contamination of the epoxysilane esters with water be avoided, and that intentional hydrolysis be properly controlled to avoid hazardous consequences.

HAZARDOUS THERMAL DECOMPOSITION / COMBUSTION PRODUCTS
Carbon oxides; 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.;

INCOMPATIBLE MATERIALS
Reacts with water or moisture to form: Methanol

CONDITIONS TO AVOID
Temperature > 300 °C
Avoid contact with: Ignition sources.

11. TOXICOLOGICAL INFORMATION

ACUTE ORAL
Remarks: No data available.

REPEATED DOSE TOxicity
No data available.
ACUTE DERMAL
Remarks: No data available.

ACUTE INHALATION
Remarks: No data available.

OTHER
Long-term repeated overexposure to methanol vapor concentrations of 3000 ppm or greater may allow a cumulative effect to occur with resulting nausea, vomiting, headache, ringing in the ears, insomnia, trembling, unsteady gait, vertigo, clouded and double vision. Liver and/or kidney injury may occur. Prolonged overexposure at levels of 800-1000 ppm may result in severe eye damage in some persons.

This organosilane ester was weakly mutagenic in the following in vitro procedures: Ames test, mouse lymphoma assay, and a sister chromatid exchange test. Results of in vivo genotoxicity studies have shown mixed results. Repeated exposure of rats or rabbits to this material did not result in an increase in sister chromatid exchange, while single exposures of mice to a hydrolyzate of this material resulted in a significant increase in micronucleated polychromatic erythrocytes. It is unlikely that this material presents a significant genotoxic hazard, in that it lacks any local tumorigenic response to the chronic recurrent application to mouse skin. In a developmental toxicity study with rats given this organosilane ester by gavage over the period of organogenesis, the only effect was minimal fetotoxicity at 3000 mg/kg/day (reduced ossification at one site) in the presence of maternal toxicity. There were no embryotoxic or teratogenic effects. No effects were seen at 500 and 1500 mg/kg/day.

A subsequent developmental study in the rabbit, using gavage dosages of 50, 200 and 400 mg/kg/day given over gestational days 6 through 18, resulted in one maternal death at 400 mg/kg/day; there were no other indications of maternal toxicity at this or lower dosages. At no dosage was there any evidence for developmental toxicity (embryofetal toxicity or teratogenicity).

GENETIC TOXICITY IN VITRO
No data available.

GENETIC TOXICITY IN VIVO
No data available.

SENSITIZATION
No data available.

SKIN IRRITATION
No data available.

EYE IRRITATION
No data available.

MUTAGENICITY
No data available.

OTHER EFFECTS OF OVEREXPOSURE
No adverse effects anticipated from available information.
12. ECOLOGICAL INFORMATION

ECOTOXICOLOGY
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

DISPOSAL METHODS
Disposal should be made in accordance with federal, state and local regulations.

14. TRANSPORT INFORMATION

Further Information: This product is not regarded as dangerous goods according to the national and international regulations on the transport of dangerous goods. Keep away from food, drink and animal feeding stuffs.

15. REGULATORY INFORMATION

Inventories
Australia Inventory of Chemical Substances (AICS)  y (positive listing)
EU list of existing chemical substances  y (positive listing)
Japan Inventory of Existing & New Chemical Substances (ENCS)  y (positive listing)
China Inventory of Existing Chemical Substances  y (positive listing)
Korea Existing Chemicals Inventory (KECI)  y (positive listing)
Canada DSL Inventory  y (positive listing)
Canada NDSL Inventory  n (Negative listing)
New Zealand Inventory of Chemicals  y (positive listing)
Philippines Inventory of Chemicals and Chemical Substances (PICCS)  y (positive listing)
SILQUEST A-187 SILANE/TSP/18KG
Gamma-Glycidoxypropyltrimethoxysilane

US Regulatory Information

SARA (311,312) HAZARD CLASS
Acute Health Hazard; Chronic Health Hazard

CALIFORNIA PROPOSITION 65
Warning! This product contains a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

Canadian Regulatory Information

WHMIS CLASSIFICATION
D1A - Very Toxic Material Causing Immediate and Serious Toxic Effects
D2A - Very Toxic Material Causing Other Toxic Effects
D2B - Toxic Material Causing Other Toxic Effects

Other

SCHED B/HTSUS: 2931.00.9010 Organo-silicon compounds
ECCN: EAR99

16. OTHER INFORMATION

OTHER
These data are offered in good faith as typical values and not as product specifications. No warranty, either expressed or implied, is made. The recommended industrial hygiene and safe handling procedures are believed to be generally applicable. However, each user should review these recommendations in the specific context of the intended use and determine whether they are appropriate.

,C  = ceiling limit     NEGL = negligible
EST = estimated      NF  = none found
NA  = not applicable  UNKN = unknown
NE  = none established REC = recommended
ND  = none determined  V   = recommended by vendor
SKN = skin          TS  = trade secret
R   = recommended    MST = mist
NT  = not tested     STEL = short term exposure limit
ppm = parts per million  ppb = parts per billion
By-product= reaction by-product, TSCA inventory status not required under 40 CFR part 720.30(h-2).