SECTION 1: Identification

1.1. Identification

Product name: HARDSIL™ AM
Product code: PP1-HSAM
Product form: Mixture
Physical state: Liquid
Synonyms: METHYLSILSESQUIOXANE RESIN SOLUTION; METHYL T RESIN SILOXANE SOLUTION
Chemical family: ORGANOSILOXANE

1.2. Recommended use and restrictions on use

Recommended use: Chemical intermediate

1.3. Supplier

GELEST, INC.
11 East Steel Road
Morrisville, PA 19067
USA
T 215-547-1015 - F 215-547-2484 - (M-F): 8:00 AM - 5:30 PM EST
info@gelest.com - www.gelest.com

1.4. Emergency telephone number

Emergency number: CHEMTREC: 1-800-424-9300 (USA); +1 703-527-3887 (International)

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS-US classification
Flammable liquids Category 2
Acute toxicity (oral) Category 3
Acute toxicity (dermal) Category 3
Acute toxicity (inhalation/vapor) Category 3
Skin corrosion/irritation Category 2
Serious eye damage/eye irritation Category 1
Specific target organ toxicity (single exposure) Category 1
Specific target organ toxicity (single exposure) Category 3
Specific target organ toxicity (single exposure) Category 3

H225 - Highly flammable liquid and vapor
H301 - Toxic if swallowed
H311 - Toxic in contact with skin
H331 - Toxic if inhaled
H315 - Causes skin irritation
H318 - Causes serious eye damage
H335 - May cause respiratory irritation
H336 - May cause drowsiness or dizziness
H370 - Causes damage to organs

Full text of H statements: see section 16

2.2. GHS Label elements, including precautionary statements

GHS-US labeling
Hazard pictograms (GHS US):

Signal word (GHS US): Danger
Hazard statements (GHS US):
H225 - Highly flammable liquid and vapor
H301+H311+H331 - Toxic if swallowed, in contact with skin or if inhaled
H315 - Causes skin irritation
H318 - Causes serious eye damage
H335 - May cause respiratory irritation
H336 - May cause drowsiness or dizziness
H370 - Causes damage to organs

Precautionary statements (GHS US):
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P210 - Keep away from heat, open flames, sparks. - No smoking.
P240 - Ground/Bond container and receiving equipment
P241 - Use explosion-proof electrical equipment
P242 - Use only non-sparking tools.
P243 - Take precautionary measures against static discharge.
P260 - Do not breathe vapors.
P264 - Wash hands thoroughly after handling.
P270 - Do not eat, drink or smoke when using this product.
P271 - Use only outdoors or in a well-ventilated area.
P330 - Rinse mouth.
P301+P310 - If swallowed: Immediately call a POISON CENTER
P303+P361+P353 - If on skin (or hair): take off immediately all contaminated clothing. rinse
skin with water/shower
P332+P313 - If skin irritation occurs: Get medical advice/attention.
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P311 - Immediately call a POISON CENTER
P321 - Specific treatment (see first aid instructions on this label)
P362+P364 - Take off contaminated clothing and wash it before reuse.
P363 - Wash contaminated clothing before reuse.
P364 - Take off contaminated clothing and wash it before reuse.
P370+P378 - In case of fire: Use water spray, foam, carbon dioxide, dry chemical to extinguish.
P403+P233 - Store in a well-ventilated place. Keep container tightly closed.
P403+P235 - Keep in a cool place
P405 - Store locked up.
P501 - Dispose of contents/container to licensed waste disposal facility.

2.3. Hazards not otherwise classified (HNOC)
No additional information available

2.4. Unknown acute toxicity (GHS US)
Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances
Not applicable

3.2. Mixtures

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>GHS-US classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isopropanol</td>
<td>(CAS No.) 67-83-0</td>
<td>30-60</td>
<td>Flam. Liq. 2, H225, Acute Tox. 4 (Oral), H302, Eye Irrit. 2A, H319, STOT SE 3, H336</td>
</tr>
<tr>
<td>Methylsilsesquioxane resin</td>
<td>(CAS No.) 96195-80-1</td>
<td>10-30</td>
<td>Not classified</td>
</tr>
<tr>
<td>Methanol</td>
<td>(CAS No.) 67-56-1</td>
<td>10-30</td>
<td>Flam. Liq. 2, H225, Acute Tox. 3 (Oral), H301, Acute Tox. 3 (Dermal), H311, Acute Tox. 3 (Inhalation/vapour), H331, Skin Irrit. 2, H315, Eye Dam. 1, H318, STOT SE 1, H370, STOT SE 3, H336</td>
</tr>
<tr>
<td>n-Butanol</td>
<td>(CAS No.) 71-36-3</td>
<td>10-30</td>
<td>Flam. Liq. 3, H226, Acute Tox. 4 (Oral), H302, Skin Irrit. 2, H315, Eye Irrit. 2A, H319, STOT SE 3, H335</td>
</tr>
</tbody>
</table>

Full text of hazard classes and H-statements: see section 16

SECTION 4: First-aid measures

4.1. Description of first aid measures
First-aid measures general: Remove contaminated clothing and shoes. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). If possible show this sheet; if not available show packaging or label. Call a POISON CENTER or doctor/physician.
First-aid measures after inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get immediate medical advice/attention. Immediately call a poison center or doctor/physician.
First-aid measures after skin contact: Wash with plenty of soap and water. Get immediate medical advice/attention.
First-aid measures after eye contact: Immediately flush eyes thoroughly with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get immediate medical advice/attention.
First-aid measures after ingestion: Never give anything by mouth to an unconscious person. Immediately call a poison center or doctor/physician.

4.2. Most important symptoms and effects (acute and delayed)
Symptoms/effects: Causes damage to organs.
Symptoms/effects after inhalation: Toxic if inhaled. May cause drowsiness or dizziness. May cause respiratory irritation. Danger of serious damage to health by prolonged exposure through inhalation.
Symptoms/effects after skin contact: Toxic in contact with skin. Causes skin irritation. Repeated exposure to this material can result in absorption through skin causing significant health hazard.
Symptoms/effects after eye contact: Causes serious eye damage.
Symptoms/effects after ingestion: Toxic if swallowed. Swallowing a small quantity of this material will result in serious health hazard.

4.3. Immediate medical attention and special treatment, if necessary
No additional information available
SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media
Unsuitable extinguishing media: Do not use straight streams.

5.2. Specific hazards arising from the chemical
Fire hazard: Highly flammable liquid and vapor. Irritating fumes and organic acid vapors may develop when material is exposed to elevated temperatures or open flame.
Explosion hazard: May form flammable/explosive vapor-air mixture.

5.3. Special protective equipment and precautions for fire-fighters
Firefighting instructions: Use water spray to cool exposed surfaces. Exercise caution when fighting any chemical fire.
Protection during firefighting: Do not enter fire area without proper protective equipment, including respiratory protection. Avoid all eye and skin contact and do not breathe vapor and mist.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
General measures: Eliminate every possible source of ignition. Use special care to avoid static electric charges.

6.1.1. For non-emergency personnel
Protective equipment: Wear protective equipment as described in Section 8.
Emergency procedures: Evacuate unnecessary personnel.

6.1.2. For emergency responders
Protective equipment: For further information refer to section 8: “Exposure controls/personal protection”. Equip cleanup crew with proper protection. Do not attempt to take action without suitable protective equipment.

6.2. Environmental precautions
Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up
For containment: Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.
Methods for cleaning up: Clean up any spills as soon as possible, using an absorbent material to collect it. Sweep or shovel spills into appropriate container for disposal. Use only non-sparking tools.

6.4. Reference to other sections
See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Additional hazards when processed: Handle empty containers with care because residual vapors are flammable. Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
Precautions for safe handling: Avoid all eye and skin contact and do not breathe vapor and mist. Provide good ventilation in process area to prevent accumulation of vapors. Ground/bond container and receiving equipment. Take precautionary measures against static discharge. Use only outdoors or in a well-ventilated area. Use only non-sparking tools.
Hygiene measures: Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Wash contaminated clothing before reuse.

7.2. Conditions for safe storage, including any incompatibilities
Technical measures: Proper grounding procedures to avoid static electricity should be followed. Use explosion-proof electrical equipment.
Storage conditions: Keep container tightly closed. Keep in a cool place. Store locked up. Store < 5°C.
Storage area: Store in a well-ventilated place. Store away from heat.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

<table>
<thead>
<tr>
<th>Isopropanol (67-63-0)</th>
<th>ACGIH</th>
<th>ACGIH TWA (ppm)</th>
<th>200 ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACGIH</td>
<td>ACGIH STEL (ppm)</td>
<td>400 ppm</td>
<td></td>
</tr>
<tr>
<td>OSHA</td>
<td>OSHA PEL (TWA) (mg/m³)</td>
<td>980 mg/m³</td>
<td></td>
</tr>
<tr>
<td>OSHA</td>
<td>OSHA PEL (TWA) (ppm)</td>
<td>400 ppm</td>
<td></td>
</tr>
<tr>
<td>Isopropanol (67-63-0)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td>-----------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IDLH</td>
<td>US IDLH (ppm)</td>
<td>2000 ppm (10% LEL)</td>
<td></td>
</tr>
<tr>
<td>NIOSH</td>
<td>NIOSH REL (TWA) (mg/m³)</td>
<td>980 mg/m³</td>
<td></td>
</tr>
<tr>
<td>NIOSH</td>
<td>NIOSH REL (TWA) (ppm)</td>
<td>400 ppm</td>
<td></td>
</tr>
<tr>
<td>NIOSH</td>
<td>NIOSH REL (STEL) (mg/m³)</td>
<td>1225 mg/m³</td>
<td></td>
</tr>
<tr>
<td>NIOSH</td>
<td>NIOSH REL (STEL) (ppm)</td>
<td>500 ppm</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Methanol (67-56-1)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ACGIH</td>
<td>ACGIH TWA (ppm)</td>
</tr>
<tr>
<td>ACGIH</td>
<td>ACGIH STEL (ppm)</td>
</tr>
<tr>
<td>OSHA</td>
<td>OSHA PEL (TWA) (mg/m³)</td>
</tr>
<tr>
<td>OSHA</td>
<td>OSHA PEL (TWA) (ppm)</td>
</tr>
<tr>
<td>IDLH</td>
<td>US IDLH (ppm)</td>
</tr>
<tr>
<td>NIOSH</td>
<td>NIOSH REL (TWA) (mg/m³)</td>
</tr>
<tr>
<td>NIOSH</td>
<td>NIOSH REL (TWA) (ppm)</td>
</tr>
<tr>
<td>NIOSH</td>
<td>NIOSH REL (STEL) (mg/m³)</td>
</tr>
<tr>
<td>NIOSH</td>
<td>NIOSH REL (STEL) (ppm)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>n-Butanol (71-36-3)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ACGIH</td>
<td>ACGIH TWA (ppm)</td>
</tr>
<tr>
<td>OSHA</td>
<td>OSHA PEL (TWA) (mg/m³)</td>
</tr>
<tr>
<td>OSHA</td>
<td>OSHA PEL (TWA) (ppm)</td>
</tr>
<tr>
<td>IDLH</td>
<td>US IDLH (ppm)</td>
</tr>
<tr>
<td>NIOSH</td>
<td>NIOSH REL (ceiling) (mg/m³)</td>
</tr>
<tr>
<td>NIOSH</td>
<td>NIOSH REL (ceiling) (ppm)</td>
</tr>
</tbody>
</table>

8.2. Appropriate engineering controls

Appropriate engineering controls: Provide local exhaust or general room ventilation.

8.3. Individual protection measures/Personal protective equipment

Personal protective equipment:
Avoid all unnecessary exposure. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

Hand protection:
Neoprene or nitrile rubber gloves

Eye protection:
Chemical goggles. Contact lenses should not be worn

Skin and body protection:
Wear suitable protective clothing

Respiratory protection:
Where exposure through inhalation may occur from use, respiratory protection equipment is recommended. NIOSH-certified organic vapor (black cartridge) respirator.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Physical state</th>
<th>Liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Liquid</td>
</tr>
<tr>
<td>Color</td>
<td>Straw. Amber.</td>
</tr>
<tr>
<td>Odor</td>
<td>Odor of alcohols.</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>Refractive index</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative evaporation rate (butyl acetate=1)</td>
<td>No data available</td>
</tr>
</tbody>
</table>
Melting point: No data available
Freezing point: < -20 °C
Boiling point: No data available
Flash point: 19 °C
Auto-ignition temperature: 385 °C
Decomposition temperature: No data available
Flammability (solid, gas): Highly flammable liquid and vapor
Vapor pressure: No data available
Relative vapor density at 20 °C: > 1
Relative density: No data available
% Volatiles: > 60 %
Solubility: Reacts with water.
Log Pow: No data available
Log Kow: No data available
Viscosity, kinematic: No data available
Viscosity, dynamic: No data available
Explosive properties: No data available
Oxidizing properties: No data available
Explosion limits: 1.7 - 36.5 vol % (lower; upper)

SECTION 10: Stability and reactivity

10.1. Reactivity
No additional information available

10.2. Chemical stability
Stable in sealed containers stored under a dry inert atmosphere.

10.3. Possibility of hazardous reactions
Reacts with water and moisture in air liberating hydrogen chloride.

10.4. Conditions to avoid
Heat. Open flame. Sparks.

10.5. Incompatible materials

10.6. Hazardous decomposition products
Organic acid vapors.

SECTION 11: Toxicological information

11.1. Information on toxicological effects
Acute toxicity: Not classified

<table>
<thead>
<tr>
<th>Substance</th>
<th>Oral (mg/kg)</th>
<th>Dermal (mg/kg)</th>
<th>Vapors (mg/l)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HARDSIL™ AM</td>
<td>266.707</td>
<td>1000</td>
<td>10</td>
</tr>
<tr>
<td>Isopropanol (67-63-0)</td>
<td>1870</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50 oral rat</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50 dermal rat</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LC50 inhalation rat (mg/l)</td>
<td>72600</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ATE US (oral)</td>
<td>1870</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ATE US (dermal)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MeOH (67-56-1)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50 oral rat</td>
<td>1870</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LC50 inhalation rat (ppm)</td>
<td>22500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ATE US (oral)</td>
<td>1000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ATE US (dermal)</td>
<td>300</td>
<td></td>
<td></td>
</tr>
<tr>
<td>n-Butanol (71-36-3)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50 oral rat</td>
<td>700</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
HARDSIL™ AM
Safety Data Sheet

<table>
<thead>
<tr>
<th>n-Butanol (71-36-3)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50 dermal rabbit</td>
<td>3402 mg/kg</td>
</tr>
<tr>
<td>LC50 inhalation rat (ppm)</td>
<td>&gt; 8000 ppm/4h</td>
</tr>
<tr>
<td>ATE US (oral)</td>
<td>700 mg/kg body weight</td>
</tr>
<tr>
<td>ATE US (dermal)</td>
<td>3402 mg/kg body weight</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>Causes skin irritation.</td>
</tr>
<tr>
<td>Serious eye damage/irritation</td>
<td>Causes serious eye damage.</td>
</tr>
<tr>
<td>Respiratory or skin sensitization</td>
<td>Not classified</td>
</tr>
<tr>
<td>Germ cell mutagenicity</td>
<td>Not classified</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>Not classified</td>
</tr>
</tbody>
</table>

| Isopropanol (67-63-0)                           |                |
| IARC group                                      | 3 - Not classifiable |
| Reproductive toxicity                           | Not classified |
| Specific target organ toxicity – single exposure| Causes damage to organs. May cause respiratory irritation. May cause drowsiness or dizziness. |
| Specific target organ toxicity – repeated exposure| Not classified |
| Aspiration hazard                              | Not classified |
| Symptoms/effects after inhalation              | Toxic if inhaled. May cause drowsiness or dizziness. May cause respiratory irritation. Danger of serious damage to health by prolonged exposure through inhalation. |
| Symptoms/effects after skin contact            | Toxic in contact with skin. Causes skin irritation. Repeated exposure to this material can result in absorption through skin causing significant health hazard. |
| Symptoms/effects after eye contact             | Causes serious eye damage. |
| Symptoms/effects after ingestion                | Toxic if swallowed. Swallowing a small quantity of this material will result in serious health hazard. |
| Reason for classification                      | Expert judgment |

SECTION 12: Ecological information

<table>
<thead>
<tr>
<th>Isopropanol (67-63-0)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>LC50 fish 1</td>
<td>9640 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through])</td>
</tr>
<tr>
<td>EC50 Daphnia 1</td>
<td>13299 mg/l (Exposure time: 48 h - Species: Daphnia magna)</td>
</tr>
<tr>
<td>LC50 fish 2</td>
<td>11130 mg/l (Exposure time: 96 h - Species: Pimephales promelas [static])</td>
</tr>
<tr>
<td>Methanol (67-56-1)</td>
<td></td>
</tr>
<tr>
<td>LC50 fish 1</td>
<td>28200 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through])</td>
</tr>
<tr>
<td>LC50 fish 2</td>
<td>&gt; 100 mg/l (Exposure time: 96 h - Species: Pimephales promelas [static])</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>n-Butanol (71-36-3)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>LC50 fish 1</td>
<td>1730 - 1910 mg/l (Exposure time: 96 h - Species: Pimephales promelas [static])</td>
</tr>
<tr>
<td>EC50 Daphnia 1</td>
<td>1983 mg/l (Exposure time: 48 h - Species: Daphnia magna)</td>
</tr>
<tr>
<td>LC50 fish 2</td>
<td>1740 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through])</td>
</tr>
<tr>
<td>EC50 Daphnia 2</td>
<td>1897 - 2072 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])</td>
</tr>
</tbody>
</table>

12.2. Persistence and degradability
No additional information available

12.3. Bioaccumulative potential

<table>
<thead>
<tr>
<th>Isopropanol (67-63-0)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Log Pow</td>
<td>0.05 (at 25 °C)</td>
</tr>
<tr>
<td>Methanol (67-56-1)</td>
<td></td>
</tr>
<tr>
<td>BCF fish 1</td>
<td>&lt; 10</td>
</tr>
<tr>
<td>Log Pow</td>
<td>-0.77</td>
</tr>
<tr>
<td>n-Butanol (71-36-3)</td>
<td></td>
</tr>
<tr>
<td>BCF fish 1</td>
<td>0.64</td>
</tr>
<tr>
<td>Log Pow</td>
<td>0.785 (at 25 °C)</td>
</tr>
</tbody>
</table>

12.4. Mobility in soil
No additional information available
12.5. Other adverse effects
Other adverse effects : This substance may be hazardous to the environment.
Effect on the ozone layer : No additional information available

SECTION 13: Disposal considerations

13.1. Disposal methods
Sewage disposal recommendations : Do not dispose of waste into sewer.
Product/Packaging disposal recommendations : May be incinerated. Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to licensed waste disposal facility.
Ecology - waste materials : Avoid release to the environment.

SECTION 14: Transport information

14.1. UN number
UN-No.(DOT) : 1139
DOT NA no. : UN1139

14.2. UN proper shipping name
Transport document description : UN1139 Coating solution (METHANOL & n-BUTYL ALCOHOL), 3, II
Proper Shipping Name (DOT) : Coating solution (METHANOL & n-BUTYL ALCOHOL)
Class (DOT) : 3 - Class 3: Flammable and combustible liquid 49 CFR 173.120
Packing group (DOT) : II - Medium Danger
Hazard labels (DOT) : 3 - Flammable liquid

14.3. Additional information
Emergency Response Guide (ERG) Number : 127
Other information : No supplementary information available.

Transport by sea
DOT Vessel Stowage Location : B - (i) The material may be stowed “on deck” or “under deck” on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers, or one passenger per each 3 m of overall vessel length; and (ii) “On deck only” on passenger vessels in which the number of passengers specified in paragraph (k)(2)(i) of this section is exceeded.

Air transport
DOT Quantity Limitations Passenger aircraft/raill (49 CFR 173.27) : 5 L
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : 60 L

SECTION 15: Regulatory information

15.1. US Federal regulations
Methylosilsesquioxane resin (96195-80-1) : Listed on the United States TSCA (Toxic Substances Control Act) inventory
Isopropanol (67-63-0) : Listed on the United States TSCA (Toxic Substances Control Act) inventory
Subject to reporting requirements of United States SARA Section 313
EPA TSCA Regulatory Flag : T - T - indicates a substance that is the subject of a final TSCA section 4 test rule.
SARA Section 313 - Emission Reporting : 1 % (only if manufactured by the strong acid process, no supplier notification)
### Methanol (67-56-1)
- Listed on the United States TSCA (Toxic Substances Control Act) inventory
- Subject to reporting requirements of United States SARA Section 313
- SARA Section 313 - Emission Reporting: 1%

### n-Butanol (71-36-3)
- Listed on the United States TSCA (Toxic Substances Control Act) inventory
- Subject to reporting requirements of United States SARA Section 313
- EPA TSCA Regulatory Flag: T - T indicates a substance that is the subject of a final TSCA section 4 test rule.
  Y2 - Y2 indicates a polymer that is a polyester and that was exempt under the 1984 polymer exemption rule. The polyester is made only from reactants included in a specified list of low-concern reactants that comprises one of the eligibility criteria for the 1984 polymer exemption rule.
- SARA Section 313 - Emission Reporting: 1%

### 15.2. International regulations

#### CANADA

**Methylsilsesquioxane resin (96195-80-1)**
- Listed on the Canadian DSL (Domestic Substances List)

**Isopropanol (67-63-0)**
- Listed on the Canadian DSL (Domestic Substances List)
  - WHMIS Classification:
    - Class B Division 2 - Flammable Liquid
    - Class D Division 1 Subdivision B - Toxic material causing other toxic effects

**Methanol (67-56-1)**
- Listed on the Canadian DSL (Domestic Substances List)
  - WHMIS Classification:
    - Class B Division 2 - Flammable Liquid
    - Class D Division 1 Subdivision B - Toxic material causing other toxic effects
    - Class D Division 2 Subdivision A - Very toxic material causing other toxic effects
    - Class D Division 2 Subdivision B - Toxic material causing other toxic effects

**n-Butanol (71-36-3)**
- Listed on the Canadian DSL (Domestic Substances List)
  - WHMIS Classification:
    - Class B Division 2 - Flammable Liquid
    - Class D Division 2 Subdivision B - Toxic material causing other toxic effects

#### EU-Regulations

No additional information available

**Isopropanol (67-63-0)**
- Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

**Methanol (67-56-1)**
- Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

**n-Butanol (71-36-3)**
- Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

#### National regulations

**Methylsilsesquioxane resin (96195-80-1)**
- Listed on the AICS (Australian Inventory of Chemical Substances)
- Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
- Listed on the Korean ECL (Existing Chemicals List)
- Listed on NZIoC (New Zealand Inventory of Chemicals)
- Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

**Isopropanol (67-63-0)**
- Listed on the AICS (Australian Inventory of Chemical Substances)
- Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
- Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
- Subject to reporting requirements of United States SARA Section 313
- Listed on the Japanese ISHL (Industrial Safety and Health Law)
- Listed on the Korean ECL (Existing Chemicals List)
- Listed on NZIoC (New Zealand Inventory of Chemicals)
- Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
- Listed on the Canadian IDL (Ingredient Disclosure List)
- Listed on INSC (Mexican National Inventory of Chemical Substances)
- Listed on CICR (Turkish Inventory and Control of Chemicals)
**HARDSIL™ AM**  
Safety Data Sheet

**Methanol (67-56-1)**
- Listed on the AICS (Australian Inventory of Chemical Substances)  
- Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)  
- Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory  
- Listed on the Korean ECL (Existing Chemicals List)  
- Listed on NZIoC (New Zealand Inventory of Chemicals)  
- Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)  
- Japanese Poisonous and Deleterious Substances Control Law  
- Listed on the Canadian IDL (Ingredient Disclosure List)  
- Listed on INSQ (Mexican National Inventory of Chemical Substances)  
- Listed on CICR (Turkish Inventory and Control of Chemicals)

**n-Butanol (71-36-3)**
- Listed on the AICS (Australian Inventory of Chemical Substances)  
- Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)  
- Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory  
- Listed on the Korean ECL (Existing Chemicals List)  
- Listed on NZIoC (New Zealand Inventory of Chemicals)  
- Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)  
- Listed on the Canadian IDL (Ingredient Disclosure List)  
- Listed on INSQ (Mexican National Inventory of Chemical Substances)  
- Listed on CICR (Turkish Inventory and Control of Chemicals)

**15.3. US State regulations**

**WARNING:** This product can expose you to Methanol, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

**Methanol (67-56-1)**

<table>
<thead>
<tr>
<th>U.S. - California - Proposition 65 - Carcinogens List</th>
<th>U.S. - California - Proposition 65 - Developmental Toxicity</th>
<th>U.S. - California - Proposition 65 - Reproductive Toxicity - Female</th>
<th>U.S. - California - Proposition 65 - Reproductive Toxicity - Male</th>
<th>No significant risk level (NSRL)</th>
<th>Maximum allowable dose level (MADL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

**Isopropanol (67-63-0)**

- U.S. - Massachusetts - Right To Know List
- U.S. - New Jersey - Right to Know Hazardous Substance List
- U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List

**Methanol (67-56-1)**

- U.S. - Massachusetts - Right To Know List
- U.S. - New Jersey - Right to Know Hazardous Substance List
- U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
- U.S. - Pennsylvania - RTK (Right to Know) List

**n-Butanol (71-36-3)**

- U.S. - Massachusetts - Right To Know List
- U.S. - New Jersey - Right to Know Hazardous Substance List
- U.S. - Pennsylvania - RTK (Right to Know) List

**SECTION 16: Other information**

Full text of H-phrases:

<table>
<thead>
<tr>
<th>H225</th>
<th>Highly flammable liquid and vapor</th>
</tr>
</thead>
<tbody>
<tr>
<td>H226</td>
<td>Flammable liquid and vapor</td>
</tr>
<tr>
<td>H301</td>
<td>Toxic if swallowed</td>
</tr>
<tr>
<td>H302</td>
<td>Harmful if swallowed</td>
</tr>
<tr>
<td>H311</td>
<td>Toxic in contact with skin</td>
</tr>
<tr>
<td>H315</td>
<td>Causes skin irritation</td>
</tr>
<tr>
<td>H318</td>
<td>Causes serious eye damage</td>
</tr>
<tr>
<td>H319</td>
<td>Causes serious eye irritation</td>
</tr>
<tr>
<td>H331</td>
<td>Toxic if inhaled</td>
</tr>
<tr>
<td>H335</td>
<td>May cause respiratory irritation</td>
</tr>
<tr>
<td>H336</td>
<td>May cause drowsiness or dizziness</td>
</tr>
<tr>
<td>H370</td>
<td>Causes damage to organs</td>
</tr>
</tbody>
</table>
Abbreviations and acronyms

Abbreviations: ND: Not Determined, No Data; NA: Not Applicable; LD: Lethal Dose; LC: Lethal Concentration; ATE: Acute Toxicity Estimates; H: hour; °: °C unless otherwise stated; mm: millimeters Hg, torr; PEL: permissible exposure level; TWA: time weighted average; TLV: threshold limit value; TG: Test Guideline; NIOSH: National Institute for Occupational Safety and Health; IARC: International Agency for Research on Cancer; NTP: National Toxicology Program; HMIS: Hazardous Material Information System; CAS No.: Chemical Abstract Service Registration Number; EC No.: European Commission Registration Number; EC Index No.: European Commission Index Number; OECD: The Organisation for Economic Co-operation and Development; GHS: The Globally Harmonized System of Classification and Labelling; APF: Assigned Protection Factor.

Hazard Rating

Health: 3 Serious Hazard - Major injury likely unless prompt action is taken and medical treatment is given

Flammability: 4 Severe Hazard - Flammable gases, or very volatile flammable liquids with flash points below 73 F, and boiling points below 100 F. Materials may ignite spontaneously with air. (Class IA)

Physical: 0 Minimal Hazard - Materials that are normally stable, even under fire conditions, and will NOT react with water, polymerize, decompose, condense, or self-react. Non-Explosives.

Prepared by safety and environmental affairs.

Date of issue: 08/26/2015  Revision date: 03/05/2019  Version: 1.1

SDS US (GHS HazCom 2012) - Custom

According to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

The information contained in this document has been gathered from reference materials and/or Gelest, Inc. test data and is to the best knowledge and belief of Gelest, Inc. accurate and reliable. Such information is offered solely for your consideration, investigation and verification. It is not suggested or guaranteed that the hazard precautions or procedures described are the only ones which exist. Gelest, Inc. makes no warranties, express or implied, with respect to the use of such information and assumes no responsibility therefore. Information on this safety data sheet is not intended to constitute a basis for product specifications.

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Gelest HardSil™ AM

Silicone Resin Hard Coatings

Features: Provides clear silicone hard coat with excellent optical properties. HardSil™ A series are curable polysilsesquioxane T-resins with excellent abrasion resistance.

Applications:
- **Optical Thermoplastics** - provides effective scratch-resistant coatings with good weather resistance for polycarbonates and polyacrylates. Examples include glazing, windscreen, computer screen and ophthalmic applications.
- **Laminated Structures** - hard, heat resistant impregnants for continuous exposures up to 360°C.

<table>
<thead>
<tr>
<th>Capsule Description</th>
<th>Thickness</th>
<th>Cure</th>
<th>Hardness</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>thin-thick</td>
<td>thermal</td>
<td>high</td>
<td>solvent-borne 1-part</td>
</tr>
</tbody>
</table>

**HardSil™ AM** Abrasion Resistant Coating - Thermal Cure

**Description**
HardSil™ AM is a primerless acrylated silicone nanocomposite dispersed in a mixture of alcohols including methanol, n-butanol and isopropanol. The nanocomposite structure imparts scratch resistance to a clear film structure.

**Film Properties**
- **Color** clear
- **Abrasion Resistance**
  - Taber 500 cycles 500g CS10F: 5

**Solution Properties**
- **Form** solution
- **Solids** 19-21%
- **Flashpoint** 19°C
- **Specific Gravity** 0.91
- **Viscosity** 5-15 cSt.

**Shelf life:** 3 months when stored below 5°C in sealed containers. Containers should be warmed to 15°C before opening to reduce condensation of water.

**Standard Packaging**
- PP1-HSAM HardSil™ AM
  - 100g: $39.00
  - 750g: $210.00
  - 10kg: commercial package

**Cautions**
Use in a well ventilated area.
Flammable.
Avoid contact with skin and eyes.

**Application Methods**
Gelest HardSil™ AM is applied as a coating by spraying, dipping or brushing. After solvent evaporation, the system cures in 30-60 minutes at 125-140°C. As supplied, typical film deposition is 6-8 microns. Thinner films may be prepared by diluting with methoxypropanol or isopropanol.