SECTION 1: Identification

1.1. Identification

Product name: DICHLOROSILANE, 99.9+%

Product code: SID3368.1

Product form: Substance

Physical state: Gas

Formula: Cl₂H₂Si

Synonyms: SILICOMETHYLENE CHLORIDE; DIHYDRIDODICHLOROSILANE

Chemical family: CHLOROSILANE

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 gases Category 1
H220 Extremely flammable gas

Gases under pressure liquefied gas
H280 Contains gas under pressure; may explode if heated

Acute toxicity (inhalation/gas) Category 2
H330 Fatal if inhaled

Skin corrosion/irritation Category 1A
H314 Causes severe skin burns and eye damage

Serious eye damage/eye irritation Category 1
H318 Causes serious eye damage

Specific target organ toxicity (single exposure) Category 3
H335 May cause respiratory irritation

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): H220 - Extremely flammable gas
H280 - Contains gas under pressure; may explode if heated
H314 - Causes severe skin burns and eye damage
H318 - Causes serious eye damage
H330 - Fatal if inhaled
H335 - May cause respiratory irritation

Precautionary statements (GHS US): P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P210 - Keep away from heat, sparks, open flames. - No smoking.
P260 - Do not breathe gas.
P264 - Wash hands thoroughly after handling.
P271 - Use only outdoors or in a well-ventilated area.
P284 - [In case of inadequate ventilation] wear in case of inadequate ventilation wear respiratory protection.
P301+P330+P331 - If swallowed: rinse mouth. Do NOT induce vomiting
P303+P361+P353 - If on skin (or hair): take off immediately all contaminated clothing. Rinse skin with water/shower
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
P310 - Immediately call a doctor
P363 - Wash contaminated clothing before reuse.
DICHLOROSILANE, 99.9+%  
Safety Data Sheet

P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely.  
P381 - Eliminate all ignition sources if safe to do so.  
P403+P233 - Store in a well-ventilated place. Keep container tightly closed.  
P405 - Store locked up.  
P410+P403 - Protect from sunlight. Store in a well-ventilated place.  
P501 - Dispose of contents/container to licensed waste disposal facility.

2.3. Hazards not otherwise classified (HNOC)

Other hazards not contributing to the classification:  
NOTE: Material may form a siloxane polymer on the skin, eyes or in the lungs.

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>GHS-US classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dichlorosilane</td>
<td>(CAS-No.) 4109-96-0</td>
<td>&gt; 99</td>
<td>Flam. Gas 1, H220</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Press. Gas (Liq.), H280</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Acute Tox. 2 (Inhalation), H330</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Skin Cor. 1A, H314</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Eye Dam. 1, H318</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>STOT SE 3, H335</td>
</tr>
<tr>
<td>Hydrochloric acid</td>
<td>(CAS-No.) 7647-01-0</td>
<td></td>
<td>Skin Cor. 1A, H314</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Eye Dam. 1, H318</td>
</tr>
</tbody>
</table>

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

3.2. Mixtures

Not applicable

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.

First-aid measures after inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical advice/attention if you feel unwell.

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. Get medical advice/attention if you feel unwell.

4.2. Most important symptoms and effects (acute and delayed)

Symptoms/effects: Causes severe skin burns and eye damage.

Symptoms/effects after inhalation: Fatal if inhaled. May cause respiratory irritation. Danger of serious damage to health by prolonged exposure through inhalation.

Symptoms/effects after skin contact: Causes (severe) skin burns.

Symptoms/effects after eye contact: Causes serious eye damage.

Symptoms/effects after ingestion: May be harmful if swallowed.

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

Suitable extinguishing media: Alcohol-resistant foam. Carbon dioxide. Dry chemical. Use of high expansion foam (100:1) is recommended to cover flames.

Unsuitable extinguishing media: Water.

5.2. Specific hazards arising from the chemical

Fire hazard: Extremely flammable gas. Irritating fumes of hydrogen chloride and organic acid vapors may develop when material is exposed to water or open flame.

Explosion hazard: Explosions of partially hydrolyzed dichlorosilane dispersed on high surface area media have been reported.
5.3. Special protective equipment and precautions for fire-fighters

Firefighting instructions: Use only dry media to extinguish flames. Water spray or fog should only be used to knock down hydrogen chloride vapors in areas downwind from the fire. Leaking gas fire: Do not extinguish, unless leak can be stopped safely. 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.

Other information: If material has been opened and exposed to water, flood, do not partially wet, non-burning material with water.

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

Emergency procedures: Evacuate unnecessary personnel.

6.1.2. For emergency responders

Protective equipment: Equip cleanup crew with proper protection.

Emergency procedures: Stop release.

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if product enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

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.

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.

Precautions for safe handling: Avoid all eye and skin contact and do not breathe vapor and mist. Containers must be properly grounded before beginning transfer. Open carefully. Provide good ventilation in process area to prevent accumulation of vapors. Take precautionary measures against static discharge. Use only outdoors or in a well-ventilated area. Vapors can ignite spontaneously if heated. 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: Ground/bond container and receiving equipment. Proper grounding procedures to avoid static electricity should be followed. Use explosion-proof electrical equipment.

Storage conditions: Keep container tightly closed. Store in sealed containers under dry inert atmosphere. Store containers below 40°C. Containers can generate pressure during storage.


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>DICHLOROSILANE, 99.9+% (4109-96-0)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>AIHA</td>
<td>WEEL Ceiling (ppm)</td>
</tr>
<tr>
<td>Hydrochloric acid (7647-01-0)</td>
<td></td>
</tr>
<tr>
<td>ACGIH</td>
<td>ACGIH Ceiling (ppm)</td>
</tr>
<tr>
<td>OSHA</td>
<td>OSHA PEL (Ceiling) (mg/m³)</td>
</tr>
<tr>
<td>OSHA</td>
<td>OSHA PEL (Ceiling) (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 or face shield. (Viton recommended). Contact lenses should not be worn

**Skin and body protection:**
Wear suitable protective clothing

**Respiratory protection:**
NIOSH-certified combination organic vapor/acid gas (yellow cartridge) respirator.

### SECTION 9: Physical and chemical properties

#### 9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Gas</td>
</tr>
<tr>
<td>Appearance</td>
<td>Clear low boiling liquid or gas.</td>
</tr>
<tr>
<td>Molecular mass</td>
<td>101.01 g/mol</td>
</tr>
<tr>
<td>Color</td>
<td>No data available</td>
</tr>
<tr>
<td>Odor</td>
<td>Acrid. Similar to hydrogen chloride.</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>&gt; 40</td>
</tr>
<tr>
<td>Melting point</td>
<td>No data available</td>
</tr>
<tr>
<td>Freezing point</td>
<td>122 °C</td>
</tr>
<tr>
<td>Boiling point</td>
<td>8.3 °C</td>
</tr>
<tr>
<td>Flash point</td>
<td>37 °C</td>
</tr>
<tr>
<td>Critical temperature</td>
<td>176 °C</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>57.8 °C</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Extremely flammable gas</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>100 mm Hg @ -34°C; 1.62 atm @ 20°C</td>
</tr>
<tr>
<td>Critical pressure</td>
<td>46.1 atm</td>
</tr>
<tr>
<td>Relative vapor density at 20 °C</td>
<td>3.5</td>
</tr>
<tr>
<td>Relative density</td>
<td>1.22</td>
</tr>
<tr>
<td>% Volatiles</td>
<td>&gt; 75 %</td>
</tr>
<tr>
<td>Solubility</td>
<td>Reacts violently with water.</td>
</tr>
<tr>
<td>Log Pow</td>
<td>No data available</td>
</tr>
<tr>
<td>Log Kow</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity, kinematic</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity, dynamic</td>
<td>No data available</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>No data available</td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>No data available</td>
</tr>
<tr>
<td>Explosion limits</td>
<td>4.1 - 96 vol % (lower; upper)</td>
</tr>
</tbody>
</table>

#### 9.2. Other information

Gas group: Press. Gas (Liq.)

### 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. Platinum, platinum and iron salts and other Lewis acids can cause generation of flammable hydrogen gas in the presence of moisture. Forms impact sensitive explosive mixtures with potassium permanganate.

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

10.5. Incompatible materials

10.6. Hazardous decomposition products
Hydrogen chloride. White silicon dioxide vapors.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified

<table>
<thead>
<tr>
<th>Hydrochloric acid (7647-01-0)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50 oral rat</td>
<td>238 - 277 mg/kg</td>
</tr>
<tr>
<td>LD50 dermal rabbit</td>
<td>&gt; 5010 mg/kg</td>
</tr>
<tr>
<td>LC50 inhalation rat (mg/l)</td>
<td>1.68 mg/l (Exposure time: 1 h)</td>
</tr>
<tr>
<td>ATE US (oral)</td>
<td>238 mg/kg body weight</td>
</tr>
<tr>
<td>ATE US (vapors)</td>
<td>1.68 mg/l/4h</td>
</tr>
<tr>
<td>ATE US (dust, mist)</td>
<td>1.68 mg/l/4h</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dichlorosilane (4109-96-0)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>LC50 inhalation mouse</td>
<td>144 ppm/4h</td>
</tr>
<tr>
<td>LC50 inhalation rat</td>
<td>215 ppm</td>
</tr>
<tr>
<td>ATE US (gases)</td>
<td>100 ppmV/4h</td>
</tr>
<tr>
<td>ATE US (vapors)</td>
<td>0.5 mg/l/4h</td>
</tr>
<tr>
<td>ATE US (dust, mist)</td>
<td>0.05 mg/l/4h</td>
</tr>
</tbody>
</table>

Skin corrosion/irritation : Causes severe skin burns and eye damage.
Serious eye damage/irritation : Causes serious eye damage.
Respiratory or skin sensitization : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified

Hydrochloric acid (7647-01-0)

<table>
<thead>
<tr>
<th>IARC group</th>
<th>3 - Not classifiable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reproductive toxicity</td>
<td>Not classified</td>
</tr>
<tr>
<td>Specific target organ toxicity – single exposure</td>
<td>May cause respiratory irritation.</td>
</tr>
</tbody>
</table>

Specific target organ toxicity – repeated exposure : Not classified

Aspiration hazard : Not classified
Symptoms/effects after inhalation : Fatal if inhaled. May cause respiratory irritation. Danger of serious damage to health by prolonged exposure through inhalation.
Symptoms/effects after skin contact : Causes (severe) skin burns.
Symptoms/effects after eye contact : Causes serious eye damage.
Symptoms/effects after ingestion : May be harmful if swallowed.
Reason for classification : Expert judgment

SECTION 12: Ecological information

12.1. Toxicity
No additional information available

12.2. Persistence and degradability
No additional information available

12.3. Bioaccumulative potential
No additional information available

12.4. Mobility in soil
No additional information available
**DICHLOROSILANE, 99.9+%**
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<table>
<thead>
<tr>
<th>12.5. Other adverse effects</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Other adverse effects</td>
<td>This substance may be hazardous to the environment.</td>
</tr>
<tr>
<td>Effect on the ozone layer</td>
<td>No additional information available</td>
</tr>
<tr>
<td>Effect on global warming</td>
<td>No known effects from this product.</td>
</tr>
<tr>
<td>GWPtrix comment</td>
<td>No known effects from this product.</td>
</tr>
</tbody>
</table>

**SECTION 13: Disposal considerations**

<table>
<thead>
<tr>
<th>13.1. Disposal methods</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Product/Packaging disposal recommendations</td>
<td>Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to licensed waste disposal facility.</td>
</tr>
<tr>
<td>Additional information</td>
<td>Handle empty containers with care because residual vapors are flammable.</td>
</tr>
<tr>
<td>Ecology - waste materials</td>
<td>Avoid release to the environment.</td>
</tr>
</tbody>
</table>

**SECTION 14: Transport information**

<table>
<thead>
<tr>
<th>14.1. UN number</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>UN-No.(DOT)</td>
<td>2189</td>
</tr>
<tr>
<td>DOT NA no.</td>
<td>UN2189</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>14.2. UN proper shipping name</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport document description</td>
<td>UN2189 Dichlorosilane, 2.3</td>
</tr>
<tr>
<td>Proper Shipping Name (DOT)</td>
<td>Dichlorosilane</td>
</tr>
<tr>
<td>Class (DOT)</td>
<td>2.3 - Class 2.3 - Poisonous gas 49 CFR 173.115</td>
</tr>
<tr>
<td>Hazard labels (DOT)</td>
<td>2.3 - Poison gas 2.1 - Flammable gas 8 - Corrosive</td>
</tr>
</tbody>
</table>

| DOT Packaging Non Bulk (49 CFR 173.xxx) | 304 |
| DOT Packaging Bulk (49 CFR 173.xxx)    | 314/315 |
| DOT Packaging Exceptions (49 CFR 173.xxx) | None |

<table>
<thead>
<tr>
<th>14.3. Additional information</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency Response Guide (ERG) Number</td>
<td>119</td>
</tr>
<tr>
<td>Other information</td>
<td>No supplementary information available.</td>
</tr>
</tbody>
</table>

**Transport by sea**

| DOT Vessel Stowage Location | D - The material must be stowed “on deck only” 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, but the material is prohibited on passenger vessels in which the limiting number of passengers is exceeded. |
| DOT Vessel Stowage Other    | 17 - Segregation same as for flammable gases but “away from” dangerous when wet,40 - Stow “clear of living quarters” |

**Air transport**

| DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) | Forbidden |
| DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75)   | Forbidden |

**SECTION 15: Regulatory information**

| 15.1. US Federal regulations |          |

---

Print date: 04/11/2019   EN (English US)   SDS ID: SID3368.1
DICHLOROSILANE, 99.9+%  
Safety Data Sheet

<table>
<thead>
<tr>
<th>Substance</th>
<th>Inventory Details</th>
</tr>
</thead>
</table>
| Hydrochloric acid (7647-01-0) | Listed on the United States TSCA (Toxic Substances Control Act) inventory  
Listed on the United States SARA Section 302  
Subject to reporting requirements of United States SARA Section 313  
SARA Section 302 Threshold Planning Quantity (TPQ) 500 (gas only)  
SARA Section 313 - Emission Reporting 1 % (acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size) |
| Dichlorosilane (4109-96-0) | Listed on the United States TSCA (Toxic Substances Control Act) inventory  
SARA Section 302 Threshold Planning Quantity (TPQ) 10000 lb |

15.2. International regulations

**CANADA**

**Hydrochloric acid (7647-01-0)**

Listed on the Canadian DSL (Domestic Substances List)

| WHMIS Classification | Class A - Compressed Gas  
Class D Division 1 Subdivision A - Very toxic material causing immediate and serious toxic effects  
Class E - Corrosive Material |

**Dichlorosilane (4109-96-0)**

Listed on the Canadian DSL (Domestic Substances List)

**EU-Regulations**

**Hydrochloric acid (7647-01-0)**

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

**Dichlorosilane (4109-96-0)**

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

**National regulations**

**Hydrochloric acid (7647-01-0)**

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  
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)

**Dichlorosilane (4109-96-0)**

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  
Listed on the Korean ECL (Existing Chemicals List)  
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)

15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

**Hydrochloric acid (7647-01-0)**

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  
U.S. - Pennsylvania - RTK (Right to Know) List

**Dichlorosilane (4109-96-0)**

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

**SECTION 16: Other information**
DICHLOROSILANE, 99.9+%
Safety Data Sheet

Full text of H-phrases:

H220 Extremely flammable gas
H280 Contains gas under pressure; may explode if heated
H314 Causes severe skin burns and eye damage
H318 Causes serious eye damage
H330 Fatal if inhaled
H335 May cause respiratory irritation

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: 4 Severe Hazard - Life-threatening, major or permanent damage may result from single or repeated overexposures
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: 3 Serious Hazard - Materials that may form explosive mixtures with water and are capable of detonation or explosive reaction in the presence of a strong initiating source. Materials may polymerize, decompose, self-react, or undergo other chemical change at normal temperature and pressure with moderate risk of explosion

Prepared by safety and environmental affairs.

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SDS US (GHS HazCom 2012) - Custom
According to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

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