



DICHLOROSILANE

Safety Data Sheet SID3368.0

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Version: 1.1

SECTION 1: Identification

1.1. Identification

Product name : DICHLOROSILANE
 Product code : SID3368.0
 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.

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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

Substance type : Mono-constituent
Name : DICHLOROSILANE
CAS-No. : 4109-96-0

Name	Product identifier	%	GHS-US classification
Dichlorosilane	(CAS-No.) 4109-96-0	97 - 100	Flam. Gas 1, H220 Press. Gas (Liq.), H280 Acute Tox. 2 (Inhalation), H330 Skin Corr. 1A, H314 Eye Dam. 1, H318 STOT SE 3, H335

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.

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- 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.

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.
- 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.
- Incompatible materials : Acids. Alcohols. Oxidizing agent. Moisture. Water.
- Storage area : Store in a well-ventilated place. Store away from heat.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

DICHLOROSILANE (4109-96-0)		
AIHA	WEEL Ceiling (ppm)	0.5 ppm

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

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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

Physical state	: Gas
Appearance	: Clear low boiling liquid or gas.
Molecular mass	: 101.01 g/mol
Color	: No data available
Odor	: Acrid. Similar to hydrogen chloride.
Odor threshold	: No data available
Refractive index	: No data available
pH	: No data available
Relative evaporation rate (butyl acetate=1)	: > 40
Melting point	: No data available
Freezing point	: 122 °C
Boiling point	: 8.3 °C
Flash point	: 37 °C
Critical temperature	: 176 °C
Auto-ignition temperature	: 57.8 °C
Decomposition temperature	: No data available
Flammability (solid, gas)	: Extremely flammable gas
Vapor pressure	: 100 mm Hg @ -34°C; 1.62 atm @ 20°C
Critical pressure	: 46.1 atm
Relative vapor density at 20 °C	: 3.5
Relative density	: 1.22
% Volatiles	: > 75 %
Solubility	: Reacts violently 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	: 4.1 - 96 vol % (lower; upper)

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

Alcohols. Acids. Moisture. Oxidizing agent. Water.

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

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Dichlorosilane (4109-96-0)	
LC50 inhalation mouse	144 ppm/4h
LC50 inhalation rat	215 ppm
ATE US (gases)	100 ppmV/4h
ATE US (vapors)	0.5 mg/l/4h
ATE US (dust, mist)	0.05 mg/l/4h

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
Reproductive toxicity	: Not classified
Specific target organ toxicity – single exposure	: May cause respiratory irritation.
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

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
Effect on global warming	: No known effects from this product.
GWPMix comment	: No known effects from this product.

SECTION 13: Disposal considerations

13.1. Disposal methods

Product/Packaging disposal recommendations	: Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to licensed waste disposal facility.
Additional information	: Handle empty containers with care because residual vapors are flammable.
Ecology - waste materials	: Avoid release to the environment.

SECTION 14: Transport information

14.1. UN number

UN-No.(DOT)	: 2189
DOT NA no.	UN2189

14.2. UN proper shipping name

Transport document description	: UN2189 Dichlorosilane, 2.3 (2.1;8)
Proper Shipping Name (DOT)	: Dichlorosilane
Class (DOT)	: 2.3 - Class 2.3 - Poisonous gas 49 CFR 173.115

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Hazard labels (DOT) : 2.3 - Poison gas
2.1 - Flammable gas
8 - Corrosive



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

14.3. Additional information

Emergency Response Guide (ERG) Number : 119
Other information : No supplementary information available.

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

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

Dichlorosilane (4109-96-0)
Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

Dichlorosilane (4109-96-0)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

National regulations

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

Dichlorosilane (4109-96-0)
U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List

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SECTION 16: Other information

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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