

Safety Data Sheet

Material Name: SILANE

SDS ID: MAT20590

*** Section 1 - PRODUCT AND COMPANY IDENTIFICATION ***

Material Name: SILANE

Manufacturer Information

MATHESON TRI-GAS, INC.

150 Allen Road, Suite 302

Basking Ridge, NJ 07920

General Information: 1-800-416-2505

Emergency #: 1-800-424-9300 (CHEMTREC)

Outside the US: 703-527-3887 (Call collect)

Chemical Family

hydrides

Synonyms

MTG MSDS 78; MONOSILANE (SIH4); SILICANE; SILICON HYDRIDE (SIH4); SILICON TETRAHYDRIDE; SILICON HYDRIDE; MONOSILANE; STCC 4920168; UN 2203; H4Si; RTECS: VV1400000

Product Use

industrial

Usage Restrictions

None known.

*** Section 2 - HAZARDS IDENTIFICATION ***

EMERGENCY OVERVIEW

Color: colorless

Physical Form: gas

Odor: unpleasant odor

Health Hazards: respiratory tract irritation, skin irritation, eye irritation

Physical Hazards: May explode on contact with water. Flammable gas. May cause flash fire. Extremely flammable. May ignite spontaneously on exposure to air.

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POTENTIAL HEALTH EFFECTS

Inhalation

Short Term: irritation, nausea, headache

Long Term: lung damage

Skin

Short Term: irritation, blisters

Long Term: same as effects reported in short term exposure

Eye

Short Term: irritation, blurred vision

Long Term: same as effects reported in short term exposure

Ingestion

Short Term: frostbite

Long Term: no information is available

*** Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS ***

CAS	Component	Percent
7803-62-5	SILANE	100.0

*** Section 4 - FIRST AID MEASURES ***

Inhalation

If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.

Skin

If frostbite or freezing occur, immediately flush with plenty of lukewarm water (105-115 F; 41-46 C). DO NOT USE HOT WATER. If warm water is not available, gently wrap affected parts in blankets. Get immediate medical attention.

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Eyes

Contact with liquid: Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

Ingestion

If a large amount is swallowed, get medical attention.

* * * Section 5 - FIRE FIGHTING MEASURES * * *

See Section 9 for Flammability Properties

NFPA Ratings: Health: 2 Fire: 4 Reactivity: 3

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Flammable Properties

Severe fire hazard. May ignite on exposure to air. The vapor is heavier than air. Vapors or gases may ignite at distant ignition sources and flash back.

Extinguishing Media

carbon dioxide, regular dry chemical

Large fires: Use regular foam or flood with fine water spray.

Unsuitable Extinguishing Media

Do not use halogenated extinguishing agents.

Protective Equipment and Precautions for Firefighters

Wear full protective fire fighting gear including self contained breathing apparatus (SCBA) for protection against possible exposure.

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Fire Fighting Measures

Move container from fire area if it can be done without risk. For fires in cargo or storage area: Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. If this is impossible then take the following precautions: Keep unnecessary people away, isolate hazard area and deny entry. Let the fire burn. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. For tank, rail car or tank truck: Stop leak if possible without personal risk. Let burn unless leak can be stopped immediately. For smaller tanks or cylinders, extinguish and isolate from other flammables. Evacuation radius: 800 meters (1/2 mile). Do not attempt to extinguish fire unless flow of material can be stopped first. Flood with fine water spray. Cool containers with water spray until well after the fire is out. Apply water from a protected location or from a safe distance. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas. Evacuate if fire gets out of control or containers are directly exposed to fire. Evacuation radius: 500 meters (1/3 mile). Consider downwind evacuation if material is leaking.

Thermal Decomposition Products

Combustion: silicon, hydrogen

*** Section 6 - ACCIDENTAL RELEASE MEASURES ***

Occupational spill/release

Avoid heat, flames, sparks and other sources of ignition. Stop leak if possible without personal risk. Reduce vapors with water spray. Keep unnecessary people away, isolate hazard area and deny entry. Remove sources of ignition. Ventilate closed spaces before entering.

*** Section 7 - HANDLING AND STORAGE ***

Storage Procedures

Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101. Keep separated from incompatible substances. Store above -110 C. Store in a tightly closed container. May ignite on exposure to air.

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*** Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION ***

Component Analysis

SILANE (7803-62-5)

ACGIH: 5 ppm TWA

OSHA (vacated): 5 ppm TWA; 7 mg/m³ TWA

NIOSH: 5 ppm TWA; 7 mg/m³ TWA

Component Biological Limit Values

There are no biological limit values for any of this product's components.

Ventilation

Provide local exhaust ventilation system. Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Ensure compliance with applicable exposure limits.

PERSONAL PROTECTIVE EQUIPMENT

Eyes/Face

Wear helmet with full face shield and fire-proof hood to prevent any possibility of burns if in contact with this substance.

Protective Clothing

Wear appropriate chemical resistant clothing.

Glove Recommendations

Wear fire-resistant gloves.

Respiratory Protection

Under conditions of frequent use or heavy exposure, respiratory protection may be needed.

Respiratory protection is ranked in order from minimum to maximum.

Consider warning properties before use.

Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode.

Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

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For Unknown Concentrations or Immediately Dangerous to Life or Health -

Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.

Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

*** Section 9 - PHYSICAL AND CHEMICAL PROPERTIES ***

Physical State:	Gas	Appearance:	Not available
Color:	colorless	Physical Form:	gas
Odor:	unpleasant odor	Odor Threshold:	Not available
Melting/Freezing Point:	-185 °C	Boiling Point:	-112 °C
Flash Point:	flammable gas	Decomposition:	Not available
LEL:	1 %	UEL:	100 %
Vapor Pressure:	Not available	Vapor Density (air = 1):	1.3
Density:	1.342 g/L @ 20 °C	Water Solubility:	insoluble
Log KOW:	Not available	Auto Ignition:	Not available
Viscosity:	0.01092 cP @ 25 °C	Volatility:	100 %
Molecular Weight:	32.12	Molecular Formula:	Si-H4

Solvent Solubility

Insoluble: ethanol, benzene, ether, chloroform, silicochloroform, silicon tetrachloride

*** Section 10 - STABILITY AND REACTIVITY ***

Chemical Stability

May ignite on exposure to air.

Conditions to Avoid

Avoid heat, flames, sparks and other sources of ignition. Containers may rupture or explode if exposed to heat.

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Materials to Avoid

metal salts, bases, halogens, oxidizing materials

Combustion: silicon, hydrogen

Possibility of Hazardous Reactions

Will not polymerize.

*** Section 11 - TOXICOLOGICAL INFORMATION ***

Component Analysis - LD50/LC50

The components of this material have been reviewed in various sources and the following selected endpoints are published:

SILANE (7803-62-5)

Inhalation LC50 Rat 9600 ppm 4 h

Acute Toxicity Level

SILANE (7803-62-5)

Slightly Toxic: inhalation.

Component Carcinogenicity

None of this product's components are listed by ACGIH, IARC, NTP, OSHA or DFG.

Irritation

No animal testing data available for skin or eyes.

Local Effects

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Irritant: inhalation, skin, eye.

Medical Conditions Aggravated by Exposure

respiratory disorders

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Mutagenic

Both negative and positive results found with E. coli and S. typhimurium, with and without activation; no human data available.

Reproductive Effects

No data available.

*** Section 12 - ECOLOGICAL INFORMATION ***

Component Analysis - Aquatic Toxicity

No LOLI ecotoxicity data are available for this product's components.

*** Section 13 - DISPOSAL CONSIDERATIONS ***

Disposal Methods

Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001.

Component Waste Numbers

The U.S. EPA has not published waste numbers for this product's components.

*** Section 14 - TRANSPORT INFORMATION ***

US DOT Information

Shipping Name: Silane

UN/NA #: UN2203 Hazard Class: 2.1

Required Label(s): 2.1

TDG Information

Shipping Name: Silane, compressed

UN #: UN2203 Hazard Class: 2.1

Required Label(s): 2.1

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*** Section 15 - REGULATORY INFORMATION ***

U.S. Federal Regulations

None of this products components are listed under SARA Sections 302/304 (40 CFR 355 Appendix A), SARA Section 311/312 (40 CFR 370.21), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), or require an OSHA process safety plan.

SARA 311/312

Acute Health: Yes **Chronic Health:** No **Fire:** Yes **Pressure:** Yes **Reactive:** Yes

U.S. State Regulations

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA	RI
SILANE	7803-62-5	Yes	Yes	Yes	Yes	Yes	Yes

Not regulated under California Proposition 65

Canada WHMIS

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List

SILANE (7803-62-5)

1 %

Component Analysis - Inventory

Component	CAS	US	CA	EU	AU	PH	JP	KR	CN	NZ
SILANE	7803-62-5	Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	Yes

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*** Section 16 - OTHER INFORMATION ***

Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSL - Domestic Substances List; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; JP - Japan; Kow - Octanol/water partition coefficient; KR - Korea; LEL - Lower Explosive Limit; LOLI - List Of Lists™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PH - Philippines; RCRA - Resource Conservation and Recovery Act; RID - European Rail Transport; RTECS - Registry of Toxic Effects of Chemical Substances®; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; US - United States

Other Information

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