

## Safety Data Sheet P-4823

This SDS conforms to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication. Issue date: 01/01/1984 Revision date: 02/03/2022 Supersedes: 02/09/2021

# **SECTION: 1. Product and company identification**

#### **Product identifier**

Product form : Substance Substance name Trichlorosilane CAS-No. 10025-78-2 Formula CI3HSi

Other means of identification : Chlorosilane A-19, Silicochloroform, trichloromonosilane

#### Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Industrial use; Use as directed.

#### 1.3. Details of the supplier of the safety data sheet

Linde Inc.

10 Riverview Drive

Danbury, CT 06810-6268, USA

www.lindeus.com

Linde Inc. 1-844-44LINDE (1-844-445-4633)

#### **Emergency telephone number**

**Emergency number** : Onsite Emergency: 1-800-645-4633

CHEMTREC, 24 hr/day 7 days/week

- Within USA: 1-800-424-9300, Outside USA: 001-703-527-3887

(collect calls accepted, Contract 17729)

#### **SECTION 2: Hazard identification**

## Classification of the substance or mixture

## **GHS-US** classification

Flam. Liq. 1 H224 Water-react. 1 H260 Acute Tox. 3 (Inhalation) H331 Skin Corr. 1A H314 Eye Dam. 1 H318 STOT SE 3 H335

#### 2.2. **Label elements**

#### **GHS US labelling**

Hazard pictograms (GHS US)







GHS02

GHS05

Signal word (GHS US)

H224 - EXTREMELY FLAMMABLE LIQUID AND VAPOUR Hazard statements (GHS US)

H260 - IN CONTACT WITH WATER RELEASES FLAMMABLE GASES WHICH MAY IGNITE

**SPONTANEOUSLY** 

H314 - CAUSES SEVERE SKIN BURNS AND EYE DAMAGE

H331 - TOXIC IF INHALED

CGA-HG04 - MAY FORM EXPLOSIVE MIXTURES WITH AIR CGA-HG22 - CORROSIVE TO THE RESPIRATORY TRACT.

P202 - Do not handle until all safety precautions have been read and understood. Precautionary statements (GHS US)

P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No

smoking.



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P222 - Do not allow contact with air.

P223 - Do not allow contact with water.

P231+P232 - Handle under inert gas. Protect from moisture.

P233 - Keep container tightly closed.

P235 - Keep cool.

P240 - Ground/Bond container and receiving equipment.

P241 - Use explosion-proof electrical, ventilating and lighting equipment.

P242 - Use only non-sparking tools.

P243 - Take precautionary measures against static discharge.

P260 - Do not breathe vapours

P264 - Wash hands thoroughly after handling

P271+P403 - Use and store only outdoors or in a well-ventilated place.

P280 - Wear protective gloves/protective clothing/eye protection/face protection.

P370+P378 - In case of fire: Use AFFF alcohol-compatible foam to extinguish

P381 - Eliminate all ignition sources if safe to do so.

P402 - Store in a dry place.

P404 - Store in a closed container.

P405 - Store locked up.

P501 - Dispose of contents/container in accordance with container Supplier/owner instructions

CGA-PG05 - Use a back flow preventive device in the piping.

CGA-PG20 - Use only with equipment of compatible materials of construction and rated for cylinder pressure.

CGA-PG12 - Do not open valve until connected to equipment prepared for use.

CGA-PG06 - Close valve after each use and when empty.

CGA-PG18 - When returning cylinder, install leak tight valve outlet cap or plug.

CGA-PG02 - Protect from sunlight when ambient temperature exceeds 52°C (125°F).

P303, P361, P353, P363, P310 - IF ON SKIN OR (HAIR): Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before

reuse. Immediately call a POISON CENTER/doctor.

P335+P334 - Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages.

P332+P313 - IF SKIN IRRITATION OCCURS: Get medical advice/attention.

P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing. P311 - Call a poison center or doctor.

P305, P351, P338, P310 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.

#### 2.3 Other hazards

Other hazards which do not result in classification

: Reacts with moisture to form hydrochloric acid (aqueous hydrogen chloride).

Trace amounts may be present in the product.

#### **Unknown acute toxicity (GHS US)**

No data available

## **SECTION 3: Composition/information on ingredients**

## **Substances**

Name	Product identifier	%
Trichlorosilane (Main constituent)	(CAS-No.) 10025-78-2	100

#### **Mixtures**

Not applicable

## **SECTION 4: First aid measures**

#### **Description of first aid measures**

First-aid measures after inhalation

: Remove to fresh air and keep at rest in a position comfortable for breathing. If not breathing, give artificial respiration. If breathing is difficult, trained personnel should give oxygen. Call a physician. . WARNING: To avoid possible chemical burns, the rescuer should avoid breathing any exhaled air from the victim.

First-aid measures after skin contact

In case of contact, immediately flush affected areas with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician. Wash clothing before reuse. Discard contaminated shoes.

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First-aid measures after eye contact

: Immediately flush eyes thoroughly with water for at least 15 minutes. Hold the eyelids open and

away from the eyeballs to ensure that all surfaces are flushed thoroughly. Contact an

ophthalmologist immediately.

First-aid measures after ingestion

: Do NOT induce vomiting. If patient is fully conscious, give two glasses of milk or water at once. Get immediate medical attention. Never give anything by mouth to an unconscious person.

#### Most important symptoms and effects, both acute and delayed

Symptoms/effects after inhalation : MAY CAUSE RESPIRATORY IRRITATION.

Symptoms/effects after eye contact : CAUSES SERIOUS EYE DAMAGE.

Symptoms/effects after ingestion Swallowing a small quantity of this material will result in serious health hazard.

#### 4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

## **SECTION 5: Firefighting measures**

#### **Extinguishing media**

Suitable extinguishing media

: DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS THE LEAK CAN BE STOPPED.

Carbon dioxide. Dry sand. Alcohol resistant foam.

Unsuitable extinguishing media : Water. Dry chemical, soda ash or lime.

#### Special hazards arising from the substance or mixture

Fire hazard

: DANGER! Flammable, corrosive liquid and vapour. .

Explosion hazard

: Dousing fire with water might generate hydrogen gas creating dangerous explosion hazard especially in confined areas. Vapours may form explosive mixture with air and oxidizing agents.

Reactivity

: Vapor has a very low autoignition temperature. (~ 104 °C (220 °F)). May ignite on hot surfaces at about this temperature or greater. Vapour burns rapidly in air. Reacts violently with water to form hydrogen chloride fumes.

#### 5.3. Advice for firefighters

Firefighting instructions

: DANGER! Flammable, corrosive liquid and vapour.

Evacuate all personnel from the danger area. Use self-contained breathing apparatus (SCBA) and protective clothing. Immediately cool containers with water from maximum distance. Stop flow of gas if safe to do so, while continuing cooling water spray. Remove ignition sources if safe to do so. Remove containers from area of fire if safe to do so. On-site fire brigades must comply with their provincial and local fire code regulations.

Special protective equipment for fire fighters

Wear gas tight chemically protective clothing in combination with self contained breathing

Specific methods

If venting or leaking gas catches fire, do not extinguish flames. Flammable vapors may spread from leak, creating an explosive reignition hazard. Vapors can be ignited by pilot lights, other flames, smoking, sparks, heaters, electrical equipment, static discharge, or other ignition sources at locations distant from product handling point. Explosive atmospheres may linger. Before entering an area, especially a confined area, check the atmosphere with an appropriate device.

In large fires where leakage may occur, water spray may be used if applied in quanitities sufficient to absorb the heat of reaction and knock down the hydrogen chloride fumes.

For small fires, use copious quantities of water spray to react with the chlorosilane, which reacts violently with water to form hydrogen chloride fumes. Despite the reaction with water, trichlorosilane fires can be extinguished with a 6 percent solution in water of medium-expansion Hazmat II foam.

## **SECTION 6: Accidental release measures**

#### Personal precautions, protective equipment and emergency procedures

: DANGER! Flammable, corrosive liquid and vapour. . General measures

6.1.1. For non-emergency personnel

No additional information available

6.1.2. For emergency responders

No additional information available

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#### 6.2. Environmental precautions

Prevent waste from contaminating the surrounding environment. Prevent soil and water pollution. Dispose of contents/container in accordance with local/regional/national/international regulations. Contact supplier for any special requirements.

#### 6.3. Methods and material for containment and cleaning up

Methods for cleaning up

: Small spills may be absorbed on an acid spill pillow or hydrolyzed with large quantities of water. If the product is absorbed on an acid spill pillow, place the pillow in a large quantity of water and allow it to dissolve (hydrolyze). In either case, ensure that the hydrolyzed product can be safely vented.

#### 6.4. Reference to other sections

No additional information available

## **SECTION 7: Handling and storage**

#### 7.1. Precautions for safe handling

Additional hazards when processed

Precautions for safe handling

: Handle empty containers with care because residual vapours are flammable. Keep away from any possible contact with water, because of violent reaction and possible flash fire.

: MAY BE FATAL IF SWALLOWED

WARNING: May be harmful if inhaled or absorbed.

Do not swallow liquid.

Do not breathe vapours.

May irritate skin, eyes, and respiratory tract. Use only with adequate ventilation or respiratory protection. Do not get liquid or vapor in eyes, on skin, or on clothing. Have safety showers and eyewash fountains immediately available. May form explosive mixtures with air. Keep away from heat, sparks, and open flame. Use only spark-proof tools and explosion-proof equipment. Protect containers from damage. Use a suitable hand truck to move containers; do not drag, roll, slide, or drop. For other precautions in using this product, see section 16.

Protect from moisture.

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use only non-sparking tools. Use only explosion-proof equipment.

Vapor has a very low autoignition temperature

VAPOR MAY CAUSE FLASH FIRE (OR EXPLOSION)

Wear leather safety gloves and safety shoes when handling cylinders. Protect containers from physical damage; do not drag, roll, slide or drop. While moving cylinder, always keep in place removable valve cover. Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. Never insert an object (e.g, wrench, screwdriver, pry bar) into cap openings; doing so may damage the valve and cause a leak. Use an adjustable strap wrench to remove over-tight or rusted caps. Slowly open the valve. If the valve is hard to open, discontinue use and contact your supplier. Close the container valve after each use; keep closed even when empty. Never apply flame or localized heat directly to any part of the container. High temperatures may damage the container and could cause the pressure relief device to fail prematurely, venting the container contents. For other precautions in using this product, see section 16.



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Safe use of the product

: Trichlorosilane vapours react with moisture in air to produce dense white clouds of silica and hydrogen chloride. Therefore, this product should be confined within enclosed equipment and should not be vented directly to the air. Where venting is necessary, trichlorosilane should be vented through a scrubber system equipped to handle hydrogen chloride.

WARNING: Hot organic chemical vapors or mists are susceptible to sudden spontaneous combustion when mixed with air. Ignition may occur at temperatures below those published in the literature as "autoignition" or "ignition" temperatures. Ignition temperatures decrease with increasing vapor volume and vapor/air contact time, and are influenced by pressure changes.

Ignition may occur at typical elevated-temperature process conditions, especially in processes operating under vacuum if subjected to sudden ingress of air or in outside process equipment operating under elevated pressure if a sudden escape of vapors or mists to the atmosphere occurs.

Any proposed use of this product in elevated-temperature processes should be thoroughly evaluated to ensure that safe operating conditions are established and maintained.

#### 7.2. Conditions for safe storage, including any incompatibilities

Storage conditions

: All equipment in storage areas must be explosion-proof. Electric installation in storage areas must meet the requirements of National Electric Code (NEC) Article 500. This material is a static accumulator. To avoid ignition of vapors by static discharge, all metal parts and equipment must be grounded. Follow NFPA 77, Recommended Practice on Static Electricity (www.nfpa.org), and API Recommended Practice 2003, Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents.

Keep in fireproof place.

Store in a dry place.

Protect from moisture.

Store only where temperature will not exceed 125°F (52°C). Post "No Smoking/No Open Flames" signs in storage and use areas. There must be no sources of ignition. Separate packages and protect against potential fire and/or explosion damage following appropriate codes and requirements (e.g, NFPA 30, NFPA 55, NFPA 70, and/or NFPA 221 in the U.S.) or according to requirements determined by the Authority Having Jurisdiction (AHJ). Always secure containers upright to keep them from falling or being knocked over. Install valve protection cap, if provided, firmly in place by hand when the container is not in use. Store full and empty containers separately. Use a first-in, first-out inventory system to prevent storing full containers for long periods. For other precautions in using this product, see section 16.

OTHER PRECAUTIONS FOR HANDLING, STORAGE, AND USE: When handling product under pressure, use piping and equipment adequately designed to withstand the pressures to be encountered. Never work on a pressurized system. Use a back flow preventive device in the piping. Gases can cause rapid suffocation because of oxygen deficiency; store and use with adequate ventilation. If a leak occurs, close the container valve and blow down the system in a safe and environmentally correct manner in compliance with all international, federal/national, state/provincial, and local laws; then repair the leak. Never place a container where it may become part of an electrical circuit.

Sources of ignition. Heat sources. Keep away from any possible contact with water, because of violent reaction and possible flash fire.

Conditions to avoid

## 7.3. Specific end use(s)

No additional information available

## **SECTION 8: Exposure controls/personal protection**

## 8.1. Control parameters

Trichlorosilane (10025-78-2)	
ACGIH	Not established
USA OSHA	Not established

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#### 8.2. Exposure controls

Appropriate engineering controls

: Use corrosion-resistant equipment. Use an explosion-proof local exhaust system with sufficient flow velocity to maintain an adequate supply of air in the worker's breathing zone. Mechanical/General measures: Use in a closed system. A canopy-type, forced-draft fume hood is preferred.

In semiconductor process gas and other suitable applications, Linde recommends the use of engineering controls such as gas cabinet enclosures, automatic gas panels (used to purge systems on cylider changeout), excess-flow valves throughout the gas distribution system, double containment for the distribution system, and continuous gas monitors.

Eye protection : Wear safety glasses when handling cylinders; vapor-proof goggles and a face shield during

cylinder changeout or whenever contact with product is possible. Select eye protection in

accordance with OSHA 29 CFR 1910.133.

Skin and body protection : Wear metatarsal shoes and work gloves for cylinder handling, and protective clothing where

needed. Wear appropriate chemical gloves during cylinder changeout or wherever contact with

product is possible.

Respiratory protection : When workplace conditions warrant respirator use, follow a respiratory protection program that

meets or exceeds the requirements of the appropriate Health and Safety Regulations. Use an air-supplied or air-purifying cartridge if the action level is exceeded. Ensure that the respirator has the appropriate protection factor for the exposure level. If cartridge type respirators are used, the cartridge must be appropriate for the chemical exposure. For emergencies or instances with unknown exposure levels, use a self-contained breathing apparatus (SCBA).

Other information : Do not eat, drink or smoke during use.

## **SECTION 9: Physical and chemical properties**

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

Physical state : Liquid

Appearance : Colorless liquid.

Colour : Colourless

Odour : sharp choking

Odour threshold : No data available

pH : No data available

Relative evaporation rate (butylacetate=1) : No data available

Melting point : -126.6 °C

Freezing point : No data available

Boiling point : 31.8 - 36.5 °C (at 760 mmHg)

Flash point : -27.8 °C
Critical temperature : 205.9 °C
Auto-ignition temperature : 104 °C

Decomposition temperature : No data available Flammability (solid, gas) 1.2 - 90.5 vol % : 533 hPa (at 14.5 °C) Vapour pressure Relative vapour density at 20 °C : No data available Relative density : No data available Density 1.35 g/cm3 (at 0 °C) Solubility : Water: reacts violently Partition coefficient n-octanol/water (Log Pow) : No data available Partition coefficient n-octanol/water (Log Kow) : No data available Viscosity, kinematic : No data available : No data available Viscosity, dynamic

Explosive properties : May form flammable/explosive vapour-air mixture.

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May occur.

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Oxidizing properties : No data available Explosive limits : No data available

9.2. Other information

Additional information : Ignition may occur at temperatures below those published in the literature as "autoignition" or "ignition" temperatures. Ignition temperatures decrease with increasing vapor volume and

vapor/air contact time, and are influenced by pressure changes.

## **SECTION 10: Stability and reactivity**

# 10.1. Reactivity Vapor has a very low autoignition temperature. (~ 104 °C (220 °F)). May ignite on hot surfaces at about this temperature or greater. Vapour burns rapidly in air. Reacts violently with water to form hydrogen chloride fumes. 10.2. Chemical stability Stable under use and storage conditions as recommended below and in section 7. 10.3. Possibility of hazardous reactions

Trichlorosilane reacts violently with water to form hydrogen chloride fumes. Halocarbons react strongly with it, and the mixture may explode given a source of ignition. Under some conditions, the reaction of this product with acids or alkalis can release flammable hydrogen gas. Trichlorosilane is also a reducing agent that may react explosively with some oxidizing agents. Under the influence of heat or catalysts, such as amines, rust, or aluminum chloride, trichlorosilane may redistribute to form mixtures of silane, monochlorosilane, dichlorosilane, and silicon tetrachloride. These mixtures may be pyrophoric.

10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

10.5. Incompatible materials

Water, humidity. Oxidizer. Organic materials. Bases. Will react violently with the water in aqueous acid solutions. Alkalis. Ketones. Aldehydes. It reacts rapidly (exothermically) with alcohols, primary and secondary amines, ammonia, and other compounds containing active hydrogen atoms.

10.6. Hazardous decomposition products

Thermal decomposition or burning can produce chlorine, hydrogen chloride, hydrogen, and oxides of silicon.

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Halocarbons react strongly with it, and the mixture may explode given a source of ignition.

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Trichlorosilane is also a reducing agent that may react explosively with some oxidizing agents.

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**SECTION** 11: Toxicological information

## 11.1. Information on toxicological effects

Acute toxicity : Not classified

Trichlorosilane ( \f )10025-78-2	
LC50 Inhalation - Rat [ppm]	1040 ppm/1h
ATE US (gases)	520 ppmv/4h

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Trichlorosilane ( \f )10025-78-2	
ATE US (vapours)	3 mg/l/4h
ATE US (dust,mist)	0.5 mg/l/4h

Skin corrosion/irritation : Causes severe skin burns.

Serious eye damage/irritation : CAUSES SERIOUS EYE DAMAGE.

Respiratory or skin sensitisation : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified
Reproductive toxicity : Not classified

STOT-single exposure : MAY CAUSE RESPIRATORY IRRITATION.

STOT-repeated exposure : Not classified
Aspiration hazard : Not classified

Potential adverse human health effects and

symptoms

: HARMFUL IF SWALLOWED.

Symptoms/effects after inhalation : MAY CAUSE RESPIRATORY IRRITATION.
Symptoms/effects after eye contact : CAUSES SERIOUS EYE DAMAGE.

Symptoms/effects after ingestion : Swallowing a small quantity of this material will result in serious health hazard.

## **SECTION 12: Ecological information**

#### 12.1. Toxicity

No additional information available

## 12.2. Persistence and degradability

Trichlorosilane (10025-78-2)	
Persistence and degradability	Not established.

# 12.3. Bioaccumulative potential

Trichlorosilane (10025-78-2)		
	Bioaccumulative potential	Not established.

## 12.4. Mobility in soil

No additional information available

## 12.5. Other adverse effects

Other information : Avoid release to the environment.

## **SECTION 13: Disposal considerations**

#### 13.1. Waste treatment methods

Product/Packaging disposal recommendations : Do not attempt to dispose of residual or unused quantities. Return container to supplier.

Additional information : Handle empty containers with care because residual vapours are flammable.

Ecology - waste materials : Avoid release to the environment.

## **SECTION 14: Transport information**

In accordance with DOT

Transport document description (DOT) : UN1295 Trichlorosilane, 4.3, I

UN-No.(DOT) : UN1295
Proper Shipping Name (DOT) : Trichlorosilane

Class (DOT) : 4.3 - Class 4.3 - Dangerous when wet material 49 CFR 173.124

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Hazard labels (DOT)

: 4.3 - Dangerous when wet

3 - Flammable liquid

8 - Corrosive







Packing group (DOT)

DOT Special Provisions (49 CFR 172.102)

: I - Great Danger

: N34 - Aluminum construction materials are not authorized for any part of a packaging which is normally in contact with the hazardous material.

T14 - 6 6 mm Prohibited 178.275(g)(3).

TP2 - a. The maximum degree of filling must not exceed the degree of filling determined by the following: Degree of filling = 95 / (1 + a (tr - tf)) Where: tr is the maximum mean bulk temperature during transport, tf is the temperature in degrees celsius of the liquid during filling, and a is the mean coefficient of cubical expansion of the liquid between the mean temperature of the liquid during filling (tf) and the maximum mean bulk temperature during transportation (tr) both in degrees celsius. b. For liquids transported under ambient conditions may be calculated using the formula:  $a = (d15 - d50) / 35^*d50$  Where: d15 and d50 are the densities (in units of mass per unit volume) of the liquid at 15 C (59 F) and 50 C (122 F), respectively.

TP7 - The vapor space must be purged of air by nitrogen or other means.

TP13 - Self-contained breathing apparatus must be provided when this hazardous material is transported by sea.

#### **Additional information**

Emergency Response Guide (ERG) Number : 139

Other information : No supplementary information available.

#### Transport by sea

UN-No. (IMDG) : 1295

Proper Shipping Name (IMDG) : TRICHLOROSILANE

Class (IMDG) : 4.3 - Substances which, in contact with water, emit flammable gases
Division (IMDG) : 4.3 - Substances which in contact with water emit flammable gases

Packing group (IMDG) : I - substances presenting high danger

Air transport

UN-No. (IATA) : 1295

Proper Shipping Name (IATA) : Trichlorosilane

Class (IATA) : 4.3 - Substances which in Contact with Water emit Flammable Gases

## **SECTION 15: Regulatory information**

## 15.1. US Federal regulations

## Trichlorosilane (10025-78-2)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory.

## 15.2. International regulations

## **CANADA**

#### Trichlorosilane (10025-78-2)

Listed on the Canadian DSL (Domestic Substances List)

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## **EU-Regulations**

#### Trichlorosilane (10025-78-2)

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

## 15.2.2. National regulations

## Trichlorosilane (10025-78-2)

Listed introduction on Australian Industrial Chemicals Introduction Scheme (AICIS Inventory)

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 Japanese ISHL (Industrial Safety and Health Law)

Listed on KECL/KECI (Korean Existing Chemicals Inventory)

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 the TCSI (Taiwan Chemical Substance Inventory)

#### 15.3. US State regulations

Trichlorosilane(10025-78-2)	hlorosilane(10025-78-2)	
U.S California - Proposition 65 - Carcinogens List	No	
U.S California - Proposition 65 - Developmental Toxicity	No	
U.S California - Proposition 65 - Reproductive Toxicity - Female	No	
U.S California - Proposition 65 - Reproductive Toxicity - Male	No	
State or local regulations	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	



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#### **SECTION 16: Other information**

Other information

: When you mix two or more chemicals, you can create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an industrial hygienist or other trained person when you evaluate the end product. Before using any plastics, confirm their compatibility with this product.

Linde asks users of this product to study this SDS and become aware of the product hazards and safety information. To promote safe use of this product, a user should (1) notify employees, agents, and contractors of the information in this SDS and of any other known product hazards and safety information, (2) furnish this information to each purchaser of the product, and (3) ask each purchaser to notify its employees and customers of the product hazards and safety information.

The opinions expressed herein are those of qualified experts within Linde Inc. We believe that the information contained herein is current as of the date of this Safety Data Sheet. Since the use of this information and the conditions of use are not within the control of Linde Inc, it is the user's obligation to determine the conditions of safe use of the product.

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NFPA health hazard : 3 - Materials that, under emergency conditions, can cause serious or permanent injury.

NFPA fire hazard : 4 - Materials that rapidly or completely vaporize at atmospheric pressure and normal ambient temperature or that are readily dispersed in air and burn readily.

: 2 - Materials that readily undergo violent chemical change at elevated temperatures and pressures.

: W - Unusual reactivity with water. This indicates a potential hazard using water to fight a fire involving this material.



SDS US (GHS HazCom 2012) - Linde 2022

NFPA instability

NFPA specific hazard

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.