



Silane

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878
 Reference number: EIGA107
 Issue date: 16.01.2013 Revision date: 22.05.2024 Supersedes version of: 16.04.2024 Version: 2.5

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form : Substance
 Name : Silane
 Trade name : Silane 5.0; Silane 6.0
 EC-No. : 232-263-4
 CAS-No. : 7803-62-5
 REACH registration No. : 01-2119436667-29
 Product code : 000010021753
 Formula : SiH₄

1.2. Relevant identified uses of the substance or mixture and uses advised against

1.2.1. Relevant identified uses

Relevant identified uses : Industrial use. Perform risk assessment prior to use.
 Test gas/Calibration gas.
 Chemical reaction / Synthesis.
 Laboratory use.
 Use for manufacture of electronic/photovoltaic components.

Use of the substance/mixture : Glass processing.

1.2.2. Uses advised against

Uses advised against : Consumer use.
 Uses other than those listed above are not supported, contact your supplier for more information on other uses.

1.3. Details of the supplier of the safety data sheet

Oy Linde Gas Ab
 Itsehallintokuja 6
 FIN-02600 Espoo
 Finland
 T +358 10 2421
sds.ren@linde.com

1.4. Emergency telephone number

Emergency number : Myrkytystietokeskus (24h): 09-471 977

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

| | | |
|------------------|--|-------------------|
| Physical hazards | Flammable gases, Category 1A, Pyrophoric Gas Gases under pressure : Liquefied gas | H220;H232 H280 |
|------------------|--|-------------------|

Full text of H- and EUH-statements: see section 16



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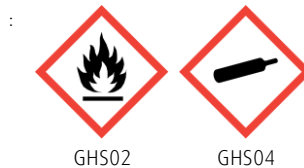
Adverse physicochemical, human health and environmental effects

No additional information available

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP)



Signal word (CLP) : Danger
 Hazard statements (CLP) : H220 - Extremely flammable gas.
 H232 - May ignite spontaneously if exposed to air.
 H280 - Contains gas under pressure; may explode if heated.

Precautionary statements (CLP)

- Prevention : P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
 P280 - Wear eye protection, face protection, protective clothing, protective gloves.
- Response : P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
 P381 - In case of leakage, eliminate all ignition sources.
- Storage : P403 - Store in a well-ventilated place.

2.3. Other hazards

Other hazards : Contact with liquid may cause cold burns/frostbite. The substance/mixture has no endocrine disrupting properties.

SECTION 3: Composition/information on ingredients

3.1. Substances

| Name | Product identifier | % | Classification according to Regulation (EC) No. 1272/2008 [CLP] |
|--------|---|-----|---|
| Silane | CAS-No.: 7803-62-5 EC-No.: 232-263-4 REACH-no: 01-2119436667-29 | 100 | Flam. Gas 1A - Pyr. Gas, H220;H232 Press. Gas (Liq.), H280 |

Full text of H- and EUH-statements: see section 16

Contains no other components or impurities which will influence the classification of the product.

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures after inhalation : Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Perform cardiopulmonary resuscitation if breathing stopped.



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| | |
|---------------------------------------|---|
| First-aid measures after skin contact | : In case of frostbite spray with water for at least 15 minutes. Apply a sterile dressing. Obtain medical assistance. |
| First-aid measures after eye contact | : Immediately flush eyes thoroughly with water for at least 15 minutes. |
| First-aid measures after ingestion | : Ingestion is not considered a potential route of exposure. |

4.2. Most important symptoms and effects, both acute and delayed

| | |
|---|--|
| Most important symptoms and effects, both acute and delayed | May cause headache, nausea and irritation of respiratory tract. See section 11. |
|---|--|

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

None.

SECTION 5: Firefighting measures

5.1. Extinguishing media

| | |
|--------------------------------|--|
| Suitable extinguishing media | : Carbon dioxide. Shutting off the source of the gas is the preferred method of control. Water spray or fog. Be aware of the risk of formation of static electricity with the use of CO2 extinguishers. Do not use them in places where a flammable atmosphere may be present. |
| Unsuitable extinguishing media | : Do not use water jet to extinguish. |

5.2. Special hazards arising from the substance or mixture

| | |
|-------------------------------|---|
| Reactivity in case of fire | : No reactivity hazard other than the effects described in sub-sections below. |
| Specific hazards | : Exposure to fire may cause containers to rupture/explode. Escaping gas cannot be extinguished. |
| Hazardous combustion products | : Silica dust (inert - but may irritate respiratory tract and eyes). |

5.3. Advice for firefighters

| | |
|--|---|
| Specific methods | : Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur. Extinguish any other fire. Use fire control measures appropriate for the surrounding fire. Exposure to fire and heat radiation may cause gas receptacles to rupture. Cool endangered receptacles with water spray jet from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems. If possible, stop flow of product. Use water spray or fog to knock down fire fumes if possible. Move containers away from the fire area if this can be done without risk. |
| Special protective equipment for fire fighters | : In confined space use self-contained breathing apparatus. Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire fighters. Standard EN 469 - Protective clothing for firefighters. Standard - EN 659: Protective gloves for firefighters. Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask. |



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SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures : Act in accordance with local emergency plan. Try to stop release. Evacuate area. Eliminate ignition sources. Ensure adequate air ventilation. Stay upwind. See section 8 of the SDS for more information on personal protective equipment.

6.1.2. For emergency responders

Emergency procedures : Monitor concentration of released product. Consider the risk of potentially explosive atmospheres. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. See section 5.3 of the SDS for more information.

6.2. Environmental precautions

Try to stop release.

6.3. Methods and material for containment and cleaning up

Methods and material for containment and cleaning up : Ventilate area.
Dust deposited may be vacuum cleaned or the area hosed down with water.

6.4. Reference to other sections

See also sections 8 and 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Safe use of the product : For more guidance on safe use, refer to the EIGA Doc.160 "Storage and handling of silane and silane mixtures", downloadable at <http://www.eiga.eu> and consult your supplier.
A manually activated deluge water spray fire protection system shall be provided to protect bulk product delivery systems.
Assess the risk of potentially explosive atmospheres and the need for explosion-proof equipment.
Purge air from system before introducing gas.
Take precautionary measures against static discharge.
Keep away from ignition sources (including static discharges).
Consider the use of only non-sparking tools.
Ensure equipment is adequately earthed.
Gas cabinets, rooms or indoor areas where product is stored or used shall be protected by an automatic sprinkler system.
The product must be handled in accordance with good industrial hygiene and safety procedures.
Only experienced and properly instructed persons should handle gases under pressure.
Consider pressure relief device(s) in gas installations.
Ensure the complete gas system was (or is regularly) checked for leaks before use.
Do not smoke while handling product.
Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.
Avoid suck back of water, acid and alkalis.
Do not breathe gas.
Avoid release of product into work area.



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Safe handling of the gas receptacle :

- : Refer to supplier's container handling instructions.
- Do not allow backfeed into the container.
- Protect containers from physical damage; do not drag, roll, slide or drop.
- When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders.
- Leave valve protection caps in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use.
- If user experiences any difficulty operating valve discontinue use and contact supplier.
- Never attempt to repair or modify container valves or safety relief devices.
- Damaged valves should be reported immediately to the supplier.
- Keep container valve outlets clean and free from contaminants particularly oil and water.
- Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment.
- Close container valve after each use and when empty, even if still connected to equipment.
- Never attempt to transfer gases from one cylinder/container to another.
- Never use direct flame or electrical heating devices to raise the pressure of a container.
- Do not remove or deface labels provided by the supplier for the identification of the content of the container.
- Suck back of water into the container must be prevented.
- Open valve slowly to avoid pressure shock.

7.2. Conditions for safe storage, including any incompatibilities

Conditions for safe storage, including any incompatibilities :

- : Segregate from oxidant gases and other oxidants in store.
- All electrical equipment in the storage areas should be compatible with the risk of a potentially explosive atmosphere.
- Observe all regulations and local requirements regarding storage of containers.
- Containers should not be stored in conditions likely to encourage corrosion.
- Container valve guards or caps should be in place.
- Containers should be stored in the vertical position and properly secured to prevent them from falling over.
- Stored containers should be periodically checked for general condition and leakage.
- Keep container below 50°C in a well ventilated place.
- Store containers in location free from fire risk and away from sources of heat and ignition.
- Keep away from combustible materials.

7.3. Specific end use(s)

None.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1 National occupational exposure and biological limit values

| Silane (7803-62-5) | |
|--|------------------------|
| Finland - Occupational Exposure Limits | |
| Local name | Piitetrahydridi |
| HTP (OEL TWA) [1] | 0,67 mg/m ³ |
| HTP (OEL TWA) [2] | 0,5 ppm |
| HTP (OEL STEL) | 2 mg/m ³ |



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| Silane (7803-62-5) | |
|----------------------|---|
| HTP (OEL STEL) [ppm] | 1,5 ppm |
| Regulatory reference | HTP-ARVOT 2020 (Sosiaali- ja terveystieteiden ministeriö) |

8.1.2. Recommended monitoring procedures

No additional information available

8.1.3. Air contaminants formed

No additional information available

8.1.4. DNEL and PNEC

| Silane (7803-62-5) | |
|--|------------------------|
| DNEL/DMEL (Workers) | |
| Acute - systemic effects, inhalation | 0,67 mg/m ³ |
| Long-term - systemic effects, inhalation | 0,67 mg/m ³ |
| PNEC (additional information) | |
| Additional information | None established. |

8.1.5. Control banding

No additional information available

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Appropriate engineering controls:

Optical flame detection systems shall be provided to detect a fire at potential leak points. Provide adequate general and local exhaust ventilation. Product to be handled in a closed system. Gas detectors should be used when flammable gases/vapours may be released. Consider the use of a work permit system e.g. for maintenance activities. Systems under pressure should be regularly checked for leakages. Ensure exposure is below occupational exposure limits (where available).

8.2.2. Personal protection equipment

Personal protective equipment:

A risk assessment should be conducted and documented in each work area to assess the risks related to the use of the product and to select the PPE that matches the relevant risk. The following recommendations should be considered: PPE compliant to the recommended EN/ISO standards should be selected.

Personal protective equipment symbol(s):



8.2.2.1. Eye and face protection

Eye protection:

Wear goggles and a face shield when transfilling or breaking transfer connections.

Standard EN 166 - Personal eye-protection - specifications



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8.2.2.2. Skin protection

Hand protection:

Wear working gloves when handling gas containers.

Standard EN 388 - Protective gloves against mechanical risks, performance level 1 or higher.

Standard EN 511 - Cold insulating gloves, performance level 1 or higher. Recommended types include insulated gauntlets or gloves specifically selected to prevent liquid penetration and ingress of cryogenic liquids and to provide mechanical resistance.

Other skin protection

Depending on operations that e.g. involve opening of valves or opening of process silane systems the following additional PPE shall be considered: Hard hat, fire resistant hood, face shield, leather gauntlet.

Consider the use of flame resistant anti-static safety clothing.

Standard EN ISO 14116 - Limited flame spread materials.

Standard EN 1149-5 - Protective clothing: Electrostatic properties.

Wear safety shoes while handling containers.

Standard EN ISO 20345 - Personal protective equipment - Safety footwear.

Other information:

Depending on operations that e.g. involve opening of valves or opening of process silane systems the following additional PPE shall be considered: Hard hat, fire resistant hood, face shield, leather gauntlet.

Consider the use of flame resistant anti-static safety clothing.

Standard EN ISO 14116 - Limited flame spread materials.

Standard EN 1149-5 - Protective clothing: Electrostatic properties.

Wear safety shoes while handling containers.

Standard EN ISO 20345 - Personal protective equipment - Safety footwear.

8.2.2.3. Respiratory protection

Respiratory protection:

Self contained breathing apparatus (SCBA) or positive pressure airline with mask are to be used in oxygen-deficient atmospheres.

Self contained breathing apparatus is recommended, where unknown exposure may be expected, e.g. during maintenance activities on installation systems.

Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.

8.2.2.4. Thermal hazards

Thermal hazard protection:

None in addition to the above sections.

8.2.3. Environmental exposure controls

Environmental exposure controls:

Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance

Physical state

: Gas

Colour

: Colourless.

Form

: Liquefied gas

Odour

: Odourless.

Odour threshold

: Odour threshold is subjective and inadequate to warn of overexposure.

Melting point

: -186 °C

Freezing point

: Not applicable

Boiling point

: -111 °C

Flammability

: Extremely flammable gas, Pyrophoric.



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| | |
|---|--|
| Oxidising properties | : No oxidising properties. |
| Explosive limits | : Not known. |
| Lower explosion limit | : Not known. |
| Upper explosion limit | : Not known. |
| Flash point | : Not applicable for gases and gas mixtures. |
| Auto-ignition temperature | : -50 °C |
| Decomposition temperature | : Not applicable. |
| pH | : Not applicable for gases and gas mixtures. |
| Viscosity, kinematic | : No reliable data available. |
| Viscosity, dynamic | : No reliable data available. |
| Solubility in water | : No reliable data available. |
| Partition coefficient n-octanol/water (Log Kow) | : Not applicable for inorganic products. |
| Partition coefficient n-octanol/water (Log Pow) | : Not applicable for gas mixtures. |
| Vapour pressure | : Not applicable. |
| Vapour pressure at 50°C | : Not applicable. |
| Critical pressure | : 4840 kPa |
| Density | : 1,44 g/l |
| Relative density | : 0,55 |
| Relative vapour density at 20°C | : Not applicable. |
| Relative gas density | : 1,1 |
| Particle characteristics | : Not applicable Not applicable for gases and gas mixtures. Nanoforms are not relevant for gases and gas mixtures. |

9.2. Other information

9.2.1. Information with regard to physical hazard classes

| | |
|----------------------|-----------|
| Tci | : 1 % |
| Critical temperature | : -3,5 °C |

9.2.2. Other safety characteristics

| | |
|----------------|---------------------|
| Molecular mass | : 32 g/mol |
| Gas group | : Press. Gas (Liq.) |

SECTION 10: Stability and reactivity

10.1. Reactivity

No reactivity hazard other than the effects described in sub-sections below.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Can form explosive mixture with air. May react violently with oxidants. Can ignite spontaneously in air (fire cannot be put out). Can form spontaneous, violently explosive mixture in air.

10.4. Conditions to avoid

Keep away from heat/sparks/open flames/hot surfaces. – No smoking. Avoid moisture in installation systems.

10.5. Incompatible materials

Air, Oxidisers. For additional information on compatibility refer to ISO 11114.



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10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity : Classification criteria are not met.
 Acute toxicity (dermal) : Not classified
 Acute toxicity (inhalation) : Not classified

Silane (7803-62-5)

| | |
|---------------------------------------|--|
| LC50 Inhalation - Rat [ppm] | 9500 ppm/4h |
| Skin corrosion/irritation | : No known effects from this product. pH: Not applicable for gases and gas mixtures. |
| Serious eye damage/irritation | : No known effects from this product. pH: Not applicable for gases and gas mixtures. |
| Respiratory or skin sensitisation | : No known effects from this product. |
| Germ cell mutagenicity | : No known effects from this product. |
| Carcinogenicity | : No known effects from this product. |
| Reproductive toxicity | : Not classified |
| Toxic for reproduction : Fertility | : No known effects from this product. |
| Toxic for reproduction : unborn child | : No known effects from this product. |
| STOT-single exposure | : May cause nausea and irritation of the respiratory tract. Hydrolysis of silanes in the body forms silicic acid or hydrated silica. |
| STOT-repeated exposure | : No known effects from this product. |
| Aspiration hazard | : Not applicable for gases and gas mixtures. |

Silane (7803-62-5)

| | |
|----------------------|-----------------------------|
| Viscosity, kinematic | No reliable data available. |
|----------------------|-----------------------------|

11.2. Information on other hazards

11.2.1. Endocrine disrupting properties

No additional information available

11.2.2. Other information

Other information : The substance/mixture has no endocrine disrupting properties.

SECTION 12: Ecological information

12.1. Toxicity

Assessment : No ecological damage caused by this product.
 Hazardous to the aquatic environment, short-term (acute) : Not classified
 Hazardous to the aquatic environment, long-term (chronic) : Not classified
 Not rapidly degradable



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| Silane (7803-62-5) | |
|---------------------------------|--------------------|
| LC50 96 h - Fish [mg/l] | No data available. |
| EC50 48h - Daphnia magna [mg/l] | No data available. |
| EC50 72h - Algae [mg/l] | No data available. |

12.2. Persistence and degradability

| Silane (7803-62-5) | |
|--------------------|--|
| Assessment | Not applicable for inorganic products. |

12.3. Bioaccumulative potential

| Silane (7803-62-5) | |
|---|--|
| Partition coefficient n-octanol/water (Log Pow) | Not applicable for gas mixtures. |
| Partition coefficient n-octanol/water (Log Kow) | Not applicable for inorganic products. |
| Assessment | No data available. |

12.4. Mobility in soil

| Silane (7803-62-5) | |
|--------------------|--|
| Assessment | Because of its high volatility, the product is unlikely to cause ground or water pollution. Partition into soil is unlikely. |

12.5. Results of PBT and vPvB assessment

Assessment : Not classified as PBT or vPvB.

12.6. Endocrine disrupting properties

Other adverse effects : No known effects from this product.
 Assessment : The substance/mixture has no endocrine disrupting properties.

12.7. Other adverse effects

Other adverse effects : No known effects from this product.
 Effect on the ozone layer : No effect on the ozone layer.
 Effect on global warming : No known effects from this product.



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SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods : Gases formed by combustion should be washed with water to remove silica. Contact supplier if guidance is required. Do not discharge into areas where there is a risk of forming an explosive mixture with air. Waste gas should be flared through a suitable burner with flash back arrestor. Ensure that the emission levels from local regulations or operating permits are not exceeded. Refer to the EIGA code of practice Doc.30 "Disposal of Gases", downloadable at <http://www.eiga.eu> for more guidance on suitable disposal methods. Do not discharge into any place where its accumulation could be dangerous. Return unused product in original container to supplier.





List of hazardous waste codes (from Commission Decision 2000/532/EC as amended) : 16 05 04 *: Gases in pressure containers (including halons) containing hazardous substances.

13.2. Additional information

External treatment and disposal of waste should comply with applicable local and/or national regulations.

SECTION 14: Transport information

In accordance with ADR / IMDG / IATA / ADN / RID

| ADR | IMDG | IATA | ADN | RID |
|---|---|-----------------------------------|---|---|
| 14.1. UN number or ID number | | | | |
| UN 2203 | UN 2203 | UN 2203 | UN 2203 | UN 2203 |
| 14.2. UN proper shipping name | | | | |
| SILANE | SILANE | Silane | SILANE | SILANE |
| Transport document description | | | | |
| UN 2203 SILANE, 2.1, (B/D) | UN 2203 SILANE, 2.1 | UN 2203 Silane, 2.1 | UN 2203 SILANE, 2.1 | UN 2203 SILANE, 2.1 |
| 14.3. Transport hazard class(es) | | | | |
| 2.1 | 2.1 | 2.1 | 2.1 | 2.1 |
|  |  | Not applicable |  |  |
| 14.4. Packing group | | | | |
| Not applicable | Not applicable | Not applicable | Not applicable | Not applicable |
| 14.5. Environmental hazards | | | | |
| Dangerous for the environment: No | Dangerous for the environment: No Marine pollutant: No | Dangerous for the environment: No | Dangerous for the environment: No | Dangerous for the environment: No |
| No supplementary information available | | | | |



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14.6. Special precautions for user

Special transport precautions : Avoid transport on vehicles where the load space is not separated from the driver's compartment, Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency, Before transporting product containers: - Ensure there is adequate ventilation, - Ensure that containers are firmly secured, - Ensure valve is closed and not leaking, - Ensure valve outlet cap nut or plug (where provided) is correctly fitted, - Ensure valve protection device (where provided) is correctly fitted.

Overland transport

Classification code (ADR) : 2F
 Special provisions (ADR) : 632, 662
 Limited quantities (ADR) : 0
 Excepted quantities (ADR) : E0
 Packing instructions (ADR) : P200
 Mixed packing provisions (ADR) : MP9
 Portable tank and bulk container instructions (ADR) : (M)
 Tank code (ADR) : PxBN(M)
 Tank special provisions (ADR) : TA4, TT9
 Vehicle for tank carriage : FL
 Transport category (ADR) : 2
 Special provisions for carriage - Loading, unloading and handling (ADR) : CV9, CV10, CV36
 Special provisions for carriage - Operation (ADR) : S2, S20
 Hazard identification number (Kemler No.) : 23
 Orange plates :



Tunnel restriction code (ADR) : B/D

Transport by sea

Limited quantities (IMDG) : 0
 Excepted quantities (IMDG) : E0
 Packing instructions (IMDG) : P200
 EmS-No. (Fire) : F-D
 EmS-No. (Spillage) : S-U
 Stowage category (IMDG) : E
 Stowage and handling (IMDG) : SW2
 Segregation (IMDG) : SG43, SG46
 Properties and observations (IMDG) : Flammable, colourless gas with a foul odour. Explosive limits: 1% to 100%. Ignites spontaneously in air. Strong reducing agent which reacts violently with oxidizing substances. Heavier than air (1.1).

Air transport

PCA Limited quantities (IATA) : FORBIDDEN
 PCA limited quantity max net quantity (IATA) : FORBIDDEN
 PCA packing instructions (IATA) : FORBIDDEN
 PCA max net quantity (IATA) : FORBIDDEN
 CAO packing instructions (IATA) : FORBIDDEN
 CAO max net quantity (IATA) : FORBIDDEN
 Special provisions (IATA) : A2
 ERG code (IATA) : 10L



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Inland waterway transport

| | |
|-----------------------------------|-------------|
| Classification code (ADN) | : 2F |
| Special provisions (ADN) | : 632, 662 |
| Limited quantities (ADN) | : 0 |
| Excepted quantities (ADN) | : E0 |
| Equipment required (ADN) | : PP, EX, A |
| Ventilation (ADN) | : VE01 |
| Number of blue cones/lights (ADN) | : 1 |

Rail transport

| | |
|---|-----------------------------|
| Classification code (RID) | : 2F |
| Special provisions (RID) | : 632, 662 |
| Limited quantities (RID) | : 0 |
| Excepted quantities (RID) | : E0 |
| Packing instructions (RID) | : P200 |
| Mixed packing provisions (RID) | : MP9 |
| Portable tank and bulk container instructions (RID) | : (M) |
| Tank codes for RID tanks (RID) | : PxBN(M) |
| Special provisions for RID tanks (RID) | : TU38, TE22, TA4, TT9, TM6 |
| Transport category (RID) | : 2 |
| Special provisions for carriage - Loading, unloading and handling (RID) | : CW9, CW10, CW36 |
| Hazard identification number (RID) | : 23 |

14.7. Maritime transport in bulk according to IMO instruments

| | |
|----------|-------------------|
| IBC code | : Not applicable. |
|----------|-------------------|

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

15.1.1. EU-Regulations

REACH Annex XVII (Restriction List)

Not listed on REACH Annex XVII

REACH Annex XIV (Authorisation List)

Not listed on REACH Annex XIV (Authorisation List)

REACH Candidate List (SVHC)

Not listed on the REACH Candidate List

PIC Regulation (Prior Informed Consent)

Not listed on the PIC list (Regulation EU 649/2012)

POP Regulation (Persistent Organic Pollutants)

Not listed on the POP list (Regulation EU 2019/1021)

Ozone Regulation (1005/2009)

Not listed on the Ozone Depletion list (Regulation EU 1005/2009)

VOC Directive (2004/42)

| | |
|---------------------|---------|
| Restrictions on use | : None. |
|---------------------|---------|



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Seveso Directive (Disaster Risk Reduction)

Seveso Directive : 2012/18/EU (Seveso III) : Covered.

| Seveso III Part II (Named dangerous substances) | Qualifying quantity (tonnes) | |
|--|------------------------------|------------|
| | Lower-tier | Upper-tier |
| Liquefied flammable gases, Category 1 or 2 (including LPG) and natural gas | 50 | 200 |

Explosives Precursors Regulation (2019/1148)

Contains no substance(s) listed on the Explosives Precursors list (Regulation EU 2019/1148 on the marketing and use of explosives precursors)

Drug Precursors Regulation (273/2004)

Contains no substance(s) listed on the Drug Precursors list (Regulation EC 273/2004 on the manufacture and the placing on market of certain substances used in the illicit manufacture of narcotic drugs and psychotropic substances)

15.1.2. National regulations

Ensure all national/local regulations are observed.

Safety data sheet in accordance with commission regulation (EU) No 2020/878.

Council Directive 89/391/EEC on the introduction of measures to encourage improvements in the safety and health of workers at work

Directive 2016/425/EEC on personal protective equipment

Directive 2014/34/EU on equipment and protective systems intended for use in potentially explosive atmospheres (ATEX)

Only products that comply with the food regulations (EC) No. 1333/2008 and (EU) No. 231/2012 and are labelled as such may be used as food additives.

This Safety Data Sheet has been produced to comply with Regulation (EU) 2015/830.

15.2. Chemical safety assessment

A CSA has been carried out.

SECTION 16: Other information

Indication of changes:

Safety data sheet in accordance with commission regulation (EU) No 2020/878.

| Indication of changes | |
|-----------------------|-----------------|
| Changed item | Change Comments |

| Abbreviations and acronyms: | |
|-----------------------------|---|
| ADN | European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways |
| | ADR - Agreement concerning the International Carriage of Dangerous Goods by Road |
| | ATE - Acute Toxicity Estimate |
| BLV | Biological limit value |
| BOD | Biochemical oxygen demand (BOD) |
| CAO | Cargo Aircraft only / Cargo Aircraft only |
| CAS-No. | Chemical Abstract Service number |
| | CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008 |
| COD | Chemical oxygen demand (COD) |



Silane

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

| Abbreviations and acronyms: | |
|-----------------------------|---|
| | CSA - Chemical Safety Assessment |
| DMEL | Derived Minimal Effect level |
| DNEL | Derived-No Effect Level |
| EC50 | Median effective concentration |
| EC | European Inventory of Existing Commercial Chemical Substances |
| ED | Endocrine disrupting properties |
| | EINECS - European Inventory of Existing Commercial Chemical Substances |
| EN | European Standard |
| IARC | International Agency for Research on Cancer |
| IATA | International Air Transport Association |
| IMDG | International Maritime Dangerous Goods |
| IOELV | Indicative Occupational Exposure Limit Value |
| LC50 | Median lethal concentration |
| LD50 | Median lethal dose |
| LOAEL | Lowest Observed Adverse Effect Level |
| NOAEC | No-Observed Adverse Effect Concentration |
| NOAEL | No-Observed Adverse Effect Level |
| NOEC | No-Observed Effect Concentration |
| N.O.S. | Not Otherwise Specified |
| OECD | Organisation for Economic Co-operation and Development |
| OEL | Occupational Exposure Limit |
| PBT | Persistent Bioaccumulative Toxic |
| PCA | Passenger and Cargo Aircraft / Passenger and Cargo Aircraft |
| PNEC | Predicted No-Effect Concentration |
| | PPE - Personal Protection Equipment |
| REACH | Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006 |
| RID | Regulations concerning the International Carriage of Dangerous Goods by Rail |
| | RMM - Risk Management Measures |
| STP | Sewage treatment plant |
| ThOD | Theoretical oxygen demand (ThOD) |
| TLM | Median Tolerance Limit |
| TRGS | Technical Rules for Hazardous Substances |
| STOT-RE | Specific Target Organ Toxicity-Repeated Exposure |
| STOT-SE | Specific Target Organ Toxicity-Single Exposure |



Silane

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

| Abbreviations and acronyms: | |
|-----------------------------|--|
| UFI | Unique Formula Identifier |
| | UN - United Nations |
| VOC | Volatile Organic Compounds |
| vPvB | Very Persistent and Very Bioaccumulative |
| WGK | Water Hazard Class |

Training advice : Ensure operators understand the flammability hazard.
 Other information : Classification in accordance with the procedures and calculation methods of Regulation (EC) 1272/2008 (CLP). Key literature references and sources of data are maintained in EIGA doc 169 : 'Classification and Labelling Guide', downloadable at <http://www.Eiga.eu> .

| Full text of H- and EUH-statements: | |
|-------------------------------------|---|
| Flam. Gas 1A - Pyr. Gas | Flammable gases, Category 1A, Pyrophoric Gas |
| H220 | Extremely flammable gas. |
| H232 | May ignite spontaneously if exposed to air. |
| H280 | Contains gas under pressure; may explode if heated. |
| Press. Gas (Liq.) | Gases under pressure : Liquefied gas |

The classification complies with : ATP 12
 DISCLAIMER OF LIABILITY : Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.
 Details given in this document are believed to be correct at the time of going to press.
 Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted.

Safety Data Sheet (SDS), EU FI

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.

End of document