# SILICON

## SECTION 0: INTRODUCTION

The product does not meet the criteria for classification as a hazardous substance according to EC Regulation No. 1272/2008 (CLP) and does not contain any substances that pose a hazard for human health or the environment and/or PBT/vPvB and/or substances included in the SVHC candidate list. Therefore, the transmission of a safety data sheet compiled in accordance with Annex II of EC Regulation No. 1907/2006 (REACH) is not required.

## SECTION 1: IDENTIFICATION OF SUBSTANCE OR MIXTURE AND THE COMPANY

### 1.1. PRODUCT IDENTIFICATION

| | |
|---|---|
| **Commercial name:** | Silicon |
| **IUPAC Name:** | Silicon |
| **Chemical Type:** | substance |
| **EC name:** | silicon |
| **EC No.** | 231-130-8 |
| **CAS No.** | 7440-21-3 |

### 1.2. RELEVANT IDENTIFIED USES FOR THE SUBSTANCE OR MIXTURE AND USES ADVISED AGAINST

**Identified Uses:**

- ✓ Production of metals and metal alloys, semiconductor, solar cells, silicones
- ✓ Production of refractory materials, ceramics, rubber
- ✓ Production of articles for electric/electronic/ chemical field

**Uses advised against:** No uses are specifically advised against.

### 1.3. SAFETY DATA SHEET SUPPLIER INFORMATION

| | |
|---|---|
| **Company name:** | Metalleghe Silicon d.o.o. |
| **City:** | Bjelajce bb, 70260 Mrkonjić Grad, Bosnia I Hercegovina |
| **Telephone:** | +387 50 490 021 |
| **Fax:** | +387 50 490 023 |
| **E-mail:** | info@metalleghesilicon.com |

### 1.4. EMERGENCY TELEPHONE NUMBER

https://echa.europa.eu/support/helpdesks

## SECTION 2: HAZARD IDENTIFICATION

### 2.1. CLASSIFICATION OF THE SUBSTANCE OR MIXTURE

The product is not classified as hazardous based on the requirements of EC Regulation No. 1272/2008 (CLP).

### 2.2. LABEL ELEMENTS

The product does not require a hazardous label based on the requirements of EC Regulation No. 1272/2008 (CLP).

### 2.3. OTHER HAZARDS

**Physical and Chemical Hazards**

High dust concentrations can cause skin/eye/respiratory system irritations.
High dust concentrations can form, under certain conditions, a flammable/explosive mixture with air.
Contact with acids or bases can generate flammable and/or noxious gas.

**Danger to human health**

In bulk form, the product does not present any known health risk under the normal conditions of use and storage.

| | |
|---|---|
| **Eye contact:** | Dust can cause eye irritation and dryness due to mechanical action. At high temperatures, fumes that are irritating to the eyes can be generated. |
| **Skin contact:** | Dust can cause skin irritation and dryness due to mechanical action. In clumps or granules, the product can cause abrasions or cuts. Prolonged and/or repeated exposure can cause skin rash (dermatitis). |
| **Inhalation:** | Dust can cause irritation and dehydration of the mucus membranes due to mechanical action. At high temperatures, fumes that are irritating to the respiratory tract can be generated. |

| | |
|---|---|
| **Swallowin:** | This route of exposure is reasonably unexpected. In limited quantities, no adverse effects are expected. Significant quantities can cause gastrointestinal irritation. |

**Environmental Hazards**

In bulk form, the product does not present any known risk to the environment under the normal conditions of use and storage. The substances that make up the product do not meet the criteria for classification as PBT or vPvB according to Annex XIII of EC Regulation No. 1907/2006 (REACH).

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

**3.1. SUBSTANCE**

| | |
|---|---|
| **IUPAC Name:** | silicon |
| **Chemical Type:** | substance |
| **EC name:** | silicon |
| **EC No.** | 231-130-8 |
| **CAS No.** | 7440-21-3 |
| **Chemical Composition:** | Si > 95% |

**Main impurities**

| | |
|---|---|
| aluminium | < 1% |
| calcium | < 1% |
| iron | < 1% |

**3.2. MIXTURES:** N.A.

## SECTION 4: FIRST AID MEASURES

**4.1. DESCRIPTION OF FIRST AID MEASURES**

| | |
|---|---|
| **General Information:** | Immediately consult a doctor in the event of aches and pain, or if there are any doubts. Show this product safety data sheet. People providing first aid treatment must always use suitable personal protective equipment (PPE) (please see SECTION 8.2). |
| **Eye contact:** | Rinse thoroughly for a few minutes with water or saline solution, keeping the eyelids open. If the irritation persists, seek medical attention. |
| **Skin contact:** | Wash thoroughly with water and soap. If a skin irritation or rash appear, seek medical attention. In the event of contact with the melted product, cool quickly with water and seek medical attention immediately. Do no attempt to remove the melted product to avoid possible skin lesions. |
| **Inhalation:** | Move the person to fresh air and keep him or her at rest in a position that promotes breathing. In the event of aches and pains, give oxygen and immediately seek medical attention. In the event of respiratory arrest, perform artificial respiration (only trained personnel). |
| **Swallowing:** | Rinse the mouth with water. Do not cause vomiting unless recommended by a doctor. Do not give anything by mouth if the person is not conscious. In the event of aches and pains, immediately seek medical attention. |

**4.2. MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED**

For information regarding the most important symptoms and effects due to exposure to the product, please see SECTION 2.3 and SECTION 11.1.

**4.3. INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED**

For information regarding the need to seek immediate medical attention, please see SECTION 4.1. Give basic first aid and symptomatic treatmen

## SECTION 5: FIREFIGHTING MEASURES

### 5.1. EXTINGUISHING MEDIA

Class D extinguishing agents: $CO_2$, special powder for metal fires or dry sand. Do not use water or halogenated hydrocarbon extinguishers.

### 5.2. SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE

While flammability testing show that the product in pieces/granules is not flammable, small particles can catch fire and propagate a flame, which self-extinguishes quickly. Its intensity increases as the size of the dust decreases. Contact of the melted material with water can cause explosions due to the formation of gaseous hydrogen. Above the melting point, the material generates hazardous gaseous compounds. In the event of thermal decomposition, irritating and/or toxic gas can develop.

### 5.3. ADVISE FOR FIREFIGHTERS

Always act according to the firefighting plan for the site. Evacuate and isolate the area until the fire has been extinguished. Limit access to trained personnel only. Firefighters must always wear full firefighting equipment: breathing apparatus with air reserve [ref. EN 137], fire-proof clothing [ref. EN 469], fire-proof gloves [ref. EN 659], and firefighter boots [ref. HO A29-A30].
Make certain there is adequate ventilation. Avoid breathing gases/vapours. Avoid contact with eyes, skin and clothing. Act upwind. Remove containers from the fire area if this can be done without risk.
Alternatively, cool any containers exposed to flames with a water spray. Keep the product residue/contaminated extinguishing product from flowing into drains or bodies of water.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

### 6.1. PERSONAL PRECAUTIONS, PERSONAL PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

| | |
|---|---|
| For those not directly involved: | Always act according to the emergency plan for the site. Alert the emergency personnel. Avoid generating dust and make certain there is adequate ventilation. Avoid breathing fumes/duct and eye or skin contact. If necessary, use suitable personal protective equipment (PPE) (please see SECTION 8.2). |
| For those directly involved: | Always act according to the emergency plan for the site. Evacuate and isolate the area, limiting access to trained personnel only. Remove any sources of flames or sparks, and other potential sources of ignition. Make certain there is adequate ventilation. Avoid creating dust. Avoid breathing fumes/duct and eye or skin contact. Use suitable personal protective equipment (PPE) (please see SECTION 8.2). Clothing from contaminated work must not leave the workplace. Wash contaminated clothing prior to wearing it again. |

### 6.2. ENVIRONMENTAL PRECAUTIONS

Avoid dispersion to the environment and flow into drains, water-bodies, and ground water. Alert competent authorities in the event of large spills into drains or water-bodies.

### 6.3. METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP

Collect using mechanical equipment or with an explosion-proof vacuum. Keep dry material separate from wet or humid material. Place in an appropriate container for recovery or disposal. Do not close containers of humid/wet material. Dispose of the product according to current local and national regulations. Clean the area involved carefully in order to eliminate any residual contamination.

### 6.4. REFERENCE TO OTHER SECTIONS

For information regarding personal protective equipment (PPE), please see SECTION 8. For information regarding disposal, please see SECTION 13.

## SECTION 7: HANDLING AND STORAGE

### 7.1. PRECAUTIONS FOR SAFE HANDLING

The workplace environment and procedures are organised so that direct contact with the product is prevented or minimised. Keep away from sources of flames or sparks, and other potential sources of ignition. The addition of wet material to the product in its melted state can cause explosions. Make certain there is adequate ventilation. Avoid creating dust. Avoid breathing fumes/duct and eye or skin contact. Use suitable personal protective equipment (PPE) (please see SECTION 8.2). Do not eat, drink or smoke during use. Wash hands and other exposed areas of skin after use. Periodically wash work clothing and personal protective equipment to remove any contamination.

### 7.2. CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

Store in a dry, well ventilated place. Avoid exposure to high temperatures. Keep away from sources of flames or sparks, and other potential sources of ignition. Avoid contact with humidity, water, acids and bases.

### 7.3. SPECIFIC END USE(S)

Please see SECTION 1.2.

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1. CONTROL PARAMETERS

| | | |
|---|---|---|
| **Silicon:** | ACGIH TLV - TWA (8hours) | = 10 mg/m$^3$ |
| **Respirable dust:** | ACGIH TLV - TWA (8 ours) | = 3 mg/m$^3$ |
| **Total inhalable dust:** | ACGIH TLV - TWA (8 ours) | = 10 mg/m$^3$ |

### 8.2. EXPOSURE CONTROLS

Use personal protective equipment (PPE) compliant with relevant reference European and national standards. Consult the supplier prior to making a final decision regarding the PPE to employ.

| | |
|---|---|
| **Skin protection:** | Wear suitable protective clothing for the operations to be carried out (for ex. processing product at hightemperatures) and the specific conditions of the workplace. [ref. EN340.EN11612-EN14116] |
| **Hand protection:** | Wear protective gloves suitable for the processing to be performed [ref. EN420 - EN388 - EN407]. The final decision of the PPE to use must be made based on the operations to be performed (for ex. processing product at high temperatures) and the specific conditions of the workplace. Replace gloves immediately in the event of contamination or breakage. |
| **Eye protection:** | Wear dust-proof eyewear in compliance with the EN166 standard. Wear a face mask during operations such as sawing, grinding or other processing with equipment or in the event of the risk of exposure to splashing product in the melted state. |
| **Breathing protection:** | In the event of insufficient ventilation or the risk of dust inhalation, wear a suitable breathing apparatus with dust filter (FFP2S) compliant with EN149 standard. In the event of suspected exposure hazardous gases in poorly ventilated areas, wear a breathing apparatus with air reserve compliant with EN137 standard. |
| **Technical and hygiene measures:** | Provide local ventilation for extraction or other devices to keep the particle level in the air below the recommended exposure limits. Employ extractor hoods or collection devices for eliminating fumes and equivalent dust from the plant. Equip the workplace where the product is handled and stored with emergency showers and eye wash. Do not eat, drink or smoke during use. Wash hands and other exposed areas of skin after use. Periodically wash work clothing and personal protective equipment to remove any contamination. Handle the product employing good industrial hygiene practices. |

| | |
|---|---|
| **Environmental measures:** | Avoid/limit emissions into the environment using filters to abate fumes and dust. Avoid/limit emissions into the environment using filters to abate fumes and dust. Operate in compliance with the provisions of the international/national law, relating to the protection of water and waste management. |
| **Thermal hazards:** | When working on the product at high temperatures, wear clothing [ref. EN11612 - EN14116] and heat protective gloves [ref. EN407] and a face shield [ref. EN166]. |
| **Monitoring Procedur:** | Periodical checks through environmental sampling of the workplace, according to the instructions from the supervising health authorities. |

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

### 9.1. INFORMATION ON MAIN PHYSICAL AND CHEMICAL PROPERTIES

| | |
|---|---|
| **Physical state:** | Solid |
| **Color:** | grey - bluish in a massive form |
| **Odour:** | Odourless |
| **Melting/freezing point:** | 1414 °C @ 101,3 KPa |
| **Boiling point or initial boiling point and boiling range:** | not applicable (melting point > 300 °C) |
| **Flash point:** | not applicable (inorganic solid) |
| **Upper/lower flammability or explosive limit:** | not applicable (non-flammable solid) |
| **Flammability:** | Not flammable |
| **Self-ignition temperature:** | >400°C |
| **Decomposition temperature:** | no decomposition observed up to the melting point |
| **Vapour pressure:** | not applicable (melting point > 300 °C) |
| **PH:** | not applicable (solid) |
| **Kinematic Viscosity:** | not applicable (solid) |
| **Solubility:** | Insoluble in water |
| **N-octanol/water partition coefficient:** | not applicable (inorganic solid) |
| **Vapor tension:** | not applicable (melting point > 300 °C) |
| **Density:** | 2,33 (22 °C) kg/dm$^3$ |
| **Relative vapor density:** | not applicable (solid) |
| **Particles characteristics:** | Solid in massive form |

### 9.2. OTHER INFORMATION

Not available.

## SECTION 10: STABILITY AND REACTIVITY

### 10.1. REACTIVITY
High dust concentrations can form a flammable/explosive mixture with air. The reaction with hydrofluoric and nitric acid leads to the formation of toxic gases such as silicon tetrafluoride (SiF4) or nitrogen oxides (NOx). Material can react also to other acids and alkaline products; generating violent exothermic reactions. Small particles can catch fire and propagate a flame, which self-extinguishes quickly. Its intensity increases as the size of the dust decreases; at concentration above 100 g/m$^3$, suspended particles can lead to explosions.

### 10.2. CHEMICAL STABILITY
The product is stable under normal conditions of use and storage.

### 10.3. POSSIBILITY OF HAZARDOUS REACTIONS
Please see SECTION 10.1.

### 10.4. CONDITIONS TO AVOID
Avoid generation of dust. Avoid exposure to high temperatures. Avoid exposure to sources of flame or spark and other possible sources of ignition. Avoid contact with moisture, water, acids or bases.

### 10.5. INCOMPATIBLE MATERIALS
Humidity, water, acids and bases.

### 10.6. HAZARDOUS DECOMPOSITION PRODUCTS
see SECTION 5.2 and SECTION 10.1.

## SECTION 11: TOXICOLOGICAL INFORMATION

### 11.1. INFORMATION ON TOXICOLOGICAL EFFECTS
In massive form, the product does not present any known human health risk under the normal conditions of use and storage.

| | |
|---|---|
| **Eye contact:** | Dust can cause eye irritation and dryness due to mechanical action. At high temperatures, fumes that are irritating to the eyes can be generated. |
| **Skin contact:** | Dust can cause skin irritation and dryness due to mechanical action. In clumps or granules, the product can cause abrasions or cuts. Prolonged and/or repeated exposure can cause skin rash (dermatitis). |
| **Inhalation:** | Dust can cause irritation and dehydration of the mucus membranes due to mechanical action. At high temperatures, fumes that are irritating to the respiratory tract can be generated. At temperatures above the melting point, metal oxides can be released that can cause metal fume fever, whose symptoms are chills, fever, aches and pains, and muscular pain. The effects can also appear after a period. |
| **Swallowing:** | This route of exposure is reasonably unexpected. In limited quantities, no adverse effects are expected. Significant quantities can cause gastrointestinal irritation. |

**Acute toxicity**

| | | | |
|---|---|---|---|
| Rat | $LD_{50}$ | oral | 5,000 mg/kg [read-across from synthetic amorphous silica] |
| Rabbit | $LD_{50}$ | skin | > 5,000 mg/kg [read-across from synthetic amorphous silica] |

Based on the data available, the criteria for classification are not met.

**Skin corrosion/irritation**
Not classified based on available data for similar compounds and / or product constituents.

**Serious eye damage / eye irritation**
Not classified based on available data for similar compounds and / or product constituents.

**Respiratory or cutaneous sensitisation**
Not classified based on available data for similar compounds and / or product constituents.

**Germ cell mutagenicity**
Not classified based on available data for similar compounds and / or product constituents.

**Carcinogenicity**
Not classified based on available data for similar compounds and / or product constituents.

**Reproductive toxicity**
Not classified based on available data for similar compounds and / or product constituents.

**Specific target organ toxicity (STOT) — single exposure**
Not classified based on available data for similar compounds and / or product constituents.

**Specific target organ toxicity (STOT) — repeated exposure**
Not classified based on available data for similar compounds and / or product constituents.

**Danger in the event of inhalation**
Not relevant for the product (solid).

### 11.2. INFORMATION ON OTHER HAZARDS
There are no known adverse health effects caused by the endocrine disrupting properties or other hazards than those mentioned above.

## SECTION 12: ECOLOGICAL INFORMATION

### 12.1. TOXICITY
No known effects for the product and/or for the constituent substances.

### 12.2. PERSISTENCE AND DEGRADABILITY
The product is not biodegradable (inorganic material)

### 12.3. BIOACCUMULATION POTENTIAL
The product, in massive alloy form, is not bioaccumulative due to its low mobility and the non-dispersive use.

### 12.4. MOBILITY IN SOIL
The product, in massive alloy form and under normal environmental conditions, is not mobile in soil.

### 12.5. RESULTS OF PBT AND vPvB ASSESSMENT
The substances that make up the product do not meet the criteria for classification as PBT or vPvB according to Annex XIII of EC Regulation No. 1907/2006 (REACH).

### 12.6. OTHER ADVERSE EFFECTS
There are no known other adverse effects on the environment than those mentioned above

## SECTION 13: DISPOSAL CONSIDERATIONS

**13.1. WASTE TREATMENT METHODS**

In the event recycling is not possible, dispose of the product according to current regulations. Dispose of in sealed containers in authorised landfills. Do not dispose of waste to the sewer. Avoid dispersion to the environment and flow into drains, water-bodies, and ground water. These instructions are also valid for contaminated containers. It is recommended that you contact the competent authorities or authorised companies for information on how to prepare the material for disposal. The assignment of a suitable waste code for the waste is the specific responsibility of the producer of the waste.

## SECTION 14: TRANSPORT INFORMATION

The product is not classified as hazardous based on the current regulations for the road transport of hazardous materials on the road (ADR), on rail (RID), by sea (IMDG Code) and by air (IATA).

**14.1. UN number**

| | |
|---|---|
| **ADR/RID:** | - |
| **IMDG CODE:** | - |
| **IATA:** | - |

**14.2. UN PROPER SHIPPING NAME**

| | |
|---|---|
| **ADR/RID:** | - |
| **IMDG CODE:** | - |
| **IATA:** | - |

**14.3. TRANSPORT HAZARD CLASS(ES)**

| | |
|---|---|
| **ADR/RID:** | - |
| **IMDG CODE:** | - |
| **IATA:** | - |

**14.4. PACKING GROUP**

| | |
|---|---|
| **ADR/RID:** | Not applicable |
| **IMDG CODE:** | Not applicable |
| **IATA:** | Not applicable |

**14.5. ENVIRONMENTAL HAZARDS**

The product is not hazardous to the environment and is not a marine pollutant.

**14.6. SPECIAL PRECAUTIONS FOR USERS**

The transported product must have been stored in a covered area, exposed to air, in the size shipped, for no less than three days prior to shipment.

**14.7. MARITIME TRANSPORT IN BULK ACCORDING TO IMO INSTRUMENTS**

| | |
|---|---|
| **UN number:** | Not applicable |
| **BC Code:** | Not applicable |
| **MHB Class** | Not applicable |

## SECTION 15: REGULATORY INFORMATION

**15.1. SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS/LEGISLATION SPECIFIC FOR THE SUBSTANCE OR MIXTURE**

The product does not contain substances of very high concern (SVHC) requiring authorisation, subject to authorisation and/or restrictions according to EC Regulation No. 1907/2006 (REACH).

### 15.2. CHEMICAL SAFETY ASSESSMENT

This product is not classified as hazardous according to EC Regulation No. 1272/2008 (CLP), therefore, a chemical safety assessment and submission of exposure scenarios is not required for it.

## SECTION 16: OTHER INFORMATION

**Primary bibliographical references and data sources:**

- REACH Registration Dossier for the substance "silicon": https://echa.europa.eu/registration-dossier/-/registered-dossier/16144
- EC Regulation No. 1907/2006 (REACH) (as modified and amended)
- EC Regulation No. 1272/2008 (CLP) (as modified and amended)
- RTECS - Registry of Toxic Effects of Chemical Substances (RTECS Number: LK1400000)
- EC Regulation No. 878/2020 (as modified and amended)

**Information regarding suitable training courses for workers:**

The personnel responsible for handling the product must be informed of its hazard level and the potential risks related to its use in advance, as well as trained in the precautions to adopt in order to avoid or limit exposure.

**Acronyms:**

**ACGIH:** American Conference of Governmental Industrial Hygienists
**ADR:** European Agreement concerning the International Carriage of Dangerous Goods by Road
**CAS:** Chemical Abstracts Service
**CER:** Certified Emission Reduction
**CLP:** Classification, Labelling and Packaging
**DNEL:** Derived no-effect level
**EINECS/EC:** European Inventory of Existing Commercial Chemical Substances
**ECHA:** European Chemicals Agency
**IATA:** International Air Transport Association
**IMDG Code:** International Maritime Dangerous Goods Code
**LC50:** lethal concentration for 50% of animals
**LD50:** lethal dose for 50% of animals
**OEL:** Occupational exposure limit
**PBT:** Persistent, bioaccumulative and toxic substances
**PNEC:** Predicted no-effect concentration
**REACH:** Registration, Evaluation, Authorisation and Restriction of Chemicals
**RID:** Regulations concerning the International carriage of Dangerous goods by rail
**SVHC:** Substances of Very High Concern
**TLV:TWA:** Threshold Limit Value Time Weighted Average
**vPvB:** Very persistent and very bioaccumulative

**Notes:**

The information contained in this data sheet are based on the state of our knowledge relevant to the product on the date indicated. This information is provided free of charge. Metalleghe Silicon is not liable for use of the material in applications other thanthose for which it has been designed. Furthermore, Metalleghe Silicon is not liable in the event of resale of the product to third partiesfor the lack of information provided to the end users.

The information is provided with the objective of:

- Recalling the safety standards and emergency actions to be adopted.
- Facilitating the use, storage, transportation, and disposal, and must not be considered a specific quality guarantee.

This information is not to be considered exhaustive and in no way does it release the user from the responsibility of knowing and applying current regulations regarding workplace safety and hygiene.