

# SILICA FUME

**SILICA FUME**

Date 09-09-22

**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 envisaged.

**SECTION 1: IDENTIFICATION OF SUBSTANCE OR MIXTURE AND THE COMPANY****1.1. PRODUCT IDENTIFICATION**

<b>Commercial name:</b>	Silica fume
<b>IUPAC Name:</b>	Silicon di-oxide
<b>Chemical Type:</b>	Substance (ultra-fine dust of SiO <sub>2</sub> , having amorphous structure)
<b>EC name:</b>	Silica fume
<b>EC No.</b>	273-761-1
<b>CAS No.</b>	69012-64-2

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

<b>Identified Uses:</b>	<ul style="list-style-type: none"><li>✓ Production of ceramic materials and refractories</li><li>✓ additive for pigments</li><li>✓ additive for mortar and concrete</li><li>✓ production of rubber/ polymers</li><li>✓ fertilizer</li></ul>
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**Uses advised against:** No uses are specifically advised against.

**1.3. SAFETY DATA SHEET SUPPLIER INFORMATION Company**

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**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 concentrations of fine dust, in the presence of ignition sources, can form a flammable / explosive mixture with air.

**Danger to human health**

<b>Eye contact:</b>	Dust can cause eye irritation and dryness due to mechanical action. At high temperatures, fumes that are irritating to the eyes can be generated.
<b>Skin contact:</b>	Dust can cause skin irritation and dryness due to mechanical action. Prolonged and/or repeated exposure can cause skin rash (dermatitis) in particular cases.

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**Inhalation:**

Exposure to high concentrations of dust can cause shortness of breath, chest tightness, sore throat and cough. At high temperatures, fumes irritating to the respiratory tract may be generated. Temperatures above 1000 ° C can favor the formation of crystalline silica which - in case of chronic exposure - can cause pulmonary fibrosis (silicosis).

**Swallowing:**

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

**Environmental Hazards**

the product does 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 di-oxide

**Chemical Type:**Substance (ultra-fine dust of SiO<sub>2</sub>, having amorphous structure)**EC name:**

Silica fume

**EC No.**

273-761-1

**CAS No.**

69012-64-2

**Degree of purity:**

90 - 99%

**Main impurities**K<sub>2</sub>O <4%Na<sub>2</sub>O <4%

MgO &lt;3%

C &lt;3%

CaO &lt;1%

Fe<sub>2</sub>O<sub>3</sub> <1%Al<sub>2</sub>O<sub>3</sub> <1%

The possible presence of respirable crystalline silica is less than 0.1% and therefore has no effect on the classification of the product.

**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 data sheet to the doctor. 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 product at high temperature, cool quickly with water and seek medical attention immediately. Do not attempt to remove the product from the skin 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

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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 treatment.

**SECTION 5: FIREFIGHTING MEASURES****5.1. EXTINGUISHING MEDIA**

Class D extinguishing agents: CO<sub>2</sub>, chemical foam, 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**

In the event of thermal decomposition, fumes / gases that are hazardous to human health may be evolved. Temperatures above 1000 ° C can favor the formation of crystalline silica. High concentrations of fine dust, in the presence of ignition sources, can form a flammable / explosive mixture with air.

**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 fumes/gases/vapours. Avoid contact with eyes, skin and clothing. Act upwind. Remove intact containers from the fire area if this can be done without risk.

Alternatively, cool any containers exposed to flames with a water spray. Do not aim jets of water directly on the burned part. 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:

In the event of the spreading of significant quantities of product, evacuate the area and alert the emergency personnel. Avoid generating dust. Avoid breathing fumes/duct and eye or skin/cloth 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. Isolate the area in case of spreading of significant quantities of product, limiting access to trained personnel only. Remove any sources of flames or sparks, and other potential sources of ignition if this can be done in safe condition. Make certain there is adequate ventilation. Avoid creating dust. Avoid breathing fumes/duct and eye or skin/cloth 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. Place in an appropriate container for recovery or disposal. Dispose of the product according to current local and national regulations. Clean the area involved

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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 13.1.

**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 acids (in particular HF). 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. Remove contaminated work clothing and personal protective equipment before entering eating areas. 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, ventilated place. Avoid exposure to high temperatures. Keep away from sources of flames or sparks, and other potential sources of ignition. Avoid contact with acids (especially hydrofluoric acid).

**7.3. SPECIFIC END USE(S)**

Please see SECTION 1.2.

**SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**
**8.1. CONTROL PARAMETERS**

<b>Respirable dust:</b>	ACGIH TLV - TWA (8 hours)	= 3 mg/m <sup>3</sup>
<b>Total inhalable dust:</b>	ACGIH TLV - TWA (8 hours)	= 10 mg/m <sup>3</sup>
<b>Silica fume:</b>	DNEL workers - inhalation - local effect - long term	= 0.3 mg/m <sup>3</sup>
<b>Respirable crystalline silica dust:</b>	ITALY OEL (8 hours)	= 0.1 mg/m <sup>3</sup> (respirable fraction) [Directive 2017/2398]

**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.

<b>Skin protection:</b>	Wear suitable protective clothing (e.g. processing product at high temperatures) and the specific conditions of the workplace [ref. EN 340 - EN 11612 - EN 14116].
<b>Hand protection:</b>	Wear protective gloves suitable for the work to be carried out (eg work on the product brought to high temperatures [ref. EN420 - EN388 - EN407]). Replace gloves immediately in the event of contamination or breakage.
<b>Eye protection:</b>	Wear safety glasses with side shields. For operations of sawing, grinding or with machinery or in case of risk of exposure to the product brought to high temperatures, Wear wear Wear a face shield [ref. EN166].
<b>Breathing protection:</b>	In the event of insufficient ventilation or the risk of dust inhalation, wear a suitable breathing apparatus with dust filter (FFP2S/3S) [ref. EN149]. In the event of suspected exposure to hazardous gases in poorly ventilated areas, wear a breathing apparatus with air reserve [ref. EN137].
<b>Technical and hygiene measures:</b>	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. Remove contaminated work clothing and personal protective equipment before entering eating areas. Wash hands and other exposed areas of skin after

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**Environmental measures:**

use. Periodically wash work clothing and personal protective equipment to remove any contamination. Handle the product employing good industrial hygiene practices.

Operate in compliance with the provisions of the international and local laws, relating to the protection of water and waste management. Avoid/limit emissions into the environment using filters to abate fumes and dust.

**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 Procedure:**

Provide periodic sampling of the work environment, according to the indications of the health surveillance.

**SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES****9.1. INFORMATION ON MAIN PHYSICAL AND CHEMICAL PROPERTIES**

Physical state:	Solid
Color:	grey
Odour:	Odourless
Melting/freezing point:	1500 °C @ 101,3 KPa
Boiling point or initial boiling point and boiling range:	not applicable (melting point > 300 °C)
Flash point:	non-flammable (stable in contact with air)
Upper/lower flammability or explosive limit:	not applicable (non-flammable solid)
Flammability:	Not flammable
Self-ignition temperature:	not applicable (non-flammable solid)
Decomposition temperature:	no decomposition observed up to the melting point
Vapour pressure:	not applicable (melting point > 300 °C)
PH:	6 - 9 (5% aqueous dispersion)
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:	not densified: 2.0 - 2.5 (22 °C) g/dm <sup>3</sup> densified: 4.0 - 8.0 (22 °C) g/dm <sup>3</sup>
Relative vapor density:	not applicable (solid)
Particles characteristics:	Solid in massive form)
Physical state:	Solid

**9.2. OTHER INFORMATION**

Not available.

**SECTION 10: STABILITY AND REACTIVITY****10.1. REACTIVITY**

High concentrations of fine dust, in the presence of ignition sources, can form a flammable / explosive mixture with air. The product can react with hydrofluoric acid, producing a toxic gas (silicon tetrafluoride). Temperatures above 1000 ° C can favor the formation of crystalline silica.

**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 sparks and other possible sources of ignition.

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**10.5. INCOMPATIBLE MATERIALS**

Acids.

**10.6. HAZARDOUS DECOMPOSITION PRODUCTS**

See SECTION 5.2 and SECTION 10.4.

**SECTION 11: TOXICOLOGICAL INFORMATION****11.1. INFORMATION ON TOXICOLOGICAL EFFECTS**

<b>Eye contact:</b>	Dust can cause eye irritation and dryness due to mechanical action. At high temperatures, fumes that are irritating to the eyes can be generated.
<b>Skin contact:</b>	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) in particular cases.
<b>Inhalation:</b>	Exposure to high concentrations of dust can cause shortness of breath, chest tightness, sore throat and cough. At high temperatures, fumes irritating to the respiratory tract may be generated. Temperatures above 1000 ° C can favor the formation of crystalline silica which - in case of chronic exposure - can cause pulmonary fibrosis (silicosis).
<b>Swallowing:</b>	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 <sub>50</sub>	oral	> 5.000 mg/kg
Rat	LC <sub>50</sub> (4h)	inhalation	2,08 mg/l air
Rabbit	LD <sub>50</sub>	skin	> 5.000 mg/kg

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

**Skin corrosion/irritation**

No skin irritation effect observed in animal studies.

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

**Severe eye injuries/severe eye irritation**

No eye irritation effect observed in animal studies

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

**Respiratory or cutaneous sensitisation**

No known respiratory or skin sensitisation effects for the product.

**Germ cell mutagenicity**

No germ cell mutagenicity effect observed in animal studies

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

**Carcinogenicity**

No carcinogenicity effect observed in animal studies

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

**Reproductive toxicity**

No reproductive toxicity effect observed in animal studies

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

**Specific target organ toxicity (STOT) — single exposure**

No STOT effect observed in animal studies

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

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**Specific target organ toxicity (STOT) — repeated exposure**

No STOT effect observed in animal studies

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

**Danger in the event of inhalation**

Not relevant (solid).

**11.2. INFORMATION ABOUT OTHER DANGERS**

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**

Fish: LC50 96 hours &gt; 100 mg / L

Invertebrates: EC50 24 hours &gt; 1000 mg / L

Invertebrates: NOEC 21 days = 100 mg / L

Algae: EC50 72 hours &gt; 100 mg / L

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

**12.2. PERSISTENCE AND DEGRADABILITY**

The product is not biodegradable (inorganic material)

**12.3. BIOACCUMULATION POTENTIAL**

The product, due to its insolubility in water and the inability to cross biological membranes, is not expected to bioaccumulate

**12.4. MOBILITY IN SOIL**

Due to its insolubility in water, the product is expected to have a low absorption potential in the soil.

**12.5. RESULTS OF PBT AND vPvB ASSESSMENT**

the product does not meet the criteria for classification as PBT or vPvB according to Annex XIII of EC Regulation No. 1907/2006 (REACH).

**12.6. PROPERTIES OF INTERFERENCE WITH THE ENDOCRINE SYSTEM**

There are no known adverse effects on the environment caused by the properties of interference with the endocrine system.

**12.7. 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 CER 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/ ID number**

Not applicable.

**14.2. UN PROPER SHIPPING NAME**

Not applicable.

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

Not applicable.

**14.4. PACKING GROUP**

Not applicable.

**14.5. ENVIRONMENTAL HAZARDS**

Not applicable.

**14.6. SPECIAL PRECAUTIONS FOR USERS**

Not applicable.

**14.7. MARITIME TRANSPORT IN BULK IN COMPLIANCE WITH IMO**

Not applicable.

**SECTION 15: REGULATORY INFORMATION****15.1. SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS/LEGISLATION SPECIFIC FOR THE SUBSTANCE OR MIXTURE**

- Legislative Decree No. 81/2008 - Consolidated law on safety in the workplace.
- Legislative Decree No. 152/2006 - Protection of water (Title III) and waste (Title IV).

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****Revision:**

The main changes made to the previous version of this product information sheet concern SECTIONS 2, 5, 6, 7, 8, 9, 10, 11 and 12.

**Primary bibliographical references and data sources:**

- REACH Registration Dossier "silica fume": <https://echa.europa.eu/registration-dossier/-/registered-dossier/16156>
- 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:**

<b>ACGIH:</b>	American Conference of Governmental Industrial Hygienists
<b>ADR:</b>	European Agreement concerning the International Carriage of Dangerous Goods by Road
<b>CAS:</b>	Chemical Abstracts Service
<b>CER:</b>	Certified Emission Reduction
<b>CLP:</b>	Classification, Labelling and Packaging
<b>DNEL:</b>	Derived no-effect level
<b>EC<sub>50</sub></b>	median effect concentration
<b>EINECS/EC:</b>	European Inventory of Existing Commercial Chemical Substances
<b>ECHA:</b>	European Chemicals Agency
<b>IATA:</b>	International Air Transport Association
<b>IMDG Code:</b>	International Maritime Dangerous Goods Code
<b>LC<sub>50</sub>:</b>	lethal concentration
<b>LD<sub>50</sub>:</b>	lethal dose
<b>NOEC</b>	concentration with no observable effect
<b>PBT:</b>	Persistent, bio accumulative and toxic substances
<b>REACH:</b>	Registration, Evaluation, Authorisation and Restriction of Chemicals
<b>RID:</b>	Regulations concerning the International carriage of Dangerous goods by rail
<b>TLV:</b>	Threshold Limit Value
<b>TWA:</b>	Time Weighted Average
<b>vPvB:</b>	Very persistent and very bio accumulative

**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 than those for which it has been designed. Furthermore, Metalleghe Silicon is not liable in the event of resale of the product to third parties for 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.