

**PRODUCT SAFETY DATA SHEET for
Silica fume MICROXIL, Silica fume MICROXIL+**

prepared pursuant to Annex II of the REACH regulation EC 1907/2006 in the valid and effective wording

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING
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1.1 Substance/Mixture Identifier

Substance Name: Silica fume MICROXIL, Silica fume MICROXIL+

Chemical Name: 273-761-1 / Silica Fume

Synonyms: MICROXIL, MICROXIL+, MX, MX+

Trade Name: Silica fume MICROXIL, Silica fume MICROXIL+

EINECS: 273-761-1

CAS: 69012-64-2

Molecular Weight: 60.0843

REACH Registration No.: 01-2119486866-17-0010

1.2 Identified Uses of the Substance/Mixture

Brief Description: Please, check the identified uses in Table 1 as an Appendix to the Product Safety Data Sheet.

Uses Advised Against: contact with iron components and structures

1.3 Details of the Supplier of Safety Data Sheet

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1.4 Emergency Telephone Number

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2. HAZARDS IDENTIFICATION

2.1 Classification of the Substance

2.1.1 Classification of the Substance According to Regulation CLP / GHS

The substance does not meet the criteria for classification under Regulation EC 1272/2008.

2.2 Label Elements

2.2.1 Labelling According to Regulation CLP / GHS

The substance does not meet the criteria for classification under Regulation EC 1272/2008.

Signal word: None

2.3 Other Hazards

The substance does not meet the criteria for classification as PBT or vPvB substance.

With handling, pouring, breaking the packaging and subsequently leaking of Silica fume MICROXIL and Silica fume MICROXIL+ into the working environment, soft particles may be raised in the air which can result in exceeding the limits of OEL for a short time. Long-term exposure can be harmful to human health and lead to a formation of silicosis.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Degree of purity: ≤ 79.99 % (w/w) for Silica fume MICROXIL
> 80.0 % (w/w) for Silica fume MICROXIL+

3.1 Constituents

Constituent	Concentration Range	Remarks
SiO ₂ (silicon dioxide) CAS: 7631-86-9 EINECS: 231-545-4	≤ 79.99 % > 80.0 %	MICROXIL MICROXIL+

3.2 Impurities

Constituent	Concentration Range	Remarks
Si (elementary silicon)	≤ 1.0 % (w/w)	MICROXIL MICROXIL+
Calcium Oxide (CaO) CAS: 1305-78-8 EINECS: 215-138-9	≤ 3.5 % (w/w)	MICROXIL MICROXIL+
Sulfur Trioxide (SO ₃) CAS: 7446-11-9 EINECS: 231-197-3	≤ 4.0 % (w/w)	MICROXIL MICROXIL+

Natrium Oxide (Na ₂ O equiv.) CAS: 1313-59-3 EINECS: 215-208-9	≤ 8.0 % (w/w)	equiv. MICROXIL MICROXIL+
Chloride Ion (Cl ⁻) CAS: 16887-00-6	≤ 1.8 % (w/w)	MICROXIL MICROXIL+

4. FIRST-AID MEASURES

4.1 Description of First-aid Measures

<u>General Information:</u>	Not anticipated to cause any harm if in contact with clothing, skin, or eye. However, in case of accident or unwellness, immediately seek medical advice.
<u>Inhalation:</u>	Mechanical irritation of airways: Remove person from amorphous silicon dioxide exposed areas.
<u>Skin contact:</u>	Wash skin with water and/or a mild detergent.
<u>Eye contact:</u>	Rinse eyes with water/saline solution. See a physician upon persistent discomfort.
<u>Ingestion:</u>	Remove source to avoid further ingestion. See inhalation.

4.2 Most Important Symptoms

No acute danger of poisoning or harm to a human health – the substance is not classified

5. FIRE-FIGHTING MEASURES

5.1 Suitable Extinguishing Media

Silica Fume MICROXIL and Silica fume MICROXIL+ are not combustible and the dust entails no danger of explosion.

Not applicable

5.2 Unsuitable Extinguishing Media

Not applicable

5.3 Special Hazards Arising From the Substance or Mixture

None

5.4 Advice for Fire Fighters

Not applicable

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal Precautions, Protective Equipment, and Emergency Procedures

6.1.1 For non-emergency personnel

Use personal protective equipment (see section 8).

6.1.2 For emergency personnel

Ensure adequate ventilation and ventilate closed spaces before entering.

Avoid generation of dust.

Wear suitable protective equipment. (see section 8)

Avoid inhalation: ensure that sufficient ventilation or suitable respiratory protective system is used, wear suitable protective equipment. (see section 8)

6.2 Environmental Precautions

The preparation is not considered an environmental hazard based on the available studies. However it is advisable to keep away from drains as large quantities could clog drains.

6.3 Methods and Material for Containment and Cleaning up

Avoid handling that generates dust build-up and exposure to Silica fume MICROXIL and Silica fume MICROXIL+. Released material should be collected in suitable containers. Use vacuum cleaner rather than sweeper.

6.4 Reference to Other Sections

For more information on exposure controls or personal protection, please, see section 8.

7. HANDLING AND STORAGE

7.1 Handling

Avoid dust generation. Wear protective clothing, gloves, suitable respiratory protection and goggles.

Keep away from hydrofluoric acid (HF). Reactions with HF leads to the formation of toxic gases (SiF₄).

7.2 Storage

Store in closed packages such as big bags, bags, barrels, containers or silos. When stored in waterproof covers that can protect the material from dampening and moisture, no special storing or warehousing areas are required. Should Silica fume MICROXIL and Silica fume MICROXIL+ be stored in non-waterproof packaging, the warehousing and storing areas shall include covered closed silos or covered dry areas (such as industrial charging bunkers).

7.3 Specific End Uses

None. Please, check the identified uses in Table 1 mentioned in Appendix to the Product Safety Data Sheet.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control Parameters

Occupational Exposure Limit (OEL): 4 mg/m³ inhalable dust of Silica fume MICROXIL and Silica fume MICROXIL+

Long-term Derived No Effect Level (DNEL): 0.3 mg/m³ respirable dust of Silica fume MICROXIL and Silica fume MICROXIL+ can be achieved by controlling exposure below OEL level

PNEC_{water}: None. PNEC derivation is not reasonable for this dataset, since AF 1000 in combination to 100 mg/l threshold value would lead to unrealistically low PNEC values. These PNEC values would be far below the natural surface water background concentrations of dissolved silica. Standard AF methods of PNEC derivation is not suitable for silicon. May be updated after new study results.

PNEC_{soil}: None. Silica fume MICROXIL and Silica fume MICROXIL+ are not toxic to soil living species.

PNEC_{sediment}: None. Silica fume MICROXIL and Silica fume MICROXIL+ are not toxic to sediment living species.

8.2 Exposure Controls

To control potential exposures a generation of dust should be avoided. An appropriate protective equipment is recommended. With visible raising of dust from Silica fume MICROXIL and Silica fume MICROXIL+, use local exhaust ventilation and equipment for protection of airways and eyes.

8.2.1 Appropriate Engineering Controls

Regularly measure occupational exposure level. If user operations generate dust, use local exhaust ventilation or other controls to keep airborne dust levels below exposure limits.

8.2.2 Individual Protection Measures

8.2.2.1 Eye/Face Protection

Wear protective goggles.

8.2.2.2 Skin Protection

Wear protective clothes and gloves. Use a hand protective cream.

8.2.2.3 Respiratory Protection

Wear protective respiratory system with enhanced filtration capability.

8.2.3 Environmental Exposure Controls

Emissions from ventilation or work place process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. Silica fume MICROXIL and Silica fume MICROXIL+ do not pose a threat to environment.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on Basic Physical and Chemical Properties

Appearance:	White, grey, or black, solid, in the form of powder
Odour:	Odourless
Odour treshold:	Does not apply, substance is odourless
pH:	not applicable
Boiling point:	not applicable (solid with a melting point > 300°C)
Melting/freezing point:	> 1,500 °C at 101.3 kPa
Flash point:	not applicable (substance inorganic and solid at the room temperature)
Flammability:	non flammable (an inorganic substance with Si at its highest oxidation state)
Explosive properties:	not applicable (no chemical groups with explosive properties present in the molecule)
Oxidizing properties:	not applicable (substance incapable of reacting exothermically with combustible materials)
Vapour pressure:	not applicable (melting point > 300°C)
Bulk density:	0-800 kg/cm ³
Mass activity index:	≤ 1
Solubility in water:	OECD T/D screening test: ≤ 0.25 mg/l at pH 6 (21.5 °C); 0.37 ≤ 0.72 mg/l at pH 8 (21.5 °C) OECD 105: 1.3 ≤ 5.3 mg/l at pH 5.9-7.6 (20 °C)
Partition coefficient	

n-octanol/water (log value):	not applicable (substance inorganic)
Viscosity:	not applicable (substance solid not liquid at ambient temperature)
Self-ignition:	non flammable (an inorganic substance with Si at its highest oxidation state)
Dissociation constant:	cannot dissociate due to lack of relevant functional groups
Surface tension:	substance is not surface active
Stability in organic solvents:	not applicable (substance inorganic)

9.2 Other Information

No additional information relevant to the safe use of the substance.

10. STABILITY AND REACTIVITY

10.1 Reactivity

Silica fume MICROXIL and Silica fume MICROXIL+ are not reactive at normal ambient conditions.

10.2. Chemical Stability

Silica fume MICROXIL and Silica fume MICROXIL+ are chemically stable at normal ambient, handling, and storage conditions.

10.3 Possibility of Hazardous Reactions

Reactions with hydrofluoric acid (HF) result in formation of toxic gases.

10.4 Conditions to Avoid

Under influence of specific temperature, pressure, lighting, or shock, there are no hazardous reactions.

10.5 Incompatible Materials

Keep away from hydrofluoric acid (HF). Reactions with HF lead to the formation of toxic gases (SiF₄). For concentrations of Cl⁻ over 0.3 % (w/w) in leach, there is a reaction which lead to formation of HCl which could lead to a corrosion of iron components and structures.

10.6 Hazardous Decomposition Products

Does not decompose when used for intended uses

11. TOXICOLOGICAL INFORMATION

Toxicity Endpoints	Outcome of the Effects Assessment
Toxic-kinetics	<p>Nonhuman information: 13 week inhalation toxicity study (OECD 413), rats: no significant accumulation in lungs Inhalation (OECD 412, GLP), rats: no lungs accumulation</p> <p>Read across: synthetic amorphous silica Amorphous silica reaches a plateau level at which elimination equates with deposition. After the cessation of exposure, synthetic amorphous silica is rapidly eliminated from the lung tissue.</p> <p>The minor and low released level of impurities from Silica fume MICROXIL and Silica fume MICROXIL+ are unlikely to contribute to the body burden of these elements or to the toxicity of silica fume.</p> <p>After ingestion, synthetic amorphous silica seems to have an insignificant effect on tissue silica levels.</p>
Acute Toxicity	<p>Silica fume MICROXIL and Silica fume MICROXIL+ are not acutely toxic.</p> <p>Nonhuman information: Oral: LD₅₀ > 5,000 mg/kg bw read-across silicon dioxide (OECD 401, rat) Inhalation: LC₅₀ (4 h) > 2.08 mg/l air, read-across synthetic amorphous silica (OECD 2004a, rat) Dermal: LD₅₀ > 5,000 mg/kg bw read-across silicon dioxide (Woltjen R, Calkins JE (1978a-d), rabbit)</p> <p>Classification for acute toxicity is not warranted.</p>
Skin Corrosion/Irritation	<p>Nonhuman information: Silica fume MICROXIL and Silica fume MICROXIL+ are not irritating to skin (rabbit).</p> <p>Based on the weight-of-evidence and read-across from synthetic amorphous silica, Silica fume MICROXIL and Silica fume MICROXIL+ are not a skin irritant. No classification or further testing is proposed. Naturally, like any other dust, the dust from silica fume may also cause non-specific mechanical irritation to the eyes and respiratory tract.</p> <p>Classification for irritation/corrosion is not warranted.</p>
Serious Eye Damage/Irritation	<p>Nonhuman information: Silica fume MICROXIL and Silica fume MICROXIL+ are not irritating to eye (rabbit).</p> <p>Based on the weight-of-evidence and read-across from synthetic amorphous silica, Silica fume MICROXIL and Silica fume MICROXIL+ are not an eye irritant. No classification or further testing is proposed. Naturally, like any other dust, the dust from Silica fume MICROXIL and Silica fume MICROXIL+ may also cause non-specific mechanical irritation to the eyes and respiratory tract.</p>

	<p>Classification for irritation/corrosion is not warranted</p>
Respiratory or Skin Sensitization	<p>Silica fume MICROXIL and Silica fume MICROXIL+ have not been tested for its sensitising properties. Its main impurities, which have been shown to be dissolved in artificial biological fluids, (iron, magnesium, lead, aluminium and zinc), do not exert skin sensitising properties. Regardless of wide-spread exposure to silicon compounds, including synthetic amorphous silicas, no cases of sensitisation to silicon compounds have been described. Silica fume MICROXIL and Silica fume MICROXIL+ are also not considered sensitising to skin or the respiratory system.</p> <p>Classification for sensitization is not warranted.</p>
Germ Cell Mutagenicity	<p>Silica fume MICROXIL and Silica fume MICROXIL+ are not genotoxic.</p> <p>Nonhuman information: Bacterial reverse mutation assay (Ames test, OECD 471): negative <i>In vitro</i> mammalian chromosome aberration test (OECD 473): negative Chromosome aberration assay (OECD 475): negative Dominant lethal assay (OECD 478): negative</p> <p>Other metallic impurities present at levels of >0.1% in silica fume and released at higher amounts from Silica fume MICROXIL and Silica fume MICROXIL+ than from pyrogenic silica mainly include magnesium and zinc, which are not genotoxic elements and do not cause a need to consider the mutagenicity classification of Silica fume MICROXIL and Silica fume MICROXIL+. Even if Silica fume MICROXIL and Silica fume MICROXIL+ contain lead up to 0.3 %, no germ cell mutagenicity classification is needed.</p> <p><i>In vitro</i> bacterial studies, a mammalian cytogenetic study and a cell transformation study with synthetic amorphous silica (read-across) have been negative. Comet assays have shown inconclusive results. An <i>in vivo</i> chromosomal aberration test and a dominant lethal test as well as an <i>ex-vivo</i> hprt mutation study have been negative.</p> <p>Classification for genotoxicity is not warranted.</p>
Carcinogenicity	<p>Silica fume MICROXIL and Silica fume MICROXIL+ are not carcinogenic.</p> <p>Nonhuman information: Chronic toxicity studies (OECD 452) mouse and rat: no effects</p> <p>Human epidemiological data from the ferrosilicon/silicon metal industry do not show an increased incidence of cancer attributed to ultra-fine silica fumes MICROXIL present in furnace work. Based on available information on synthetic amorphous silica, amorphous silica, including silica fume, is not carcinogenic. The impurities of Silica fume MICROXIL and Silica fume MICROXIL+ include quartz, which may be present in silica fume at levels of <0.1% of respirable quartz. Respirable quartz is more relevant than total quartz in this respect. In addition, quartz is currently not classified as a carcinogen within the EU. Silicon carbide does not exist in silica fume MICROXIL in its fibrous, possibly carcinogenic, form.</p> <p>Classification is not warranted.</p>
Toxicity for Reproduction	<p>Silica fume MICROXIL and Silica fume MICROXIL+ are not toxic for reproduction.</p>

	<p>Nonhuman information: Genetic toxicology rodent dominant lethal test (OECD 452) rat: NOAEL (P): 5,000 mg/kg bw/day, lethal test: negative</p> <p>If review of all existing toxicological data shows that there is sufficient data to permit a robust conclusion on reproductive toxicity potential, no further testing is required. Subchronic studies with amorphous silica and a dominant lethal study with calcium silicate have failed to demonstrate any histopathological changes or deleterious effects in the reproductive organs of treated animals. The inherent physico-chemical properties and ubiquitous nature of silicon ion suggest that there is no structural alert to indicate any potential for reproductive toxicity.</p> <p>Classification is not warranted.</p>
Specific Target Organ Toxicity (Single Exposure)	Based on available data the classification criteria are not met.
Specific Target Organ Toxicity (Repeated Exposure)	<p>Silica fume MICROXIL and Silica fume MICROXIL+ are not toxic via repeated doses.</p> <p>Toxicity of Silica fume MICROXIL and Silica fume MICROXIL+ via oral route: Orally, synthetic amorphous silica has been virtually non-toxic in repeated dose toxicity tests. In this respect, silica fume MICROXIL and Silica fume MICROXIL+ are considered to resemble synthetic amorphous silica.</p> <p>Toxicity of Silica fume MICROXIL and Silica fume MICROXIL+ via dermal route: NOAEL >= 10,000 mg/kg</p> <p>Toxicity of Silica fume MICROXIL and Silica fume MICROXIL+ via inhalation: Human information on the silicon/ferrosilicon/synthetic amorphous silica manufacturing industry shows effects like higher incidence of COPD and a decline in lung function which is however attributable to general dust exposure.</p> <p>Value used for CSA (route inhalation): NOAEC: 1.3 mg/m³</p> <p>When the respirable particles cause reversible lung effects at dose levels of approximately 5 mg/m³, in the case of commercial Silica fume MICROXIL and Silica fume MICROXIL+ these effects are likely to be seen only at >20-fold higher dose levels, meaning dose levels of ≥100 mg/m³. Commercial silica fume is thus not considered to fulfil the classification criteria. Respirable quartz levels are below the cut off limit of 1 wt%, no classification due to quartz is suggested. Silicon carbide fibres have not been shown to be present in Silica fume MICROXIL and Silica fume MICROXIL+. Other elemental impurities, which are present at levels of >1% and which may be released from Silica fume MICROXIL and Silica fume MICROXIL+, are not classified as repeated dose toxicants and do not cause a need to consider the classification of silica fume.</p> <p>Classification for repeated dose toxicity is not warranted.</p>
Aspiration Hazard	Data lacking.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

12.1.1 Acute/Prolonged Toxicity to Fish

Short-term toxicity:	LC ₅₀ (96 h) for freshwater fish: 100 mg/l (OECD 203) [Silica fume MICROXIL and Silica fume MICROXIL+]
Long-term toxicity:	This information is not available. Due to the known inherent physico-chemical properties, the absence of acute toxic effects, as well as the ubiquitous presence of silica/silicates in the environment, Silica fume MICROXIL and Silica fume MICROXIL+ are not expected to show any toxic effects at low concentrations. High background concentrations indicate that chronic effects in fish are, in general, unlikely at the naturally found background levels.

12.1.2 Acute/Prolonged Toxicity to Aquatic Invertebrates

Short-term toxicity:	EC ₅₀ /LC ₅₀ (24 h) for freshwater invertebrates: 1000 mg (OECD 202) (amorphous silicon dioxide)
Long-term toxicity:	EC ₅₀ (21 d) not known, (OECD 211) ongoing

12.1.3 Acute/Prolonged Toxicity to Aquatic Plants

EC ₅₀ /LC ₅₀ (72 h) for freshwater algae: 250 mg/l (OECD 201) (silicon dioxide)
EC ₅₀ /LC ₅₀ (72 h) for marine water algae: 1000 mg/t (ISO 10253) [Silica fume MICROXIL and Silica fume MICROXIL+]
EC ₁₀ /LC ₁₀ or NOEC for freshwater algae: 228 mg/l (OECD 201) (silicon dioxide)
EC ₁₀ /LC ₁₀ or NOEC for marine water algae: 323 mg/l (OECD 201) (soluble silica salt)

12.1.4 Acute/Prolonged Toxicity to Sediment Organisms

Long-term toxicity:	EC ₅₀ /LC ₅₀ for freshwater sediment: 50,000 mg/kg dw [Silica fume MICROXIL and Silica fume MICROXIL+]
	EC ₁₀ /LC ₁₀ or NOEC for freshwater sediment: 49 mg/kg dw

12.1.5 Acute/Prolonged Toxicity to Soil Macro-organisms

The terrestrial toxicity of Silica fume MICROXIL and Silica fume MICROXIL+ to soil macroorganisms is expected to be low, since soil living species are well adapted to the presence of silica in the soil and soil pore water. Based on already existing exposure and effects information, it is currently not seen as necessary to have any targeted ecotoxicological testing of silica fume (high grade) or silicon (elemental) in soil.

12.1.6 Acute/Prolonged Toxicity to Terrestrial Plants

The toxicity of Silica fume MICROXIL and Silica fume MICROXIL+ to terrestrial plants is expected to be low, since plants are well adapted to the presence of silica in the soil and soil pore water. Based on already existing

exposure and effects information, it is currently not seen as necessary to have any targeted ecotoxicological testing of Silica fume MICROXIL and Silica fume MICROXIL+.

12.1.7 Acute/Prolonged Toxicity to Soil Micro-organisms

The toxicity of Silica fume MICROXIL and Silica fume MICROXIL+ to soil microorganisms is expected to be low, since silica is ubiquitous in the soil and soil pore water. Based on the results of CSA assessment and on already existing exposure and effects information, it is currently not seen as necessary to conduct any targeted testing of silica.

12.1.8 Acute/Prolonged Toxicity to Aquatic Micro-organisms

The test substance is particulate poorly soluble material and recommended standard study is technically not very suitable for this kind of material. Sufficient information is not available to derive reliable toxicity test based PNEC values for Silica fume MICROXIL and Silica fume MICROXIL+.

12.1.9 Acute/Prolonged Toxicity to Birds

The toxicity of Silica fume MICROXIL and Silica fume MICROXIL+ to birds is expected to be low, since silica and silica minerals are ubiquitous in natural soil, biota and birds food. Based on already existing exposure and effects information, it is currently not seen as necessary to have a targeted ecotoxicological testing of Silica fume MICROXIL and Silica fume MICROXIL+.

12.1.10 General Conclusion

These conclusions apply for high-grade Silica fume MICROXIL and Silica fume MICROXIL+, which our company is producing. In lower grades silica fume heavy metal and organic impurities may have remarkable effects relevant for the soil compartment and for these impurities a read-across method may be utilized.

12.2 Environmental Distribution

Silica fume MICROXIL and Silica fume MICROXIL+ in its solid particulate form are a completely non-volatile substance. Silica fume MICROXIL and Silica fume MICROXIL+ are a relatively poorly soluble substance in acidic, neutral and slightly alkaline water (< 1000 mg/l). In dilute solutions (< 100 mg/l) silica is present as dissolved Si(OH)_4 , and in more concentrated solutions as dimerized, trimerized, colloidal or in the form of aggregated colloids of different physical size or entirely as insoluble solid particulate matter. The soluble specie Si(OH)_4 is known to be relatively mobile in soil. The adsorption of dissolved silica to soil inorganic fraction is generally not strong and to soil organic matter weak or almost insignificant. Silica fume MICROXIL and Silica fume MICROXIL+ do not bioconcentrate remarkably, is not bioaccumulative and does not biomagnify.

12.3 Persistence and Degradation

Not relevant for inorganic substances.

12.4 Potential for Bioaccumulation

Silica fume MICROXIL and Silica fume MICROXIL+ are ubiquitous in the aquatic and terrestrial environments. Measured silicon concentration values in the biota are available for a variety of systems. These observations have shown no tendency, or a low intrinsic tendency, for undissolved or dissolved Silica fume MICROXIL and Silica fume MICROXIL+ to bioaccumulate in aquatic or terrestrial species if silicon is not taken up actively. Sufficient evidence exists to show that the bioaccumulation of Silica fume MICROXIL and Silica fume MICROXIL+ is not an environmental concern and no further bioaccumulation studies are needed for Silica fume MICROXIL.

12.5 Results of PBT and vPvB Assessment

Substance is not classified as PBT or vPvB substance.

12.6 Other Adverse Effects

No other adverse effects are identified.

13. DISPOSAL CONSIDERATIONS

Dispose of Silica fume MICROXIL and Silica fume MICROXIL+ should be in accordance with local and national legislation. Unused contents should be placed at the dump site excluding dump for hazardous waste.

14. TRANSPORT INFORMATION

Silica fume MICROXIL and Silica fume MICROXIL+ are not classified as hazardous for transport and transported according to ADR (road), RID (rail), IMDG (Sea) and ICAO-TI/IATA-DGR (air).

14.1 Special Precautions for User

Avoid contact with water during transportation. Silica fume MICROXIL and Silica fume MICROXIL+ are transported in bulk in cisterns (road or rail) or in closed containers. When packed in big bags or in other non-permeable covers that have been agreed upon, Silica fume MICROXIL and Silica fume MICROXIL+ can also be transported in non-covered vehicles.

15. REGULATORY INFORMATION

UN GHS - UN Globally Harmonized System of Classification and Labeling of Chemicals (GHS):

“According to Chapter 1.5.2 of the UN Globally Harmonized System of Classification and Labeling of Chemicals (GHS) safety data sheets (SDS) are only required for substances and mixtures that meet the harmonized criteria for physical, health or environmental hazards. This product does not meet these criteria

EU CLP – Classification Labeling and Packaging Regulation:

According to Article 59(2)(b) of (EC) No 1272/2008 (CLP), which amends REACH article 31(1), safety data sheets (SDS) are only required for substances and mixtures/special preparations that meet the harmonized criteria for physical, health or environmental hazards. Since this product does not meet these criteria, a SDS according to 453/2010/EC is not issued. In order to communicate relevant HSE-(health, safety and environmental) information, this product safety information (PSI) is provided instead.

EU REACH – Registration, Evaluation and Authorization of Chemicals:

REACH article 31(7) requires relevant exposure scenarios from the Chemical Safety Report (CSR) to be annexed to the SDS. However, according to REACH Annex I, section 0. (Introduction), subsection 0.6. no 4 and 5, exposure scenarios are only required for hazard-classified substances or mixtures. Since this product is not hazard-classified according to CLP, there is no requirement for exposure scenarios.” The assessment of chemical safety was performed for the substance. This substance does not require authorisation according to REACH regulation.

With regard to silica fume there are no special regulations, restrictions and prohibitions.

16. OTHER INFORMATION

These data are based on our current knowledge but do not constitute a guarantee for any specific product features and do not establish a legally valid contractual relationship.

16.1 Recommendations

Do not breathe dust.

Wear suitable protective clothing, gloves and eye/face protection.

In case of insufficient ventilation wear suitable respiratory equipment.

16.2 List of Abbreviations

AF:	assessment factor
Comet assay:	testing samples for DNA damage using electrophoresis
COPD:	chronic obstructive pulmonary disease
DNEL:	derived no-effect level
EC ₅₀ :	median effective concentration
LC ₅₀ :	median lethal concentration
LD ₅₀ :	median lethal dose
NOAEC:	no observable adverse effect concentration
NOAEL:	no observable adverse effect level

NOEC:	no observable effect concentration
OEL:	occupational exposure limit
PBT:	persistent, bioaccumulative, toxic chemical
PNEC:	predicted no-effect concentration
T/D test:	test on dissolution of substance
vPvB:	very persistent, very bioaccumulative chemical

16.3 Key References

This safety data sheet is prepared according to

- Chemical Safety Report issued September 9th, 2010
- TL-VP-MX_01-00.

APPENDIX

Table 1 Identified Uses of the Substance/Mixture (Uses by Workers in Industrial Settings)

IU No.	Identified Use (IU) name	Substance supplied to that use	Use descriptors
1	Manufacturing of refractory products: bricks, tiles, table ware, sanitary ware, clay pipes for processes at elevated temperatures, refractory concrete, special concretes / Manufacturing of unshaped aluminosilicate refractory materials excluding Type II additive for concrete according to EN 13263	as such (substance itself) in a mixture	<p>Process category (PROC): PROC 1, 2, 3, 4, 5, 8a, 8b, 9, 19, 21, 23, 24</p> <p>Environmental release category (ERC): ERC 3, 5</p> <p>Sector of end use (SU): SU 13 SU 0: Other: NACE code: C23.20</p> <p>Subsequent service life relevant for that use?: yes</p> <p>Article category related to subsequent service life (AC): AC 2</p>
2	Additive to SiC for the production of kiln furniture	as such (substance itself) in a mixture	<p>Process category (PROC): PROC 4, 5, 8a, 9, 26</p> <p>Market sector by type of chemical product: PC 0: Other</p> <p>Environmental release category (ERC): ERC 3, 5</p> <p>Sector of end use (SU): SU 13 SU 0: Other: NACE code: C23.20</p> <p>Subsequent service life relevant for that use?: yes</p> <p>Article category related to subsequent service life (AC): AC 4</p>
3	Protection of surfaces from wear	as such (substance itself) in a mixture	<p>Process category (PROC): PROC 3, 4, 5, 7, 9, 10, 11, 19, 21, 23, 24</p> <p>Market sector by type of chemical product: PC 9a, 9b</p> <p>Environmental release category (ERC): ERC 3, 5</p> <p>Sector of end use (SU): SU 13</p> <p>Subsequent service life relevant for that use?: no</p>
4	Manufacturing of specialty ceramics	as such (substance itself)	<p>Process category (PROC): PROC 1, 2, 3, 4, 5, 8a, 8b, 9, 19, 21, 23, 24</p> <p>Market sector by type of chemical product: PC 0</p>

			<p>Environmental release category (ERC): ERC 3, 5</p> <p>Sector of end use (SU): SU 13 SU 0: Other: NACE code: C23.44</p> <p>Subsequent service life relevant for that use?: yes</p> <p>Article category related to subsequent service life (AC): AC 0: Other: Constructional articles and building material for outdoor use: wall construction material, road surface material, ceramic, metal, plastic and wood construction material, insulating material.</p>
5	Cement industry: Raw material for clinker production	as such (substance itself)	<p>Process category (PROC): PROC 22</p> <p>Environmental release category (ERC): ERC 3, 5</p> <p>Sector of end use (SU): SU 13 SU 0: Other: NACE code: C23</p> <p>Subsequent service life relevant for that use?: yes</p>
6	Manufacture of flue dust/clinker/... containing preparations: cement, hydraulic binder, controlled low strength material, concrete (finished mixture of prefabricated), mortar, grout, excluding Type II additive for concrete according to EN 13263	as such (substance itself)	<p>Process category (PROC): PROC 3, 4, 5, 8a, 8b, 9</p> <p>Market sector by type of chemical product: PC 0: Other: Building and construction preparations</p> <p>Environmental release category (ERC): ERC 3, 5</p> <p>Sector of end use (SU): SU 13 SU 0: Other: NACE code: C23</p> <p>Subsequent service life relevant for that use?: yes</p> <p>Article category related to subsequent service life (AC): AC 0: Other: Constructional articles and building material for outdoor use: wall construction material, road surface material, ceramic, metal, plastic and wood construction material, insulating material.</p>
7	Additive into fillers for filling defects in wood, plaster, wall and for glass manufacturing	as such (substance itself)	<p>Process category (PROC): PROC 1, 2, 3, 4, 5, 8a, 8b, 9, 14, 19, 23</p> <p>Market sector by type of chemical product: PC 0: Other: Building and construction preparations</p> <p>Environmental release category (ERC): ERC 3, 5</p> <p>Sector of end use (SU): SU 13 SU 0: Other: NACE code: C23.61 and C23.1</p> <p>Subsequent service life relevant for that use?: yes</p> <p>Article category related to subsequent service life (AC): AC 4 AC 0: Other: Constructional articles and building material for outdoor use: wall construction material, road surface material, ceramic, metal, plastic and wood construction material, insulating material.</p>
8	Manufacturing of	as such	<p>Process category (PROC):</p>

	shaft drilling products	(substance itself)	<p>PROC 1, 3, 8a, 8b</p> <p>Environmental release category (ERC): ERC 3, 5</p> <p>Sector of end use (SU): SU 13</p> <p>Subsequent service life relevant for that use?: yes</p>
9	Manufacturing of inorganic dyes	<p>as such (substance itself)</p> <p>in a mixture</p>	<p>Process category (PROC): PROC 2, 3</p> <p>Market sector by type of chemical product: PC 9a, 9b, 18</p> <p>Environmental release category (ERC): ERC 1</p> <p>Sector of end use (SU): SU 9 SU 0: Other: NACE code: C20.12 and C20.30</p> <p>Subsequent service life relevant for that use?: no</p> <p>Article category related to subsequent service life (AC): AC 13</p>
10	Component in formulation of monolithic refractories	as such (substance itself)	<p>Process category (PROC): PROC 1, 2, 3, 4, 5, 8a, 8b, 9, 19</p> <p>Environmental release category (ERC): ERC 1</p> <p>Sector of end use (SU): SU 9</p> <p>Subsequent service life relevant for that use?: yes</p>
11	Manufacture of processing aids used in the chemical industry	as such (substance itself)	<p>Process category (PROC): PROC 2</p> <p>Market sector by type of chemical product: PC 20</p> <p>Environmental release category (ERC): ERC 2</p> <p>Sector of end use (SU): SU 9</p> <p>Subsequent service life relevant for that use?: no</p>
12	Fertiliser: Silica fertiliser in agriculture and anti-caking agent in artificial fertilisers	as such (substance itself)	<p>Process category (PROC): PROC 5, 8b, 11, 19, 26</p> <p>Market sector by type of chemical product: PC 12</p> <p>Environmental release category (ERC): ERC 10b</p> <p>Sector of end use (SU): SU 1</p> <p>Subsequent service life relevant for that use?: yes</p>
13	Manufacture of gaskets, gaskets materials and seals;	as such (substance itself)	<p>Process category (PROC): PROC 1, 2, 3, 5, 6, 7, 8a, 8b, 9, 10, 13, 14, 15, 19, 23</p>

	rubber materials; and rubber materials with coating and inks		<p>Market sector by type of chemical product: PC 32</p> <p>Environmental release category (ERC): ERC 3, 6d</p> <p>Sector of end use (SU): SU 11 SU 0: Other: NACE code: C22.19 and C20.30</p> <p>Subsequent service life relevant for that use?: yes</p> <p>Article category related to subsequent service life (AC): AC 1, 2, 3, 5, 8, 10 AC 0: Other: constructional articles</p>
14	Manufacture of elastomer products, thermoplastics and plastics with coating and ink	as such (substance itself)	<p>Process category (PROC): PROC 1, 2, 3, 5, 6, 7, 8a, 8b, 9, 10, 13, 14, 15, 19, 23</p> <p>Market sector by type of chemical product: PC 32</p> <p>Environmental release category (ERC): ERC 3, 6c</p> <p>Sector of end use (SU): SU 12 SU 0: Other: NACE code: 22.20 and C20.30</p> <p>Subsequent service life relevant for that use?: yes</p> <p>Article category related to subsequent service life (AC): AC 1, 2, 3, 5, 8, 10 AC 0: Other: constructional articles</p>
15	Use of the substance as intermediate	as such (substance itself)	<p>Process category (PROC): PROC 1</p> <p>Market sector by type of chemical product: PC 19</p> <p>Environmental release category (ERC): ERC 6a</p> <p>Sector of end use (SU): SU 9</p> <p>Subsequent service life relevant for that use?: no</p>
16	Manufacturing of sealants, glues & adhesives	as such (substance itself) in a mixture	<p>Process category (PROC): PROC 3, 4, 5, 7, 8b, 9, 10, 11, 19</p> <p>Market sector by type of chemical product: PC 1, 9a, 9b</p> <p>Environmental release category (ERC): ERC 2</p> <p>Sector of end use (SU):</p> <p>Subsequent service life relevant for that use?: yes</p> <p>Article category related to subsequent service life (AC):</p>
17	Component in formulation of refractories	as such (substance itself)	<p>Process category (PROC): PROC 4, 5, 8a, 9, 14, 19, 21, 23, 24, 26</p> <p>Environmental release category (ERC): ERC 5</p>

			<p>Sector of end use (SU):</p> <p>Subsequent service life relevant for that use?: yes</p>
18	Diluent, washing & cleaning and plaster manufacture	as such (substance itself)	<p>Process category (PROC): PROC 2, 3, 5, 8a, 9, 10</p> <p>Market sector by type of chemical product: PC 35, 9a, 9b</p> <p>Environmental release category (ERC): ERC 2</p> <p>Sector of end use (SU):</p> <p>Subsequent service life relevant for that use?: no</p>
19	Professional use in building and construction work (eg construction chemical; cement, hydraulic binder, controlled low strength material, etc.; soil stabilisation & improvement; mineral filler in asphalt pavement & bituminous products; shotcrete in tunnels) excluding Type II additive for concrete according to EN 13263	as such (substance itself)	<p>Process category (PROC): PROC 1, 2, 3, 5, 7, 8a, 8b, 9, 10, 11, 13, 15, 19, 26</p> <p>Market sector by type of chemical product: PC 9b PC 0: Other: road construction (asphalt and bitumeous product)</p> <p>Environmental release category (ERC): ERC 10a</p> <p>Sector of end use (SU):</p> <p>Subsequent service life relevant for that use?: yes</p> <p>Article category related to subsequent service life (AC):</p>
20	Manufacture of basic metals, including alloys and alloys with coating and ink	as such (substance itself)	<p>Process category (PROC): PROC 1, 2, 3, 4, 5, 7, 8a, 8b, 9, 10, 13, 15, 19, 22, 26</p> <p>Market sector by type of chemical product: PC 7</p> <p>Environmental release category (ERC): ERC 5</p> <p>Sector of end use (SU):</p> <p>Subsequent service life relevant for that use?: yes</p> <p>Article category related to subsequent service life (AC):</p>
21	Professional uses of glues & adhesives	in a mixture	<p>Process category (PROC): PROC 8a, 8b, 9, 11, 13, 19</p> <p>Market sector by type of chemical product: PC 1</p> <p>Environmental release category (ERC): ERC 8f</p> <p>Sector of end use (SU):</p> <p>Subsequent service life relevant for that use?: yes</p>
22	Consumer uses of glues & adhesives	in a mixture	<p>Market sector by type of chemical product: PC 1</p>

			Environmental release category (ERC): ERC 8f
			Subsequent service life relevant for that use?: yes

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