

1. Identification of the mixtures and of the company/undertaking

Product names:	Silicon (Si) slag Si refining slag, Si sculls, Ladle sculls
Products application:	Manufacture of basic metals, incl. alloys. Alloying of steel melts: steel industry. Raw material in the production of SiMn alloys.
Address/Phone No.:	Elkem AS Foundry Products P.O. Box 334, Skøyen, NO-0213 Oslo, Norway Telephone: + 47 22 45 01 00 Telefax: + 47 22 45 01 11 http://www.foundry.elkem.com http://sds.efp@elkem.no
REACH and CLP helpdesk:	https://echa.europa.eu/support/helpdesks
Emergency Phone No:	Contact your local poison information service, see: http://www.eapcct.org/index.php?page=links USA: Poison Help (AAPCC): 1-800-222-1222 & PoisonHelp.org United Kingdom: Contact your GP or NHS 111 on 111 (for 24 hour health advice).

2. Hazards Identification

Classification of the products:	The products do not meet the criteria for hazard classification in accordance with Regulation (EC) No 1272/2008 (CLP) and the UN Globally Harmonized System of Classification and Labelling of Chemicals (GHS), 6 th revision.
Hazard pictogram:	Not applicable (N/A)
Signal word:	Not applicable (N/A)
H-phrases:	Not applicable (N/A)
P-phrases:	Not applicable (N/A)

Flammable and noxious gases may be formed in contact with moisture, acids or bases. See section 10 and 11. Depending on the composition, dust from the products if suspended in air might under certain conditions cause dust explosions. See section 10.

3. Composition/Information on compounds

Compound	CAS No.	EC No.	REACH Reg. No.	Weight%	Hazard classification
					Regulation (EC) No1272/2008 (CLP)
Slags, elec. Furnace smelting, iron silicate* ("silicate")	102110-59-8	310-060-2	01-2119486867-15-0000	10-90	Not classified
Silicon*	7440-21-3	231-130-8	01-2119480401-47-0065	10-90	Not classified

* This PSI is based on the Chemical Safety Reports of Si/FeSi silicate (Slags,electric furnace smelting silicate, an UVCB substance) and of Silicon made according to the substance qualities covered by their respective registration dossier under REACH.

4. First Aid Measures

Inhalation: Mechanical irritation caused by dust: Fresh air. See a physician on persistent feeling of discomfort.
Skin contact: Wash skin with water and/or a mild detergent.
Eye contact: Rinse eyes with water/saline solution. See a physician on persistent feeling of discomfort.
Ingestion: Remove the person affected from dust-exposed area. See inhalation.

5. Fire Fighting Measures

Extinguishing media: Dry sand, CO₂ or dry powder.

Special hazards arising from the mixture

Specific fire & explosion hazards: Flammability test and contact with water test under REACH (EC guideline) show the products to be non flammable and not flammable in contact with water.

However, addition of water or wet material to molten (hot) product, may cause explosion due to formation of flammable hydrogen gas, depending on the fraction of metallic material in the product.

6. Accidental Release Measures

Material in the form of dust should be collected in suitable containers. Damp product must be kept away from dry, and must not be collected and stored in closed containers. Dry dust can be vacuumed or swept up.

7. Handling and Storage

Handling: Avoid handling that generates dust build-up. Avoid inhalation of dust. See section 8. Avoid ignition sources (e.g. welding) in areas with high dust concentrations. Addition of wet material to molten metal in the products may cause explosions. See section 10.

Storage: The products must be kept in a well-ventilated place, and away from acids and bases. Open air storage is acceptable.

Inadequately ventilated containers:

It is advisable to allow 15 minutes of natural venting with fully open doors so that fresh air can freely enter the container before starting to unload/strip the containers.

Opening of containers should preferably be done outdoors, but only under conditions whereby the product is kept dry.

In case there is a need for immediate stripping (i.e. less than 15 minutes waiting), always wear a full face mask respirator with gas/vapour filter according to standard EN 14387 during the unloading period.

8. Exposure Controls/Personal Protection

A. Occupational exposure controls

Eye protection, eye flushing facilities and protective gloves. Ensure good ventilation. Wear a particulate respirator according to EN 149 FFP 2S in areas of inadequate ventilation. If exposure to phosphine and arsine is suspected from Ferrosilicon (FeSi) slag (see section 10 and 11) in areas of poor ventilation (e.g. storage holds, bunkers etc.), a self-contained breathing apparatus or an air fed respirator should be worn.



Occupational Exposure Limits (ACGIH ¹⁾, 2016):

Substance	CAS No.	8-hour TWA		15 minute STEL		Notations
		ppm	mg/m ³	ppm	mg/m ³	
PNOS ²⁾	-	-	10 ^(I) / 3 ^(R)	-	-	-

¹⁾ American Conference of Governmental Industrial Hygienists

²⁾ Particulates (insoluble or poorly soluble) Not Otherwise Specified. Specific TLVs for the individual substances have not been established or have been withdrawn, respectively.

^(I) Inhalable fraction

^(R) Respirable fraction

DNEL (Derived No Effect Level):

4 mg/m³, proposal for inhalable particles (determined as Si).

0.3 mg/m³, proposal for respirable particles (determined as Si).

PNEC (Predicted No Effect Concentration):

Not relevant.

B. Environmental exposure controls

Target value and limit value for PM₁₀ and PM_{2.5} (Directive 2008/50/EC):

	Averaging period	Limit value	
PM ₁₀	One day	50 µg/m ³ ★	
PM ₁₀	Calendar year	40 µg/m ³	
PM _{2.5}	Calendar year	25 µg/m ³	
PM _{2.5}	Calendar year	20 µg/m ³	1 January 2020

★ Not to be exceeded more than 35 times a calendar year.

9. Physical and Chemical Properties

Form	: Lump material including fines.
Appearance	: Solid material with two distinct compounds; one mix of silicates and one metal phase.
Colour	: The silicate mix is grey/green, the metal phase is silvery grey.
Odour	: Odourless.
pH	: See solubility.
Solubility (Water)	: 2.6 µg Si/l at pH 5.7-5.9 (20°C) silicate; diameter < 1 mm. : Silicon (Si): Insoluble/Poorly soluble particles (PSP).
Melting point/freezing point	: 1414 °C (101,3 kPa) for Silicon : 1150-1450 °C (101,3 kPa) for silicate

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Initial boiling point
and boiling range : 2355-3265 °C (101.3 kPa) for Silicon.
: NA for silicate.
Flammability (solid, gas) : Non flammable.
Auto-ignition temperature : > 400 °C at 101.3 kPa for Silicon.
: NA for silicate

10. Stability and Reactivity

Conditions to avoid:

Avoid generating sparks and other ignition sources (e.g. welding) in areas with high dust concentrations.

For Silicon (Si) slag: Silicon-particles suspended in air at concentrations above 100 g/m³ can cause dust explosions. Both ignition sensitivity and the violence of explosion increase with decreasing particle size. Silicon dust with particle diameter > 40 µm probably entails no danger of explosion.

Addition of wet material to molten (hot) metal in the products may cause explosions.

Materials to avoid:

Water/humidity, acids and bases.

Hazardous decomposition products:

Reaction with hydrofluoric acid (HF) or nitric acid (HNO₃) leads to the formation of toxic gases such as silicon tetrafluoride (SiF₄) or nitrous gases (NO_x).

Wet product will form highly flammable hydrogen gas if added to molten metal, due to decomposition of water.

11. Toxicological Information

The products do not meet the criteria for hazard classification according to Regulation (EC) No1272/2008 (CLP) and the UN Globally Harmonized System of Classification and Labelling of Chemicals (GHS), 6th revision.

Acute effects:

Inhalation: Finely divided dust may irritate and dehydrate mucous membranes.

Skin contact: Dust may irritate the skin.

Eye contact: Dust may irritate and lead to dryness.

Chronic effects:

No adverse chronic effects of these products are expected, based on tests, practical experience and review of available scientific literature. Historic, epidemiological studies covering cohorts of workers in the Norwegian ferro-alloy industry have been carried out, showing there is no cancer risk from these products.

12. Ecological Information

The products are not characterised as dangerous for the environment.

MOBILITY: The products have poor mobility under normal environmental conditions.

PERSISTENCE: Not relevant.

BIOACCUMULATION: Not relevant, due to low mobility and non-dispersive use.

ECO-TOXICITY: The products do not meet the classification criteria for ecotoxicological endpoints in accordance with Regulation (EC) 1272/2008 (CLP) and the UN Globally Harmonized System of Classification and Labelling of Chemicals (GHS), 6th revision.

PNEC (Predicted No Effect Concentration): N/A

13. Disposal Considerations

The material should be recovered for recycling where possible.

Waste from the products is not considered as hazardous waste according to Commission Decisions 2000/532/EC and 2001/118/EC.

Prior to disposal of large quantities of this material, advice should be sought from the nearest Environment Agency.

14. Transport Information

UN no.	None.
IMDG-Code:	Not subject to classification.
ICAO/IATA:	Not subject to classification.
ADR/RID:	Not subject to classification.

15. Regulatory Information

The text of this Product Safety Information is prepared in compliance with:

- Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) and subsequent amendments.
- Regulation (EC) No 1272/2008 (CLP) of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 (REACH).

Chemical Safety Assessment:

Silicon (Si)-slag:

Chemical Safety Assessments for the two individual ingredients; silicate (EC 310-060-2) and Silicon (EC 231-130-8) of the Silicon (Si) slag have been carried out according to REACH.

16. Other Information

According to Chapter 1.5.2 of the UN Globally Harmonized System of classification and labelling of chemicals (GHS), Article 58 (2)(a), and 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 that meet the harmonized criteria for physical-, health- or environmental hazards. Since these products do not meet these criteria, a SDS according to 2015/830/EU is not issued. In order to communicate relevant HSE-(health, safety and environmental-) information, this product safety information (PSI) is provided instead.

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 these products are not hazard-classified according to CLP, there is no requirement for exposure scenarios.