

1. Identification of the Product and Supplier

Product name: **Si-NINE™, Si-RG™, Si-PRIME™, Si-99™**

Application of Silicon: Antioxidant for carbon-containing refractories,
Silicon infiltration for SiSiC/RBSiC

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Silicon Products
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<http://www.silicon.elkem.com>

Contact: sds.esm@elkem.no

REACH registration number: 01-2119480401-47-0065

REACH and CLP helpdesk: REACH and CLP website:
<https://echa.europa.eu/support/helpdesks/>

Emergency Phone No.: not applicable for non-hazardous substances.

2. Hazards Identification

Classification of the substance The product does not meet the criteria for hazard classification in accordance with Regulation (EC) No1272/2008 (CLP) and the UN Globally Harmonized System of Classification and Labelling of Chemicals (GHS, 7th revision).

Hazard pictogram: N/A (not applicable)
Signal word: N/A (not applicable)
Hazard statements: N/A (not applicable)
Precautionary statements: N/A (not applicable)

Silicon-dust suspended in air may under certain conditions cause dust explosions. (See section 10)

3. Composition/Information on Ingredients

Synonyms/Trade names:
IUPAC Name: Silicon
CAS No.: 7440-21-3
EINECS No.: 231-130-8

Purity (weight%): 96-99 % Silicon

4. First Aid Measures

Inhalation: Irritation caused by dust: Fresh air.
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.

Lump silicon is not combustible. Dusts of silicon with particle diameter < 75 µm can be ignited and will propagate flame.

Silicon-dust suspended in air may under certain conditions cause dust explosions. (See section 10).

6. Accidental Release Measures

Avoid handling that generates dust build-up. Released material should be collected in suitable containers. Dry dust can be vacuumed or swept up.

7. Handling and Storage

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

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.



Occupational Exposure Limits (ACGIH¹, 2016):

Substance	[CAS No.]	8hr TWA Notations		ACGIH TLV 15 minute STEL	
		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. The product is considered to be PNOS. Specific TLVs for the individual substances have not been established or have been withdrawn, respectively.

^(I) Inhalable fraction

^(R) Respirable fraction

B. Environmental exposure controls

See Section 6, 7 and 12.

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	25 µg/m ³
PM _{2.5}	Calendar year	15 µg/m ³

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

9. Physical and Chemical Properties

Structure	: Crystalline
Form	: Lump material.
Colour	: Silvery material.
Odour	: Odourless.
Solubility (Water)	: Insoluble/slightly soluble.
Melting Point (°C)	: Approx. 1410
Boiling Point (°C)	: Approx. 2355
Specific Gravity (water = 1)	: Approx. 2.3

10. Stability and Reactivity

Silicon is insoluble in most acids, but dissolves in a mixture of hydrofluoric acid (HF) and nitric acid (HNO₃) evolving hazardous gases. Impurities present in silicon (e.g. Al and Ca) may react with dilute acids evolving hazardous gases (see below).

Silicon dissolves readily in dilute lye.

Conditions to avoid:

Avoid generating sparks or other ignition sources (e.g. welding) in areas with high dust concentrations. 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. Ignition temperature (warm surface) ≥ 800 °C.

Addition of wet material to molten metal may cause explosions.

Materials to avoid:

Acids (see below).

Hazardous decomposition products:

A reaction with hydrofluoric acid (HF) and nitric acid (HNO₃) leads to the formation of toxic gases such as silicon tetrafluoride (SiF₄) or nitrous gases (NO_x). Impurities in silicon may react with dilute acids forming flammable and harmful gases such as hydrogen (H₂) and silane (SiH₄).

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

11. Toxicological Information

The product does 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, 7th revision).

Acute effects:

Inhalation: Dust may irritate and dehydrate mucous membranes.
Skin contact: Dust may irritate and dehydrate skin.
Eye contact: Dust may irritate and lead to dryness.
Ingestion: Dust may irritate and dehydrate mucous membranes.

Chronic effects: No chronic effects known.

12. Ecological Information

The product is not characterised as dangerous for the environment.

MOBILITY: The alloy has poor mobility under normal environmental conditions.
PERSISTENCE: Not relevant for metals.
BIOACCUMULATION: Not relevant, due to low mobility and non-dispersive use.
ECOTOXICITY: The product does 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, 7th revision).

13. Disposal Considerations

The material should be recovered for recycling if possible.
The product is not regulated as hazardous waste according to Directive 2001/118/EEC, nor is it listed on EU's list of wastes (2000/532/EC). Disposal of materials must conform with the requirements of Section 34 of the Environmental Protection Act 1990, UK. This material is not classed as "Special Waste" under the Control of Pollution (Special Waste) Regulations 1996. Prior to disposal of large quantities of this material advice should be sought from the local Environment Agency Office.

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

A chemical safety assessment (CSA) has been carried out for the substance in accordance with Regulation (EC) 1907/2006 (REACH).

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 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures (CLP), amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.
- UN Globally Harmonized System of Classification and Labelling of Chemicals (7th revision).

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 harmonised criteria for physical, health or environmental hazards. Since this product does not meet these criteria, an SDS according to (EU) 2015/830 is not issued. In order to communicate relevant HSE-(health, safety and environmental) information, this product safety information (PSI) is provided instead.

In accordance with REACH article 31(5), safety data sheets shall be supplied in an official language of the Member State(s) where the substance or mixture is placed on the market. This obligation, however, only applies for hazard-classified products which require a formal SDS. Since this product is not hazard-classified, the product safety information (PSI) is, in accordance with current regulation, provided in English language only.

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.

Literature references are available upon request.

Changes from revision 00 to 01: New corporate address. Paragraph 2 in section 16.

Changes from revision 01 to 02: new generic email address, updated ACGIH values, legal disclaimer removed, reference to GHS and 2015/830 inserted, reference to DSD removed.

Changes from revision 01 to 02: Corporate address updated, RG 98 brandname included.

Changes from revision 02 to 03: Reference to GHS 7th rev.

Changes from revision 03 to 04: Corporate name updated, Si-Prime brandname included.

Changes from revision 04 to 05: Division name updated, Si-99 and its use included, exposure control values (section 8 B) updated.