1. Identification of the Substance/Preparation and Company

Product name:	***Si-NINE***
Product application:	Antioxidant for carbon-containing refractories
Address/Phone No.:	Elkem AS Silicon Materials P.O. Box 5211 Majorstua, N-0303 Oslo, Norway Telephone: + 47 22 45 01 00 Telefax: + 47 22 45 01 52 http://www.silicon.elkem.com
Contact person:	Dr. Bernd Friede E-mail: bernd.friede@elkem.no
Emergency Phone No.:	Not applicable

2. Hazards Identification

The product does not represent a hazard to health, safety or environment when handled and stored as advised (see section 7).
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
HAZARDOUS INGREDIENT(S):	None
Symbol:	None
R and S Phrases:	None
Constituents (analysis):	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, CO_2 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 (OEL): (see Health and Safety Executive document EH40/2002-2003):

	8 hr TWA		10 minute STEL	
	ppm	mg/m^3	ppm	mg/m^3
Total inhalable dust	-	10	-	-
Respirable dust	-	4	-	-

B. Environmental exposure controls
See Section 6, 7 and 12.

Target value and limit value for PM_{10} and $PM_{2.5}$ (Directive 2008/50/EC):

	Averaging period	**Limit value**	**By date**
PM_{10}	One day	50 μg/m^3★	1 January 2005
PM_{10}	Calendar year	40 μg/m^3	1 January 2005
		Target value	
$PM_{2.5}$	Calendar year	25 μg/m^3	1 January 2010
		Limit value	
$PM_{2.5}$	Calendar year	25 μg/m^3	1 January 2015

★ not to be exceeded more than 35 times a calendar year

9. Physical and Chemical Properties

Structure	: Crystalline
Form	: Powder. Grain fractions (45-150 μm).
Colour	: Silvery material.
Odour	: Odourless.
Solubility (Water)	: Insoluble/slightly soluble.
Melting Point (°C)	: Approx. 1410
Boiling Point(°C)	: Approx. 2355
Specific gravity (water = 1)	: 2.3

10. Stability and Reactivity

Silicon is insoluble in most acids, but dissolves in a mixture of hydrofluoric acid (HF) and nitric acid (HNO_3) 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/m^3 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 (HNO_3) leads to the formation of toxic gases such as silicon tetrafluoride (SiF_4) or nitrous gases (NO_x). Impurities in silicon may react with dilute acids forming flammable and harmful gases such as hydrogen (H_2) and silane (SiH_4).
Wet product will form flammable hydrogen gas if added to molten metal, due to decomposition of water.

11. Toxicological Information

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.
ECO-TOXICITY: LC_{50}/LD_{50}: Not determined. Hardly relevant for inorganic, insoluble substances.

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). 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-Kode:	Not subject to classification.
ICAO/IATA:	Not subject to classification.
ADR/RID:	Not subject to classification.

15. Regulatory Information

Product classification and labelling:

Symbol:	Not subject to classification.
R-phrases:	None.
S-phrases:	None.

The text of this Material Safety Data Sheet is prepared in compliance with:

- Commission Directive 67/548/EEC.
- 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).

16. Other Information

Literature references are available upon request.