1. Identification of the Product and Supplier

Product name:	***Elkem Grain Refiner™*** ***StainSeed™, WearSeed™***
Product application:	Additive for production of high-alloyed steel.
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 sds.efp@elkem.no
REACH registration numbers:	01-2119485286-28-0033 (FeSi) 01-2119480148-35-0001 (Ce) 01-2119449803-34-XXXX (Mn) 01-2119485652-31-XXXX (Cr)
REACH and CLP helpdesk:	http://echa.europa.eu/support/helpdesks/
Emergency Phone No.:	https://poisoncentres.echa.europa.eu/home

2. Hazards Identification

Hazard classification:	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), 6th revision.
Hazard pictogram:	N/A (not applicable)
Signal word:	N/A (not applicable)
H-phrases:	N/A (not applicable)
P-phrases:	N/A (not applicable)

Flammable and noxious gases may be formed in contact with moisture, acids or bases. See section 10 and 11.

3. Composition/Information on ingredients

Synonyms/Trade names: FeSiCrCe-alloy, FeSiMnCrCe-alloy.
IUPAC-name: N/A
CAS No: See table below.

Chemical composition[1,2]:

Element	Symbol	CAS No.	EINECS No.	Weight %
Chromium	**Cr**	7440-47-3	231-157-5	5 – 40
Silicon	**Si**	7440-21-3	231-130-8	15 – 30
Manganese	**Mn**	7439-96-5	231-105-1	0 – 30
Cerium	**Ce**	7440-45-1	231-154-9	5 – 15
Carbon	**C**	7440-44-0	231-153-3	< 1
Iron	**Fe**	7439-89-6	231-096-4	Balance

1) Trace elements of Ca, Al and Mg. The product does not contain Cr(VI).
2) See Product Data Sheet or product certificate for exact composition of individual products

4. First Aid Measures

Inhalation: Irritation caused by dust: Fresh air. See a physician on persistent feeling of discomfort. Phosphine/arsine intoxication: Seek medical attention. See section 11.
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.

Dry product is not combustible. Dust sample with 20 % cerium was tested by GexCon December 13, 2006. The results showed no ignitive or explosive danger. See section 10.

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 may cause explosions. See section 10.
Storage: The product must be kept in a dry and well-ventilated place, and away from acids and bases.

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 (see section 10) in areas of poor ventilation (e.g. storage holds, bunkers etc.), a self contained breathing apparatus or an air fed respirator should be worn.

Workplace Exposure Limits (HSE, EH40/2005),
Table 1: List of approved workplace exposure limits (as consolidated with amendments October 2007):

Substance	CAS number	8 hour TWA		15 minute STEL	
		ppm	mg/m³	ppm	mg/m³
Inhalable dust	-	-	10	-	-
Respirable dust	-	-	4	-	-
Chromium	7440-47-3	-	0.5	-	-
Chromium (III) compounds (as Cr)	-	-	0.5	-	-
Phosphine gas (PH_3)	7803-51-2	0.1	0.14	0.2	0.28
Arsine gas (AsH_3)	7784-42-1	0.05	0.16	-	-

EU OEL: Commission Directive 2006/15/EC
Indicative occupational exposure limit values:

Substance	CAS number	8 hour		15 minute	
		ppm	mg/m³	ppm	mg/m³
Phosphine	7803-51-2	0.1	0.14	0.2	0.28
Chromium Metal, Inorganic Chromium (II) Compounds and Inorganic Chromium (III) Compounds (insoluble)	-	2	-	-	-

Elkem has devised a “Procedure for sampling, measuring and reporting of phosphine (PH_3), arsine (AsH_3) and airborne particulates” of the workplace atmosphere (1994). The low occupational exposure limit for arsine gas is due to the evidence for carcinogenicity in humans of inorganic arsenic compounds in general (IARC). The OEL for dust does not cover possible arsine/phosphine absorption from dust deposited on mucous membranes.

DNEL (Derived No Effect Level):
4 mg/m³, proposal for inhalable FeSi particles (determined as Si).
0.3 mg/m³, proposal for respirable FeSi particles (determined as Si).

B. Environmental exposure controls

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/m³★	
PM_{10}	Calendar year	40 µg/m³	
$PM_{2.5}$	Calendar year	25 µg/m³	
$PM_{2.5}$	Calendar year	20 µg/m³	1 January 2020

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

9. Physical and Chemical Properties

Appearance:
- Colour: : Silvery grey, metallic surface.
- Form: : Sieve fractions (2-20 mm) / cored wire (0-2 mm).

Odour : Odourless.
Solubility (Water) : Insoluble/ slightly soluble.
Melting Point (°C) : Approx 1450
Specific Gravity (water = 1) : Aprox 6.1

10. Stability and Reactivity

Conditions to avoid:

Avoid generating sparks and other ignition sources (e.g. welding) in areas with high dust concentrations.
Crushing of product in air may cause sparks.
Addition of wet material to molten metal may cause explosions.

Materials to avoid:

Water/humidity, acids and bases.

Hazardous decomposition products:

Highly flammable hydrogen gas (H_2) and the highly flammable and very toxic gases phosphine and arsine (garlic-like smell), both heavier than air, may be formed if the products gets in contact with moisture, acids or bases. A prerequisite for phosphine and arsine gas formation is the presence of reactive phosphides or arsenides, such as e.g. Ca_3P_2 or Ca_3As_2 at the alloy phase-boundaries inside the alloy. Very low levels of P (< 0.02 %) and As (< 0.0005 % detection limit) in FeSi, in combination with rapid solidification that limits segregation of the alloying elements, effectively minimize the formation of such compounds and thus the probability of gas formation.
A reaction with hydrofluoric acid (HF) or nitric acid (HNO_3) leads to the formation of toxic gases such as silicon tetrafluoride (SiF_4) or nitrous gases (NO_x).
Heating the alloy above the melting point may lead to the formation of noxious fumes containing oxides of cerium (Ce), Cr(III) and Cr(VI). See section 11.
Wet product will form highly flammable hydrogen gas if added to molten metal, due to decomposition of water.

Continues next page

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), 6th revision.

Acute effects:

Inhalation: Finely divided dust may irritate and dehydrate mucous membranes.
Phosphine/arsine may be absorbed from dust deposited on mucous membranes. Phosphine irritates exposed mucous membranes, depresses the central nervous system (CNS) and can cause oedema of the lungs. Acute, non-fatal poisoning with phosphine gives temporary effects, among others headache, malaise, vomiting, stomach pains, cough, and difficulty in breathing.
Skin contact: Dust may irritate the skin.
Eye contact: Dust may irritate and lead to dryness.

Chronic effects:

Chromium in the product is present in a metallic/intermetallic form. The product does not contain Cr(VI). Chromium compounds are classified as carcinogens by IARC (1990).

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 the elements in the alloy.
BIOACCUMULATION: Not relevant, due to low mobility and non-dispersive use.
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), 6th revision.

PNEC (Predicted No Effect Concentration): N/A

13. Disposal Considerations

The material should be recovered for recycling where possible.
Waste from the product is not classified as hazardous waste according to Directive 2008/98/EC “Waste Framework Directive” and Commission Decision 2000/532/EC as amended.
Prior to disposal of large quantities of this material, advice should be sought from the nearest Environment Agency.

14. Transport Information

UN no.: 1408
IMDG-code[1)]: Not assigned to class 4.3
ICAO/IATA[1)]: Not assigned to class 4.3
ADR/RID[1)]: Not assigned to class 4.3

[1)] Consignments of ferrosilicon with a chemical analysis as described in section 2 has been tested according to “United Nations Recommendations on the Transport of Dangerous Goods, Manual of Test and Criteria Part III - 33.4.1.4” and has passed the test. Consequently, the product is not classified as a Class 4.3 product.

FeSi is not considered to cause harm to aquatic organisms (Lillicrap, 2011). FeSi is not a marine pollutant.
The same considerations hold for FeSiCrCe and FeSiMnCe.

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 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.
- UN Globally Hamonized System of Classification and Labelling of Chemical (GHS, 6th rev.).

A Chemical Safety Assessment (CSA) according to REACH has been carried out for the stated REACH registered substances.

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 this product does 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 this product is not hazard-classified according to CLP, there is no requirement for exposure scenarios.