SAFETY DATA SHEET

Ferro Silicon 14/16 Heavy media Powder

Sigma Parts & Abrasives Pty Ltd	
Perth Australia	Revision Date: 31 January 2024
Manufactured under licence in RSA	Revision No 4.0

HMS POWDER FeSi 14/16%

Ferrosilicon and by definition Ferro Silicon 14-16% is not classified as hazardous under the CLP Regulation (1272/2008/EC).

It is not classified as dangerous under the Dangerous Substances Directive (67/548/EEC)

Further it is not persistent bio accumulative and toxic (PBT) or very persistent and very bio accumulative (vPvB) as defined in Annex XIII of the REACH Regulation.

It is not included in the ECHA candidate list of substances of very high concern.

Thus provision of a Safety Data Sheet (SDS) according to Regulation 453/2010 is not mandatory. This Safety data Sheet is presented to so that additional information is available to assist the user in the handling of Ferrosilicon HMS FeSi14/16% Powders.

1 IDENTIFICATION OF SUBSTANCE AND COMPANY

1.1 Product Identifier

- Heavy Medium Powder FeSi 14/16%
- Dense Medium Powder FeSi 14/16%

Reach Reference No	01-2119485286-28-0065

Ferrosilicon is registered under REACH as a “multi-constituent substance” as reaction mass of iron and iron silicide and iron disilicide and silicon with a provisional list number 912-631-7. For classification purposes, Ferrosilicon is assessed as an entity and not as a mixture.

	MCS	**Ferro silicon**	**Iron silicide**	**Iron disilicide**	**Silicon**	**Iron**
CAS number	912-631-7	8049-17-0	12022-95-6	12022-99-0	7440-21-3	7439-89-6
EC number	-	-	234-670-2	234-671-8	231-130-8	231-096-4

1.2 Relevant identified uses of the substance and uses advised against

- This product is used for the creation of Heavy Dense Medium Slurries of density greater than 1g/cc. It is used in the Mineral beneficiation, Aggregate and Recycling industry.
- Uses advised against: - There are non-identified.

1.3 Details of supplier/ manufacturer

Supplier: Sigma Parts and Abrasives, PO Box 328 Floreat, 6014 WA Australia
Manufacturer: SAMARIUM SA CC, 6 Field Rd, Lilianton, Boksburg, 1470 RSA
Office_1@teamsigma.com.au

1.4 Emergency telephone number

The substance is not classified as hazardous. As such there is no need for emergency numbers.

If any accident occurs with the use of this product call the local emergency number

- In Europe this is 112
- In USA this is 911

2 HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

This product does not meet the criteria for hazard classification according to the current European legislation (EC)No 1272/2008 [CLP] on classification and labelling that are applicable.

2.2 Label elements

This product is not hazardous as per above. No Labelling is required.

2.3 Other Hazards

Ferrosilicon 14/16% particles may under certain conditions cause dust explosions.

Use appropriate protective equipment; eye-protection and gloves when handling the material directly and suitable respiratory protection where dust occurs.

3 COMPOSITION INFORMATION ON INGREDIENTS

3.1 Substances:

Substance / Symbol	**EC/CAS**	Classification according to Regulation (EC) No. 1272/2008			**% Content**
		Hazard Class	Hazard Category	Hazard Statement	
Silicon (Si)	231-130-8/ 7440-21-3	N/A	N/A	N/A	14 - 16
Iron (Fe)	231-096-4/ 7439-89-6	N/A	N/A	N/A	80 -84
Aluminium (Al)	231-072-3/ 7429-90-5	N/A	N/A	N/A	0 – 0.2
Carbon (C)	231-153-3/ 7440-44-0	N/A	N/A	N/A	0,01 -0.4
Phosphorus (P)	231-768-7/ 7723-14-0	N/A	N/A	N/A	0,01-0,025
Sulphur (S)	231-772-6/ 7704-34-9	N/A	N/A	N/A	0,01-0,025

1. Substance is not classified in terms of regulation (EC) No. 1272/2008 Annex VI.
2. Remaining elements of this product are propriety, non-hazardous and/or present in concentrations below reportable limits.
3. Values are typical and do not represent a specification.

4 FIRST AID MEASURES

4.1 Description of first aid measures

4.1.1 Inhalation

Mechanical irritation caused by dust in the airways: move the person to fresh air - if respiratory problem persists, seek medical attention. If you suspect poisoning by toxic gases, seek medical attention.

4.1.2 Skin contact

Wash skin with water and soap, then rinse the skin with water.

4.1.3 Eye contact

Mechanical irritation caused by dust in the eyes: rinse eyes with plenty of water to remove dust. Seek medical attention to remove any remaining dust. Do not rub the eyes.

4.2 Most important symptoms and effects, both acute and delayed

Over exposure to dust may cause irritation and symptoms like coughing and sore throat, reddening and heavy watering of the eyes. Skin contact may cause itching of the skin and dehydration.

4.3 Indication of any immediate medical attention and special treatment needed

No relevant information has been identified.

5 FIRE-FIGHTING MEASURES

5.1 Extinguishing media

Dry ferrosilicon in lump or granules is not combustible. If a fire does occur, use dry sand, Carbon Dioxide or dry powder fire extinguishers to extinguish the fire.

5.2 Special hazards arising from the substance or mixture

Ferrosilicon is not combustible.

5.3 Advice for fire-fighters

Ferro Silicon is regarded as non-flammable.

6 ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Ensure adequate ventilation and avoid the formation of dust. Eye protection and respirators should be worn were dust is a potential hazard. Wear appropriate personal protective equipment. (PPE).

6.2 Environmental precautions

Do not allow discharge into water ways, onto open ground or into public drainage systems. Dispose of according to any local or national legislation. Dry material can normally be re-used.

6.3 Methods and material for containment and cleaning up

Before Use the material should be kept dry and away from any moisture.
Spilled material should be cleaned up and stored in a dry container, any damp or wet material must be kept away from dry material and should not be stored in closed containers.
Ferrosilicon in the form of dust should be vacuumed, swept up with a magnetic broom or carefully swept up.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid generation of dust. Protective equipment, gloves and goggles, should be worn when handling the material. Suitable respiratory protection should be worn where dust occurs.

Avoid generating sparks or other ignition sources (Welding) in areas with high dust concentrations.

7.2 Conditions for safe storage, including any incompatibilities

The product is stable in storage and should be kept in a cool dry well ventilated place. Keep away from acids and bases.

7.3 Specific end use(s)

See section 1.2.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

8.1 Control parameters

8.1.1 National limit values

Users must always consult their local, regional or national regulatory authorities for advice on the current legal limits applicable to them.

Frequently used limit values for inhalable dust in Europe is

- eight hours 10 mg/m^3
- short term 20 mg/m^3

This is a guide only, check your local authority for limits applicable to your situation.

National limit values for the United Kingdom (AFS 2005:17)

Substance	**CAS-nr**	**Limit value - NGV** (8 hours)	**Short term limit value - KTV** (15 min)
Dust, total	-	10 mg/m^3	-
Dust, respirable	-	5 mg/m^3	-
Phosphorous tri hydride (Phosphine, PH_3)	7803-51-2	0,4 mg/m^3	1,4 mg/m^3
Arsenic trihydride (Arsine, AsH_3)	7784-42-1	0,05 mg/m^3	-

8.1.2 DNEL and PNEC

Proposal **of DNEL** *(Derived No Effect Level)*		**PNEC** *(Predict No Effect Concentration)*
Inhalable	Respirable	Not relevant
4 mg/m^3	0,3 mg/m^3	

8.2 National Exposure controls

8.2.1 Appropriate engineering controls

Use local exhaust ventilation for dusty operations.

8.2.2 Individual protection measures, such as personal protective equipment

Always wear appropriate PPE, (Overalls, Gloves, Goggles and respirator)

Always wash the hands after finishing work.

8.2.3 Eye/face protection

Goggles / face shield if dust is a hazard.

8.2.4 Skin

Long sleeves overalls; gloves for hands, where applicable.

8.2.5 Respiratory

If exposure is expected to exceed the applicable Occupational Health limits, suitable respiratory protection equipment approved by the relevant authorities should be used.

8.2.6 Thermal hazards.

Not identified.

8.2.7 Environmental exposure controls

Do not wash any spilled or spent materials into the drainage system, all material must be disposed of according to local legislation. The limit values for particles (PM 2,5 and PM 10) of the Ambient Air Directive 1999/30/EC and its further amendments must be implemented.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	Metallic silver grey lumps or fine material
Odour	No odour
Odour threshold	Not applicable as there is no odour
pH	Not relevant
Melting point	1220-1400 °C (101,3 kPa)
Boiling point	Not relevant
Flash point	Not relevant
Evaporation rate	Not relevant
Flammability	Not flammable
Upper/lower flammability or explosive limits	Lowest explosive limits +/- 60 mg/m^3
Vapour pressure	Not relevant
Vapour density	Not relevant
Relative density	2,5 – 7,3 g/cm^3
Water solubility	$\leq$ 0,01 mg Si/l at pH 5,8-5,9 (20 °C) 15 mg Si/l at pH 5,8 (OECD 105)
Partition coefficient: n-octanol/water	Not relevant
Auto-ignition temperature	>400 °C; no signs of combustion (EU Method A.16)

Decomposition temperature	Not relevant
Viscosity;	Not relevant
Explosive properties;	No explosive properties
Oxidising properties	Not oxidizing properties

10.1 Reactivity

The product can react with moisture and ferrosilicon particles suspended in air may under certain conditions cause dust explosions.

10.2 Chemical stability

The product is chemically stable under normal ambient and anticipated storage and handling conditions.

10.3 Possible hazardous reactions

Ferrosilicon particles suspended in air may under certain conditions cause dust explosions.

Formation of flammable and toxic gases may present hazard in confined, poorly ventilated spaces especially at elevated temperatures. 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 Ferrosilicon comes in contact with acids or bases. 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 oxide gases (NO_x).

10.4 Conditions to avoid

Avoid dust generating activities and avoid generating sparks and other ignition sources in areas with high dust concentrations.

10.5 Incompatible materials

Whilst in storage contact with moisture and water and mixing with oxidant products or strong acid or bases.

10.6 Hazardous decomposition products

See 10.3 and 10.5 above

11 TOXILOGICAL INFORMATION

11.1 Information on toxicological effects

Ferrosilicon is not classified as hazardous under the CLP Regulation (1272/2008/EC) or as dangerous under the Dangerous Substances Directive (67/548/EEC).

a. Acute toxicity

Fine dust may cause irritation and dehydration of mucous membrane. Smoking increases the risks. If the dust stays in the in trachea and/or the oesophagus formation of toxic gases (phosphine and arsine) may occur. The toxic mechanism of phosphine is not clarified; the gas

is irritating exposed membranes, inhibits the central nervous system and may cause pulmonary oedema. Acute poisoning of phosphine is transitory with for instance head ace, sickness, stomach pain, cough and respiratory distress.

b. Skin corrosion/irritation

Skin contact may cause itching of the skin and dehydration.

c. Serious eye damage/irritation

This product may cause irritation symptoms of the eyes like reddening and heavy watering.

d. Respiratory or skin sensitization

No data are available on the sensitising potential of Ferrosilicon. There are no data indicating a need for Ferrosilicon to be classified as sensitising.

e. Chronic effects

There is no chronic effects under the normal use of the product.

f. STOT-single exposure

Based on available data, the classification criteria are not met.

g. STOT-repeated exposure

NOAEC; 1,3 mg/m^3/rat

Based on available data, the classification criteria are not met.

12 ECOLOGICAL INFORMATION

12.1 Toxicity

Based on available data, the environmental hazard classification criteria are not met.

12.2 Persistence and degradability

Ferrosilicon is an inorganic substance and is not biodegradable. The solubility in water is low.

12.3 Bio accumulative potential

No or very low potential for bio concentration and bioaccumulation.

12.4 Mobility in soil

Ferrosilicon is immobile in soil and sediment. Dissolved silica (and silicon) and all the metals within Ferrosilicon are poorly volatile substances and partitions predominantly in the aquatic or soil or sediment compartments.

12.5 Results of PBT and vPvB assessment

Ferrosilicon is an inorganic material and it is not classifiable as a PBT/vPvB substance. Ferrosilicon is not known to contain any >0,1 % or any <0,1 % PBT/vPvB impurities.

13 DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Ferrosilicon is not listed as hazardous waste in the European List of Waste (Commission Decision 2000/53 of 3 May 2000 and further amendments.

Disposal of waste should be undertaken by a licensed waste contractor in accordance with appropriate local, regional and national regulations.

14 TRANSPORTATION INFORMATION

The product is not subject to International regulations on the transport of hazardous goods.

15 REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

This Product Safety Information is prepared in compliance with

- Regulation (EC) No 1907/2006 for Registration, Evaluation, Authorisation of Chemicals (REACH) and its amendments.
- Regulation (EC) No 1272/2008 on the classification, labelling and packaging of substances and mixtures (CLP).
- Commission 453/2012/EC amending Regulation (EC) No 1907/2006 (SDS)
- Commission decision 2000/53 of 3 May 2000 establishing a list of waste pursuant (European List of Wastes)
- Directive 2008/50/EC on ambient air quality and cleaner air in Europe

- **As this product is not classified under any of these regulations as hazardous or dangerous this Safety data sheet is supplied as a voluntary submission**.

15.2 Chemical Safety Assessment

Chemical safety assessment has been performed.

16 OTHER INFORMATION

Additional advice on specific questions can be obtained from Sigma Parts & Abrasives Pty Ltd. E-Mail Office_1@teamsigma.com.au.

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