Material Safety Data Sheet

According to Article 32 (non hazardous substance) of Regulation (EC) No 1907/2006 (REACH)

1 Identification of the substance/mixture and of the company

1.1 Product identifier

Identification on the label / trade name:	**Steelmaking slag**
Classification and Labelling Inventory (ECHA)	**Slags, steelmaking**
REACH registration number:	01-2119487457-23-0002
EC-No:	266-004-1
CAS-No:	65996-71-6
Additional identification:	Schlacken, Stahlerzeugung SMS : Steelmaking slags OP-Schlacke Pfannenschlacke

1.2 Relevant identified uses of the substance or mixture and uses advised against

1.2.1	**Identified uses:**	Classifying and sieving of slag, Fertilizer and soil conditioner.
1.2.2	**Uses advised against:**	none.

1.3 Details of the supplier of the safety data sheet

Supplier (manufacturer):	Salzgitter Flachstahl GmbH
Street:	Eisenhüttenstraße 99, 38239 Salzgitter
Postal code/city:	38223 Salzgitter
Country:	Deutschland
Telephone:	05341 / 21-01
Telefax:	05341 / 21-3921
Informing department:	Hauptabteilung Arbeitssicherheit Telephone: 05341 / 21-2201 Telefax: 05341 / 21-3921
E-mail (competent person):	szfg.reach@salzgitter-ag.de

1.4 Emergency telephone number: 05341 / 21-112 (plant fire department)

2 Hazards identification

2.1 Classification of the substance: This substance does not meet the requirements for classification as dangerous according to the Classification, Labelling and Packaging of substances and mixtures (CLP) regulations (EC 1272/2008).

2.2 Label elements: not applicable

2.3 Other hazards: Dust of granulated slag can act as an irritant and cause mechanical irritation to the eyes and respiration system. The PBT-Criteria are not applicable for inorganic substances (not toxic not bioaccumulative).

3 Composition/information on ingredients

3.1	**Substance related information:**	Slags, steelmaking EC-No.: 266-004-1 CAS-No.: 65996-71-6 Complex Ca-Mg-Fe-Al- silicate composition.
3.2	**Further information:**	Steelmaking slag is a crystalline substance, which is a byproduct of iron production in a steel shop. The structure of the slag depends on the temperature during cooling.

4 First aid measures

4.1 Description of first aid measures

4.1.1	**In case of inhalation:**	Move affected person into fresh air. Seek medical advice if irritation persists.
4.1.2	**In case of skin contact:**	Wash with soap and water.
4.1.3	**In case of eye contact:**	Rinse the eyes with water with the eyelids open. Seek medical advice if irritation persists.
4.1.4	**In case of ingestion:**	Rinse mouth and drink plenty of water.
4.2	**Most important symptoms and effects, both acute and delayed:**	Mechanical friction of particles in the eye can cause irritation.
4.3	**Indication of any immediate medical attention and special treatment needed:**	none

5 Fire-fighting measures

5.1	**Suitable extinguishing media:**	Foam (alcohol-resistant), carbon dioxide-powder, spray (water). Product itself does not burn. Coordinate fire-fighting measures to the fire surroundings.
5.2	**Unsuitable extinguishing media:**	none known
5.3	**Special hazards arising from the substance or mixture:**	none
5.4	**Advice for firefighters:**	not applicable (see 5.1 above)

6 Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

6.1.1	**For non-emergency personnel:**	Keep unprotected people away and stay on the upwind side. Avoid dust dispersion.
6.1.2	**For emergency responder:**	Wear personal protection equipment. Provide adequate ventilation.
6.2	**Environmental precautions:**	not necessary
6.3	**Methods and material for containment and cleaning up:**	Pick up mechanically, avoid disturbing dust. Use dust reducing cleaning method.
6.4	**Reference to other sections:**	Waste diposal: compare section 13 Personel protection: compare section 8

7 Handling and Storage

7.1 Precautions for safe handling

7.1.1 Advices on safe handling: Avoid dust dispersion. Where applicable keep substance wet. In closed areas provide adequate ventilation to prevent dust inhalation.

7.1.2 Technical measures: In case of further handling with foreseeable high dust dispersion, use for example an exhaust ventilation with filter or a closed system.

7.1.3 Advice on general occupational hygiene: Do not eat, drink, smoke or take snuff while working. Wash hands before breaks and after work.

7.2 Conditions for safe storage, including any incompatibilities: none

7.3 Specific end use: Please see section 1.2.
Dust exposure limits: Please refer to section 8.1.

8 Exposure controls / Personal protection

8.1 Control parameters

8.1.1 Occupational exposure limits (OELs):

CAS-No.	name	Limit value - 8 h		Exceedance factor
		ml/m³	mg/m³	
	Dust, respirable		1.25 A	
	Dust, inhalable		10 E	2(II)

Source (German legislation): TRGS 900 "Arbeitsplatzgrenzwerte"

8.1.2 Additional hints on exposure limits: National legislative regulations are to be considered.

8.1.3 DNEL/DMEL and PNEC values: No specific substance related threshold can be derived.

8.2 Exposure controls

8.2.1 Occupational exposure controls: Please refer to section 7.

8.2.2 Respiratory protection: In the case of high dust concentration: EN149 FFP2 filter.

8.2.3 Hand protection: Check the resistance to chemicals of the protective gloves together with the supplier of the gloves. Use only gloves conform to 89/686/EEC.
Wear duration at permanent or occasional contact:
gloves made of fabric coated with nitrile rubber
Breakthrough time (maximal wear duration): > 480 min

8.2.4 Eye protection: At appearance of dust: safety glasses.

8.2.5 Suitable protective clothing: Use usual working clothes.

8.3 Environmental exposure controls: Dust emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation.

9 Physical and chemical properties

9.1 Information on basic physical and chemical properties

9.1.1	**Appearance:**	solid, grey
9.1.2	**Odour:**	odourless
9.1.3	**Odour threshold:**	n.a.
9.1.4	**pH Value:**	approx. 10 - 13 (Eluate according to EN 12457-4)
9.1.5	**Melting point/freezing point:**	approx. 1100 - 1400°C
9.1.6	**Initial boiling point and boiling range:**	> 2000°C
9.1.7	**Flash point:**	Ferrous slags are inert inorganics with all relevant analytes in their most stable oxidation state, further oxidation will not occur spontaneously. Even if oxidizable material is present (graphite, traces of metal), it is not possible to generate a flammable gas phase from slag.
9.1.8	**Evaporation rate:**	n.a.: Melting point above 1000°C.
9.1.9	**Flammability:**	not flammable
9.1.10	**Vapour Pressure:**	n.a.: According to REACH regulation, study does not need to be conducted for solids which melt above 300 °C.
9.1.11	**Density:**	approx. 3 - 4 g/cm³ (20 °C)
9.1.12	**Water solubility:**	< 1 g/l
9.1.13	**Partition coefficient n-octanol/water:**	n.a.: Slags are solid UVCB which consist almost exclusively of inorganic ions in vitreous matrix or crystal lattice. These ions are insoluble in organic solvents including octanol.
9.1.14	**Auto-ignition temperature:**	n.a.: Since ferrous slags are inert inorganics with all relevant analytes in their most stable oxidation state, further oxidation will not occur spontaneously.
9.1.15	**Decomposition temperature:**	n.a., Melting point > 1000°C
9.1.16	**Viscosity:**	n.a. because of physical state.
9.1.17	**Explosive properties:**	Ferrous slags are inert inorganics with all relevant analytes in their most stable oxidation state. Ferrous slags do not contain any chemical group associated with explosive properties.
9.1.18	**Oxidising properties:**	Not oxidising: Ferrous slags are formed at temperatures of > 1000°C are free of any material which could exothermically react with combustible material under standard conditions.
9.2	**Other information:**	none

10 Stability and Reactivity

10.1	**Reactivity:**	Not reactive under normal conditions (compare section 9).
10.2	**Chemical Stability:**	Stable under normal conditions.
10.3	**Possibility of hazardous reaction:**	none (compare section 9)
10.4	**Conditions to avoid:**	none
10.5	**Incompatible materials:**	none
10.6	**Hazardous decomposition products:**	none

11 Toxicological information

11.1	**Acute toxicity:**	**oral: tested substance SMS** OECD Guideline 423, Wistar rat LD_{50} > 2000 mg/kg **dermal: tested substance SMS** OECD Guideline 402, Wistar rat LD_{50} > 4000 mg/kg **inhalative: tested substance GGBS** OECD Guideline 403, Wistar rat LC_{50} (powder) (4h) > 5235 mg/m³ OECD-Guidline 412 (Repeated Dose Inhalation Toxicity: 28 Days), Wistar rat, NOAEL > 24.9 µg/L (aerosol)
11.2	**Skin corrosion/irritation:**	**skin: tested substance SMS** acute irritant effect, OECD 404, New Zealand White rabbit result: not irritant
11.3	**Serious eye damage/Irritation:**	**eye: tested substance SMS** acute irritant effect, OECD 405, New Zealand White rabbit result: not irritant
11.4	**Respiratory or skin sensitisation:**	**skin: tested substance SMS** OECD 406, Dunkin-Hartley guinea pig result: not sensitive
11.5	**Germ cell mutagenicity:**	**Mutagenicity: tested substance SMS**, bacterial reverse mutation assay, OECD 471, Salmonella typhimurium result: no mutagenic effect **Mutagenicity: tested substance SMS,** mammalian erythrocyte micronucleus test, OECD 474, mouse result: no mutagenic effect
11.6	**Carcinogenicity:**	There are no specific and reliable animal studies on carcinogenicity. But one assessed study gives some hints towards a not existing carcinogenic potential of ferrous slags.
11.7	**Reproductive toxicity:**	No evidence from acute tests or other data for any reproductive effects. No data available from studies dedicated especially to reproduction toxicitiy. As slags are similar to natural rocks, no reproductive effects have to be expected.
11.8	**STOT -single exposure:**	The results from acute toxicity test give no hint towards a STOT potential of slags.
11.9	**STOT-repeated exposure:**	The results from acute toxicity test give no hint towards a STOT potential of slags.
11.10	**Aspiration Hazard:**	Slags are solids and fulfil not the requirements for aspiration hazard classification according to CLP-Regulation annex 1.
11.11	**Experiences made in practice:**	none

12 Ecological information

12.1 Toxicity:

Short-term fish toxicity, tested substance SMS
OECD 203, Leuciscus idus
LC_0 (96 h) > 100 g/l
LC_{50} (96 h) > 100 g/l

Short-term toxicity aquatic invertebrates, tested substance SMS
OECD 202, Daphnia magna
EC_0 (48 h) > 100 g/l
EC_{50} (48 h) > 100 g/l

Algae toxicity, tested substance SMS
OECD 201, Desmodesmus subspicatus
IC_{10} (72 h) 24 g/l
IC_{50} (72 h) 90 g/l

12.2 Persistence and degradability: Methods for determination of persistence and degradability are not applicable for inorganic substances.

12.3 Bioaccumulative potential: No evidence for bioaccumulation potential (compare section 9).

12.4 Mobility in soil: Ferrous slags are inorganic UVCB similar to natural rock. Biodegradation is of no relevance.

12.5 Results of PBT assessment: Not applicable for inorganic substances (not toxic and not bioaccumulative).

12.6 Other adverse effects: No negative ecological effects are expected according to the present state of knowledge.

13 Disposal considerations

13.1 Waste treatment methods: Ferrous slags can be recovered after spillage. In the case there is no further use, the slag can be disposed following local legislation.

13.2 List of proposed waste codes/waste designations in accordance with AVV (or EWC): Waste classification due to trade and processing. Disposal is possible as follows: EWC-Code: 10 02 01: waste from the processing of slags.

14 Transport information

14.1	**Land transport (ADR/RID/CDG Road/ CDG Rail):**	No hazardous material as defined by transport regulations.
14.2	**Inland waterway craft (ADN/ADNR):**	No hazardous material as defined by transport regulations.
14.3	**Marine transport (IMO):**	No hazardous material as defined by transport regulations.

15 Regulatory information

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

15.1.1	**EU law:**	No specific legislation relevant for this substance.
15.1.2	**National law:**	National legislation is to be considered.
15.2	**Chemical safety assessment:**	A chemical safety assessment has been carried out.

16 Other information

16.1	**Changes:**	First release as English version. Revision of the German version from October 2015: Addition of further identified uses and CSR details.
16.2	**Literature:**	CSR: Chemical Safety Report Ferrous Slags
16.3	**Method according to Article 9 of (EC) 1272/2008:**	No classification and labelling requirements for hazardous substances according to annex 1 of (EC) 1272/2008 are required
16.4	**Further information:**	Abbreviations: n.a. = Not applicable CSR = Chemical Safety Report - Ferrous Slags GGBS = Ground granulated blast furnace slag SMS = Steelmaking slags STOT = Specific Target Organ Toxicity ECxx = Effect Concentration ICxx = Inhibitor Concentration LDxx = Lethal dose

Statement:

The information is based on present level of our knowledge. It does not, however, give assurances of product properties and establishes no contract legal rights.
The product is to be used exclusively for the applications named in the technical leaflet or in the processing instructions. The receiver of our product is singularly responsible for adhering to existing laws and regulations.