# SAFTEY DATA SHEET: SINTER ORE; MANGANESE ORES, REDUCED

Provided in accordance with Article 18(2) of Regulation (EC) No 1272/2008

## SECTION 1: IDENTIFICATION

**1.1 Product identifier:**

Substance name: Sinter Ore, Manganese sinter
Other names: Manganese Ores, reduced.
EINECS number: 273-748-0
CAS number: 69012-49-3
REACH Registration number: **[If applicable]**
Unique formula identifier (UFI) Not applicable for this substance

**1.2 Relevant Identified uses of the substance/mixtures and uses advised against:**

SU 14: Manufacture of basic metals and including alloys–PC7: Base metals and alloys.
**Add or delete the above to suit your company's needs.**
No known uses advised against

**1.3 Details of the supplier of the Safety Data Sheet**

**1.3.1 Name of supplier or manufacturer: (including address, phone numbers etc: Complete as required.**

**1.3.2 Person responsible in EU member state / Only Representative information: Complete as required.**

**1.4 Emergency Telephone: Complete as required (For EU include 112) CIAV # of receiving country.**

## SECTION 2: HAZARD(S) IDENTIFICATION

**2.1 Classification of the substance or mixture:**

Classification according to Regulation (EC) No. 1272/2008 [EU CLP] and the UN GHS: Eye Irrit. 2: Causes serious eye damage

**2.2 Labelling elements:**

| | |
|---|---|
| **Classification:** | Eye Irrit. 2 |
| **Pictogram** |  |
| **Signal word** | Warning |
| **Hazard statement** | H319: Causes serious eye irritation. |


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| | |
|---|---|
| **Precautionary statement Prevention** | P280: Wear protective gloves/protective clothing/eye protection/face protection |
| **Precautionary statement Response** | P264: Wash ... thoroughly after handling.<br>P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.<br>P337+P313: If eye irritation persists: Get medical advice/attention. |

**2.3 Other hazards:**

None of the constituent substances are considered to meet the criteria to be included in the following hazard classes, at this time based on available information:

- ED HH (Endocrine disruption for human health
- ENV- (Endocrine disruption for the environment)
- PBT (persistent, bioaccumulative, toxic),
- vPvB (very persistent, very bioaccumulative)fs
- PMT (persistent, mobile, toxic)
- vPvM (very persistent, very mobile)

None of the constituent substances were included in the list established in accordance with Article 59(1) for having endocrine disrupting properties, nor are they identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/210056 or Commission Regulation (EU) 2018/60557.
May form explosible dust-air mixture if dispersed.
See section 8 for personal protection. Include other hazards if known.
**During handling:** If a significant amount of dust is present, precautions should be taken to limit this exposure through normal control procedures such as local exhaust ventilation (LEV) or respiratory protective equipment (RPE).
**During use:** Fumes may be produced during the melting operations.
Oxides of corresponding metals may be present in these fumes in oxidized forms, some of which maybe hazardous. Precautions should be taken to limit this exposure through normal control procedures such as local exhaust ventilation (LEV) or respiratory protective equipment (RPE).

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

**3.1 Substance(s) [Amend as appropriate]**

Sinter ore is an inorganic UVCB substance. Therefore, the concentration of its components are variable based on its source material and impurities cannot be meaningfully identified

| Chemical name | EC number | CAS number | Concentration % w/w |
|---|---|---|---|
| Trimanganese tetraoxide | 215-266-5 | 1317-35-7 | Complete as per your substance |
| Aluminium oxide | 215-691-6 | 1344-28-1 | Complete as per your substance |
| Silicon dioxide | 231-545-4 | 7631-86-9 | Complete as per your substance |
| Iron oxide | 215-570-8 | 1309-37-1 | Complete as per your substance |


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| | | | |
|---|---|---|---|
| Calcium oxide | 215-138-9 | 1305-78-8 | Complete as per your substance |

**3.2 Mixtures:** The substance is not considered a mixture according to the EU CLP.

## SECTION 4: FIRST AID MEASURES

**4.1 Description of first aid measures: FOR REACH REGISTRANTS INFORMATION IN THIS SECTION MUST ALIGN WITH THAT OF THE GUIDANCE OF SAFE USE IN YOUR DOSSIER (IUCLID SECTION 11)**

- **4.1.1 General information:** In the event of accidental exposure leading to unwellness, seek medical advice immediately**,**
- **4.1.2 Following inhalation:** Do not inhale. Wear an appropriate mask. Include other relevant information based on your company's procedures.
- **4.1.3 Following skin contact:** Include information based on your company's procedures.
- **4.1.4 Following eye contact:** The substance is an eye irritant; goggles are a must. Include specific goggle type- information based on your company's procedures.
- **4.1.5 Following ingestion:** Include other relevant information based on your company's procedures.
- **4.1.6 Self-protection of the first aider:** Include information based on your company's procedures.

**4.2 Most important symptoms and effects, both acute and delayed:** Dust particles may cause irritation to the eyes and lungs leading to breathing difficulties and eye itchiness and coughing. Breathing difficulties may occur immediately in the event of excessive dustiness due to lung overload. Include any useful/relevant information.

**4.3 Indication of any immediate medical attention and special treatment needed:** Include information based on your company's procedures.

## SECTION 5: FIRE-FIGHTING MEASURES

**5.1 Extinguishing media:** Sinter Ore is not combustible Include information on appropriate extinguishing media and detail any unsuitable extinguishing media based on your company's procedures.

**5.2 Special hazards arising from the substance or mixture:** Not combustible under normal conditions of use. Irritating or toxic gases may be generated by thermal decomposition of the substance Metallic dust or powder may form an explosive mixture with air. Include any other relevant information.

**5.3 Advice for fire fighters:** Not combustible under normal conditions of use but fine powders can combust. Wear suitable personal protective equipment (including self-contained breathing apparatus (SCBA) and full protective clothing) when extinguishing fires Include information based on your company's procedures.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

**6.1 Personal precautions, protective equipment and emergency procedures:**
Eye protection is a must. Respirators should be worn where dust is a potential hazard. Gloves should be worn when handling this material because of the risk of contact with sharp particles. When dealing with powders avoid generating dust and remove all sources of ignition.

**6.1.1 For non-emergency personnel**

a) Use personal protective equipment, such as dust masks are recommended to minimise inhalation. Goggles are a must as the substance is an eye irritant. See section 8 for more details.

b) Must have dust control and sufficient ventilation. Avoid all ignition sources.

c) In the event of accidental release, evacuated and consult trained personnel: Amend as per your company's procedures

**6.1.2 For emergency responders:** Remove persons to safety. Isolate hazard area and deny entry. Ventilate closed spaces before entering. Use personal protective equipment- Specify which to use/which not to us. Amend as per your company's procedures see section 8

**6.2 Environmental precautions:** The substance is not considered an environmental hazard based on the available studies. However, it is advisable to keep away from drains/waterways as large quantities could clog drains. Recycling is possible and encouraged. Include other information based on your company's procedures.

**6.3 Methods and material for containment and cleaning up:**

In the event of a spill, collect contaminated material and put in appropriate containers for disposal. Dispose of as special waste in compliance with local and national regulations

**6.3.1 For containment**: Collect in closed and suitable containers for disposal or reuse Include other information based on your company's procedures.

**6.3.2 For cleaning up:** Spills should be contained and recovered mechanically if possible. Collect dust or particulates using a vacuum cleaner with a HEPA filter. Place in a designated, labelled waste container. Dispose of in accordance with local regulations. Contaminated objects and areas thoroughly observing environmental regulations -include cleaning and vacuuming techniques. Amend as per your company's procedures – include cleaning and vacuuming techniques.

**6.3.3 Other information:** Avoid excessive dust generation. Material may be reclaimed for re-use. Include other information based on your company's procedures such as cleaning up techniques/materials never to be used.

**6.4 Reference to other sections:** Personal protective equipment and appropriate disposal: see section 8 and 13.

## SECTION 7: HANDLING AND STORAGE

**7.1 Precautions for safe handling:**

**7.1.1 Recommendations:**

a) Use only in well-ventilated areas. Avoid generating dust. Wear personal protective clothing (see Section 8). Include other information based on your company's procedures.

b) Avoid handling with incompatible substances/mixtures (List incompatible substances if known)

c) Avoid dust generating operations or could be carried out in properly ventilated area and wear appropriate PPE

d) Capture dust, if possible, if generated, vacuum and compress into pellets to minimize environmental exposure and recycle if possible- Amend as per company procedure

**7.1.2 Advice on general occupational hygiene:**

a) Do not eat, drink or smoke in work area.

b) Wash hands before and after use and keep them dry.

c) Remove contaminated clothing and PPE before entering eating areas.

Include other information based on your company's procedures.

**7.2 Conditions for safe storage, including any incompatibilities:**

**7.2.1 Technical measures and storage conditions:**

a) Risk associated with physical and chemical properties


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i) Explosive atmosphere: The substance is not explosive; however, it must be stored away from potential explosive materials.
ii) Corrosive conditions: The substance does not corrode metal; hence, no adverse corrosive effects are expected.
iii) Flammability hazard: The substance is not flammable, however, keep away from flammable materials
iv) Incompatible substances or mixtures: None known (List if known) Include information based on company's procedure.
v) Evaporative conditions: The substance does not evaporate. Avoid storage around organic evaporative materials/substances.
vi) Potential ignition sources: Keep away from ignition sources

b) How to control effects from environmental conditions: (i) Weather conditions, (ii) ambient pressure, (iii) varying temperatures, (iv) sunlight (v) humidity and (vi) vibration do not affect the integrity of the substance. However, storage environments should not be humid-Amend as per your company's procedure.

c) How to maintain the integrity of the substance: (i) Stabilisers and (ii)antioxidants are not required. The substance is very stable under normal conditions of use. It does not decompose or disintegrate.

d) Other advice:

i) Ventilation requirements: Ensure adequate ventilation and store at room temperature. At the same time, there are no specific issues for storage in an open warehouse, in a closed warehouse, in frost or heat. Concentrations of dust should be controlled. Amend as per your company's procedures
ii) Specific designs for storage: Keep/store only in original containers/packaging. Can be stored in bulk in stacks. Keep substance dry, especially if used in high temperature applications in contact with molten metal. –Include other information based on company's procedure
iii) Quantity limits under storage conditions: There is no limitation as the substance does not pose any physical and chemical hazard.
iv) Packaging compatibility: Store in original/similar packaging or can be stored in bulk in stacks. Protect container/packaging against damage. -Amend as per company's procedure.

**7.3 Specific end use(s):** The substance is used as raw material for the manufacture of steel and other metallic products/articles that are generally recycled at end of life. Observe instructions for use and see exposure scenarios-Annex 1**.**

## SECTION 8: EXPOSURE CONTROLS/ PERSONAL PROTECTION

### 8.1 Control parameters:

**8.1.1 Occupational exposure limits:** The EU SCOEL OEL values for Manganese and its inorganic compounds of 0.2mg/m3 – inhalable and 0.05mg/m3 respirable

**8.1.1.1 National occupational exposure limits – Europe:** Europe: (all forms of Manganese):
8 hours TWA – 0.2mg/m3 (inhalable fraction); 0.05 mg/m2 (respirable fraction)
STEL (15 mins) – Not assigned
Biological limit value – Not assigned Include other relevant countries' specific workplace limits.

**8.1.1.2 Union limits:** 0.2mg/m3 inhalable and 0.05mg/m3 respirable (manganese)

**8.1.1.3 Any other national limit values:** Include if available.

**8.1.1.4 Union biological limit values:** No union biological limits values exist for inorganic manganese.

**8.1.1.5 Any other national biological values:** Include if available.


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**8.1.2 Monitoring procedures:** In accordance with Directives 80/1107/EEC and 88/642/EEC. No specific recommendations. Dust monitoring is recommended, provide methodology as per national laws/company procedures.

**8.1.3 Formation of air contaminants:** The substance does not produce air contaminants under normal conditions of use. Amend as per your company's use

**8.1.4 Derived No Effect Levels (DNELs) / Predicted No Effect Concentrations (PNECs)**

**Hazard conclusions for workers: Derived No Effect Levels (DNELs)**

| Route | Type of effect | Hazard conclusion | Most sensitive endpoint |
|---|---|---|---|
| Inhalation | Systemic effects - Long-term | no hazard identified | |
| Inhalation | Systemic effects - Acute | no hazard identified | |
| Inhalation | Local effects - Long-term | no hazard identified | |
| Inhalation | Local effects - Acute | no hazard identified | |
| Dermal | Systemic effects - Long-term | no hazard identified | |
| Dermal | Systemic effects - Acute | no hazard identified | |
| Dermal | Local effects - Long-term | no hazard identified | |
| Dermal | Local effects - Acute | no hazard identified | |
| Eyes | Local effects | low hazard (no threshold derived) | |

**Hazard assessment conclusion for the environmental: Predicted No Effect Concentrations (PNECs)**

| Compartment | Hazard conclusion | Remarks/Justification |
|---|---|---|
| Freshwater | PNEC aqua (freshwater): 0,064mg/l Intermittent releases: 0,32mg/l | Assessment factor: 50 Extrapolation method: assessment factor PNEC aqua (freshwater) |


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| | | |
|---|---|---|
| | | Two chronic NOEC values in algae and Daphnia (read-across from FeMn slag). NOEC = 3.2 mg/l<br><br>**PNEC intermittent release hazard assessment conclusion:** PNEC aqua (intermittent releases)<br><br>**PNEC intermittent release assessment factor:** 100.0<br><br>**PNEC intermittent release extrapolation method:** assessment factor<br><br>**PNEC intermittent release justification:** Lowest L(E)C50 value from fish, daphnia and algal studies (includes read-across from FeMn slag). EyC50 = 32 mg/l |
| Marine water | PNEC aqua (marine water): 0,0064mg/l Intermittent releases: | Assessment factor: 500<br>Extrapolation method: assessment factor<br>PNEC aqua (marine water)<br>Two chronic NOEC values in algae and Daphnia (read-across from FeMn slag), with further 10 x factor for freshwater to marine. NOEC = 3.2 mg/l |
| Sediments (freshwater) | PNEC sediment (freshwater): 63,8mg/kg sediment dw | Assessment factor: 50<br>Extrapolation method: assessment factor<br>PNEC sediment (freshwater)<br>Equilibrium partitioning based on freshwater aquatic PNEC and Kd value of 994 ml/g |
| Sediments (marine water) | PNEC sediment (marine water): 6,38mg/kg sediment dw | Assessment factor: 500<br>Extrapolation method: assessment factor<br>PNEC sediment (marine water)<br>Equilibrium partitioning based on marine aquatic PNEC and Kd value of 994 ml/g |


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| | | |
|---|---|---|
| Sewage treatment plant | PNEC STP: 100mg/l | Assessment factor: 10<br>Extrapolation method: assessment factor<br>PNEC STP<br>Activated sludge Respiration/inhibition test.<br>NOEC = 1000mg/l |
| Soil | PNEC soil: 63,6mg/kg soil dw | Assessment factor: 50<br>Extrapolation method: assessment factor<br>PNEC soil<br>Equilibrium partitioning based on aquatic PNEC and Kd value of 994 ml/g |
| Air | no hazard identified: | |
| Secondary poisoning | no potential for bioaccumulation: | Bioaccumulation via the food change is not expected due to the nature of the substance. Furthermore assigning a PNEC oral value is very difficult due to the homeostatic mechanism and essentiality of Mn. |

**8.1.5 Control banding:** A control banding approach is not used to decrease risk management measures during the use of this substance for the uses specified in section 1.2.

**8.2 Exposure controls:** See Exposure scenarios in Annex 1.

**8.2.1 Appropriate engineering controls:** Dust is trapped; water is collected for treatment and recycled. Local exhaust ventilation (LEV) is encouraged. Complete as per your company procedures

**8.2.2 Individual protective measures:** Overalls, goggles and masks are mandatory during use.

**8.2.2.1 Other non-personal protection:** Good industrial hygiene is a must. Keep and use in well ventilated areas. See section 5 for more information Amend as per your company's procedures.

**8.2.2.2 CEN stand requirement for protective equipment:** (Please state the quality/standard/thickness of the personal protective equipment used by your organisation)

a) Eye/face protection: Safety eyewear complying with an approved standard should be used at all times. Complete as per your company procedures

b) Skin protection: Overalls, gloves and boots are not mandatory; however, they are encouraged for good industrial hygiene. Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this substance. (Please specify type of

overall, gloves, boots including the thickness of material and amend as per your company procedures)

c) Respiratory protection: Use a properly fitted, particulate filter respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the substance and the safe working limits of the selected respirator. (Amend as per your company procedures)

d) Thermal hazards: Not applicable

**8.2.3 Environmental exposure controls:** The substance is not harmful to the environment. However, avoid dust generation, and do not wash spillages into drainage system as material may block drains. See Annex1 Exposure scenarios (Please include environmental controls employed by your company)

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES [the information below is based on available literature and studies]

| **9.1 General information** | |
|---|---|
| State | Solid |
| Colour | Black powder |
| Odour | Odourless |
| Melting point (Mpt) / Freezing point | >723 K (>450°C), Regulation (EC) No. 440/2008, Annex, A1 |
| Boiling point/boiling range | Melting pt >300°C, hence study not applicable |
| Flammability of solids<br><br>Lower and upper explosion limits | Not flammable, Regulation (EC) No. 440/2008, Method A10<br><br>Not applicable to solids |
| Flash Point | Not required for inorganic substances |
| Auto-ignition temperature | Not applicable to solids |
| Decomposition temperature | Not applicable to inorganic solids |
| pH | Include if known (where the substance is a solid, the pH of an aqueous solution at a given concentration shall be indicated) |
| Kinematic viscosity | Not applicable to solids |
| Water Solubility | Insoluble: ≤ 1.0E-05 g/l of manganese in solution at 20±0.5°C., Regulation (EC) No. 440/2008, Annex A6 |
| Partition Coefficient/n_octanol/water | Not applicable for inorganic substances |
| Vapour pressure | Study not conducted as Mpt >300°C |
| Density/Relative density | 4.22°C, Regulation (EC) No. 440/2008, Annex, A3 |
| Particle characteristics | Include PSD study results |
| **9.2 Other information** | None |
| **9.2.1 Physical hazard classes** | |
| Explosive properties | Predicted to be non-explosive |
| Flammable gases | Not applicable as the substance is a solid |
| Aerosols | Not applicable under normal conditions of use |
| Oxidizing gases | Not applicable as the substance is a solid |
| Gases under pressure | Not applicable as the substance is a solid |
| Flammability of liquids/Solids | Not flammable |
| Self-reactive substances and mixtures | Not self-reactive |
| Pyrophoric liquids | Not applicable as the substance is a solid |
| Pyrophoric solids | Does not have pyrophoric properties |
| Self-heating substances and mixtures | Spontaneous ignition does not occur |


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| | |
|---|---|
| Substances and mixtures which emit flammable gases in contact with water | Predicted not to emit flammable gases upon contact with water |
| Oxidising Liquids/solids | Non oxidising, Method A17 |
| Organic peroxides | Not applicable to inorganic substances |
| Corrosive to metals | The substance is not corrosive to metals |
| Desensitised explosives | Not applicable |
| Bulk density | Data lacking |
| **9.2 Other information** | No additional information relevant to the safe use of the substance |

## SECTION 10: STABILITY AND REACTIVITY [Amend information below to conform to your company information]

**10.1 Reactivity:** The substance does not contain reactive functionalities.

10.1.1 **Reactivity hazard of substance:** Not applicable for inorganic substances

10.1.2 **Reactivity hazard of mixture:** Not applicable as the substance is not a mixture.

**10.2 Chemical stability:** The substance is chemically stable under recommended conditions of storage, use and temperature.

**10.3 Possibility of hazardous reaction:** No hazardous reaction when handled and stored according to provisions.

**10.4 Conditions to avoid:** Include your company's information.

**10.5 Materials to avoid:** Reactive or incompatible with the following materials: oxidizing materials, acids, and moisture. Include other information based on your company's procedures

**10.6 Hazardous decomposition products:** Does not decompose when used for intended uses. Include your company's information.

## SECTION 11: TOXICOLOGICAL INFORMATION [The information in this section is from experimental data, other available literature and data from analogue substances]

**11.1 Information on toxicological effects:**

**a) Acute toxicity: Based on available data, the classification criteria are not met.**
Acute oral toxicity: No adverse effect observed (LD50 >2000 mg/kg bw)
Acute dermal toxicity: No study available. No concerns predicted.
Acute inhalation toxicity: No adverse effects observed (LD50 >5000 mg/m3)

**b) Skin corrosion/irritation: Based on available data, the classification criteria are not met.**
Not irritating in rabbits (one study according to OECD guideline 404 and EU method B.4, GLP), applied to the intact skin for 24-, 48- and 72-hours post dosing. Primary dermal irritation index for all animals = 0. No effects were noted during the study.

**c) Serious eye damage/irritation: Based on available data, the classification criteria are met – an eye irritant.**
Irritating to the rabbit (one study according to OECD guideline 405 and EU method B. 5, GLP); undiluted test material applied to the right eye of three animals. Max group mean score of 27. Not fully reversible within 48hrs.

**d) Respiratory or skin sensitization: Based on available data, the classification criteria are not met.**
Not a skin sensitizer in the mouse (One study to OECD guideline 429 and EU method B.42, Local lymph node assay, GLP). There is not information available for respiratory sensitization. However, it is predicted not to be a respiratory sensitizer.


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**e) Germ cell mutagenicity: Based on available data, the classification criteria are not met.**

Data lacking for the substance as such. However, data on MnC12- a very soluble salt considered as a worse case evaluation concludes, no effects.

- Ames test with S. typhimurium TA 98, TA 100, TA 1535, TA 1537, E coli WP2 uvrA (Met. act.: with and without) (OECD TG 471, EU method B13 and GLP); No toxicity was observed up a concentration of 5000 ug/plate.
- Mammalian cell gene mutation assay with mouse lymphoma L5178Y cells (met. act.: with and without) (OECD 476 and GLP); Negative for mouse lymphoma Cytoxicity: Yes, induced toxicity was not at the highest dose.
- In-vitro mammalian chromosome aberration test with human lymphocytes (Met. act.: with and without) (OECD guideline 473 and GLP). Negative for lymphocytes. Cytotoxicity: Yes

**f) Carcinogenicity: Based on available data, the classification criteria are not met.**

There are no specific studies on carcinogenicity for this substance. Data lacking. However, a literature review on carcinogenicity for Mn and its inorganic compounds (Assem et al, 2011) concluded- no concerns, carcinogenicity in humans is not expected. This is supported by the EU SCOEL review outcome.

**g) Reproductive toxicity: Based on available data, the classification criteria are not met.**

Two generation reprotoxicity study on the male/female rats using MnCL2 via inhalation (OECD guideline 416, GLP): concluded: No treatment related effects at 20 mg/m³ air in F0, F1 and F2 generations (Jardine L, 2013 and McGough & Jardine, 2017) - Not toxic to reproduction

NOEL: 1000mg/kg/bw - Prenatal developmental study (PND) in rat, to GLP on analogue substance FeMn slag

NOAEL: less than 100mg/kg/day - Prenatal developmental study (PND) in the rabbit, to GLP on analogue substance FeMn slag - effects seen hence the classification in section 1.2.

**h) Specific target organ toxicity (single exposure): Based on available data the classification criteria are not met.**

**i) Specific target organ toxicity (repeated exposure): Based on available data, the classification criteria are not met.**

Based on available data on analogue substance SiMn slag (subchronic 90 days study), the classification criteria are not met. However, some epidemiological studies from some manganese-based smelters have highlighted the possibility of adverse health effects via repeated, long-term inhalation of dust in excess of exposure limits.

**j) Aspiration hazard: Based on available data, the classification criteria are not met**

**11.2 Information on other hazards**

**11.2.1 Endocrine disrupting properties:** The substance is not considered an endocrine disruptor based on available literature – Data lacking.

## SECTION 12: ECOLOGICAL INFORMATION

**12.1 Toxicity:** No environmental concerns

**a) Acute (short-term) toxicity: Based on available data, the classification criteria are not met**

**Fish:** OECD guideline 203, EU method C1 and GLP. LD50 (96h) for freshwater fish: >100 mg/L; NOEC (96h) 100mg/L via Read across

**b) Crustacean:** OECD guideline 202, EU method C2 and GLP. EC50/LC50 (48h) for freshwater invertebrates: >100 mg/L; NOEC (48h): 100mg/L


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**c) Algae/aquatic plants:** OECD 201, EU method C3 and GLP. EC50/LC50 (72h): >90 mg/L; NOEC (72h): 10 mg/L via Read across

**d) ASRI (Activated sludge respiratory inhibition):** OECD guideline 209, EU method C11 and GLP. EC50: >1000 mg/L; NOEC (>3h):1000 mg/L via Read across

**e) Chronic (long-term) toxicity:**

**Crustacean- Daphnia reproductive test:** OECD guideline 211 and GLP. EL50 (8days): 6.5-20 mg/L; LOEC (8d): 10mg/L via read across

**Toxicity to soil micro and microorganisms:** Based on available data, the classification criteria are not met

**Toxicity to other environmentally relevant organisms (birds, bees and plants**): Based on available data, the classification criteria are not met

**12.2 Persistence and degradability:** Not persistent based on knowledge of the constituent substances

**12.3 Bioaccumulative potential:** Not bioaccumulative based on knowledge of the constituent substances

**12.4 Mobility in soil:** Insignificant solubility in water, immobile

**12.5 Results of PBT, vPvB, PMT, vPvM assessment:** Not PBT, vPvB , PMT and vPvM based on knowledge of the constituent substances

**12.6 Endocrine disrupting properties:** No endocrine disrupting properties based on knowledge of the constituent substances

**12.7 Other adverse effects:** The substance is an inorganic metallic UVCB with no ozone layer depletion potential. Include your company's information

## SECTION 13: DISPOSAL CONSIDERATIONS Include your company's information.

**13.1 Waste treatment methods: Recycle** when possible. Disposal of this substance, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. The substance is not hazardous, and waste may be disposed of by landfill.

**13.1.1 Physical/chemical properties that affect waste treatment options:** Generally, solid waste should be separated and reused. Recycling is encouraged.

**13.1.2 Sewage disposal**: Sewage disposal is discouraged. Include other information based on your company's procedures.

**13.1.3 Precautions for recommended waste treatment options:** Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers

**13.1.4 Other relevant provisions related to waste:** Handle contaminated packages in the same way as the substance itself. Include other information based on your company's procedures as well as national laws.

## SECTION 14: TRANSPORT INFORMATION

Transport may take place according to national regulations or land transport (ADR/RID), sea transport (IMDG) or Air transport (ICAO-TI/IATA-DGR).

**14.1 UN Number:** The material is not classified as hazardous for transport (ADR, RID, UN RTDG, IMO, IATA/ICAO).

**14.2 UN proper shipping name:** The material is not classified as hazardous for transport (ADR, RID, UN RTDG, IMO, IATA/ICAO**).**

**14.3 Transport hazard class:** The material is not classified as hazardous for transport (ADR, RID, UN RTDG, IMO, IATA/ICAO).

**14.4 Packaging group:** The material is not classified as hazardous for transport (ADR, RID, UN RTDG, IMO, IATA/ICAO).

**14.5 Environmental hazard**: The material is not classified as hazardous for transport (ADR, RID, UN RTDG, IMO, IATA/ICAO).


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**14.6 Special precautions for users:** The material is not classified as hazardous for transport (ADR, RID, UN RTDG, IMO, IATA/ICAO).

**14.7 Transport in bulk according to Annex II of MARPOL73/78 and ISBC code:** The material is not classified as hazardous for transport (ADR, RID, UN RTDG, IMO, IATA/ICAO).

## SECTION 15: REGULATORY INFORMATION [Delete as appropriate and include regulatory information specific to your country...]

| | |
|---|---|
| **15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture** | Labelling is required – see section 2.<br><br>UN GHS - UN Globally Harmonized System of Classification and Labelling of Chemicals (GHS): According to Chapter 1.5.2 of the UN Globally Harmonized System of Classification and Labelling of Chemicals (GHS) safety data sheets (SDS) are only required for substances and mixtures that meet the harmonized criteria for physical, health or environmental hazards. This substance does not meet this criterion.<br><br>EU CLP – Classification Labelling and Packaging Regulation: According to 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/special preparations that meet the harmonised criteria for physical, health or environmental hazards. This substance meets this criterion.<br><br>EU REACH – Registration, Evaluation and Authorisation of Chemicals:<br>REACH article 31(7) requires relevant exposure scenarios from the Chemical Safety Report (CSR) to be annexed to the SDS. These exposure scenarios are only required for hazard-classified substances or mixtures. This substance is hazard-classified according to CLP, therefore exposure scenarios are required. |
| **15.2 Chemical Safety Assessment** | A chemical safety assessment has been carried out because the substance is classified as hazardous – see section 2. Exposure scenarios are mandatory and available. |

| **SECTION 16: OTHER INFORMATION** | |
|---|---|
| a) Updated sections | Main changes:<br>2 Hazard(s) identification, 7.3 Specific end uses, 13.1 Waste treatment methods, 14 Transport, 15 Regulatory information,16 Other information<br>Editorial changes throughout the document. |
| b) A key/legend to abbreviations and acronyms used in the SDS should be added in this section | ADN – European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterway<br>ADR – European Agreement concerning the International Carriage of Dangerous Goods by Road<br>BCF – Bioconcentration Factor<br>CAS – Chemical Abstract Service<br>CL – Concentration limits<br>CLP – Classification, Labelling and Packaging Regulation (EC) No. 1272/2008<br>DMEL – Derived Minimal Effect Level<br>DNEL – Derived No Effect Level<br>EC – European Commission<br>ED Endocrine Disruption |


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| | |
|---|---|
| | EL50 - Half maximal effect loading rate (Loading rate halfway between the maximum and baseline of an effect)<br>EC50 – Half maximal effect concentration (Concentration halfway between the maximum and baseline of an effect)<br>ErC50 – Half maximal effect concentration growth rate (Concentration halfway between the maximum and baseline of an effect)<br>ECHA – European Chemicals Agency<br>GHS – Globally Harmonized System of Classification and Labelling of Chemicals<br>IATA – International Air Transport Association<br>IBC – Intermediate Bulk Carrier<br>IMDG – International Maritime Dangerous Good<br>LC50 – Median lethal concentration (Concentration which causes 50 % mortality of the test population)<br>LD50 – Median lethal dose (Dose which causes 50 % mortality of the test population)<br>LL50 – Median Lethal Load (Dose which causes 50 % mortality of the test population)<br>MARPOL – International Convention for the Prevention of Pollution from Ships<br>NOAEL – No Observed Adverse Effect Level<br>NOEL – No Observed Effect Level<br>OEL – Occupational Exposure Limit<br>PNEC – Predicted No Effect Concentration<br>PBT – Persistent, Bioaccumulative, Toxic<br>REACH – Registration, Evaluation, Authorisation, and restriction of Chemicals - Regulation (EC) No. 1907/2006<br>STOT– Specific Target Organ Toxicity<br>TWA – Time Weighted Average<br>vPvB – Very Persistent and Very Bioaccumulative |
| c) Literature references and sources of data | IFA: GESTIS - International limit values for chemical agents<br>https://chem.echa.europa.eu/100.067.024/dossier-list/reach/dossiers/active?searchText=273-748-0 |
| d) Classification derivation | The classification of the substance is based on the available data on the substance itself as well as readacross data. |
| e) Precautionary notes | During melting, pickling and welding stages (strongly oxidizing conditions), oxides of several metals may be present in the effluent fumes. Suitable precautions should be taken to minimize exposure of personnel to such fumes.<br>Any moisture in the material should be regarded as an explosion hazard if it is to be used in high temperature environment. |
| f) Disclaimer | This substance meets the EU Regulation No. 1907/2006 requirements for a mandatory safety data sheet. This information sheet acts as a template for MARA members.<br><br>To the best of our knowledge, the information contained herein is accurate and reliable as of the date of publication, however we do not assume any liability whatsoever for the accuracy and completeness of such information. |
| For more information contact | reach@manganese.org |


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# ANNEX 1: EXPOSURE SCENERIOS (Include ES)


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