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**PRODUCT SAFETY INFORMATION: MANGANESE METAL MASSIVES**
provided in accordance with Article 18(2) of Regulation (EC) No 1272/2008

## SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

### 1.1 Product Identifier:

Product name: Manganese (Massives)
EC No.: 231-105-1
CAS No.: 7439-96-5
Other names: Manganese metal massives
REACH Registration number: **[If applicable]**
Unique formula identifier (UFI): Not applicable for this substance

### 1.2 Relevant identified uses of the Substance/Mixture and uses advised against:

**a)** Industrial production of steel and other metal articles in bulk and small scale in foundries

SU 14: Manufacture of basic metals, including alloys.
SU 15: Manufacture of fabricated metal products, except machinery and equipment. SU 16: Manufacture of computer, electronic and optical products, electrical equipment.
SU 17: General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment;
SU 18: Manufacture of furniture.
SU 19: Building and construction work uses.
Product category used: Base metals and alloys – PC7 and PC 38: Welding and soldering products, flux products.

**b)** Industrial use in battery production

SU 0: Other: Production of lithium ion batteries
Product category used: Base metals and alloys – PC7.


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**c)** Used in the production on manganese sulfide

SU 8: Manufacture of bulk, large scale chemicals (including petroleum products)

Product category used: Base metals and alloys – PC7.

**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:(including address, phone numbers etc: Complete as required**

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

## SECTION 2: HAZARD IDENTITIFCATION

### 2.1 Classification of the substance or mixture:

Classification according to Regulation (EC) No. 1272/2008 [CLP]:
Not classified

2.2 **Label elements:**

Not applicable as the substance is not classified

### 3. Other Hazards:

The substance is an inorganic metallic solid. Based on available information, the substance does not meet the criteria for classification as persistent, bioaccumulative and toxic or very persistent and very bioaccumulative.

Endocrine disrupting properties have not been identified from existing acute or chronic data.

It is advisable to avoid generating dust as all fine particles have the potential to explode. Long term inhalation (years) of dust from some oxides of manganese cause adverse health effects see section 11. The substance in powder (PSD < 1mmin diameter) form is harmful to the environment.

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1 Substance(s) [Complete as appropriate]

Manganese is an inorganic mono-constituent substance. Its impurities are negligible and do not influence the classification.


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| Chemical name | EC No. | CAS number | Nominal % w/w | REACH Registration No. |
|---|---|---|---|---|
| Manganese | 231-105-1 | 7439-96-5 | >95% (Amend as appropriate) | 01-2119449803-34-xxxx |
| Impurity 1: Carbon | 231-153-3 | 7440-44-0 | Complete as per your product | - |
| Impurity 2: Sulfur | 231-722-6 | 7704-34-9 | Complete as per your product | - |
| Impurity 3: Selenium | 231-49-2 | 7782-49-2 | Complete as per your product | - |

**3.2 Mixtures:** The substance is not a mixture.

## SECTION 4: FIRST AID MEASURES

### 4.1 Description of first aid measures:

**4.1.1 General Information**

Not anticipated to cause any harm if in contact with clothing, skin or eye. However, in case of accident or unwellness, seek medical advice immediately.

**4.1.2 Following Inhalation:** Do not inhale. Wear an appropriate mask. Coughing can be expected as an immediate effect, delayed effects are not expected. Move exposed individual to fresh air Include other relevant information based on your company's procedures.

**4.1.3 Following Skin Contact:** Wear appropriate protective equipment for good industrial hygiene purposes. Include information based on your company's procedures.

**4.1.4 Following Eye Contact:** Eye protection is a must to avoid dust entering eyes. Include information based on your company's procedures.

**4.1.5 Following Ingestion:** Do not ingest. Include other relevant information based on your company's procedures .

**4.1.6 Self-protection of the first aider:** Include other information based on your company's procedures.

**4.2 Most important symptoms and effects, both acute and delayed:** Dust particles could cause eye irritation/itchiness and lung irritation/coughing Breathing difficulties may occur immediately in the event of excessive dustiness due to lung overload.

**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:

Include information on an appropriate extinguishing media and any unsuitable extinguishing media based on your company's procedures.


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**5.2 Special hazards arising from substance or mixture:**

The substance does not decompose naturally. However, upon combustion produces fumes of metallic oxides and oxides of carbon. Include any other relevant information.

**5.3 Advice for fire-fighters:**

Include information based on your company's procedures.

## SECTION 6: ACCIDENTAL RELEASE MEASURES:

### 6.1 Personal precautions, protective equipment and emergency procedures:

**6.1.1 For non-emergency personnel:**

a) Dusk mask and goggles are a must. Overalls are encouraged for good industrial hygiene. See section 8 for more details.

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

c) In the event of any accidental release, evacuate the area and consult trained personnel's – Amend as per your company 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 use, see section 8 – Amend as per your company procedures

### 6.2 Environmental precautions:

Substance is considered an environmental hazard in dust form as particle sizes less than 1mm in diameter based on available studies. Therefore, minimise environmental exposure and recycling is 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:** Clean contaminated objects and areas thoroughly observing environmental regulations -include cleaning and vacuuming techniques – Amend as per company procedures.

**6.3.3 Other information:** Include information based on your company's procedure such as clean-up techniques/materials never to be used.

### 6.4 Reference to other sections

For 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)


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**c)** Avoid dust generating operations or must be carried out in properly ventilated areas while wearing appropriate PPE

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

**7.1.2 Advice on general occupational hygiene:**

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

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

**c)** Remove contaminated clothing and personal protective equipment 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 Specific storage requirements:**

**a) Risk management associated to physical and chemical properties**

**i) Explosive atmospheres:** The substance is not explosive, however, store the substance away from 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)

**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 very humid **–** Amend as per your company's procedures.

**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 advise**

**i)** **Ventilation requirements:** Ensure adequate ventilation and store at room temperature.

**ii)** **Specific designs for storage:** Keep/store only in original container/packaging. Include other information based on your company's procedures

**iii)** **Quantity limits under storage conditions:** There is no limitation as the substance does not pose any physical and chemical hazards.

**iv)** **Packaging compatibility:** Store in original/similar packaging. Protect container/packaging against damage – Amend as per company's procedures

**7.3 Specific end uses(s):**

Recommendations: Observe instructions for use and see exposure scenarios – Annex 1


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**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 are 0.2mg/m3 – inhalable and 0.05mg/m3 respirable.

**8.1.1.1** National limits: Include other relevant country specific workplace limits

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

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

**8.1.1.4** Union Biological limit values: No Union biological limit values exist for Inorganic manganese and its compounds

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

**8.1.2** Monitoring Procedures: Dust monitoring is recommended, provide methodology as per national laws/company procedures.

**8.1.3** Formation of air contaminates: The substance does not produce air contaminants under normal conditions of use. OEL/BLV are therefore not provided Amend as per your company's use.

**8.1.4** Derived No Effects Limits (DNELs)/Predicted No Effects Concentrations (PNECs):

**Hazard Assessment conclusion for Workers: DNELS**

| Route | Type of effect | Hazard conclusion | Most sensitive endpoint |
|---|---|---|---|
| Inhalation | Systemic effects - Long-term | DNEL (Derived No Effect Level) 0.2mg/m³ | |
| Inhalation | Systemic effects - Acute | no-threshold effect and/or no dose-response information available | |
| Inhalation | Local effects - Long-term | other toxicological threshold 0.2mg/m³ | |
| Inhalation | Local effects - Acute | other toxicological threshold 0.2mg/m³ | |
| Dermal | Systemic effects - Long-term | DNEL (Derived No Effect Level) 0.00414mg/kg bw/day | |
| Dermal | Systemic effects - Acute | no-threshold effect and/or no dose-response information available | |
| Dermal | Local effects - Long-term | no hazard identified | |
| Dermal | Local effects - Acute | no-threshold effect and/or no dose-response information available | |
| Eyes | Local effects | no hazard identified | |


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| | | | |
|---|---|---|---|
| | | | |

**Hazard Assessment conclusion for the Environment: PNECs**

| Compartment | Hazard conclusion | Remarks/Justification |
|---|---|---|
| Freshwater | PNEC aqua (freshwater): 0.034mg/L<br>Intermittent releases: 0.028mg/L | Assessment factor: 50<br>Extrapolation method: assessment factor<br>PNEC aqua (freshwater)<br>Two chronic NOEC values in algae and Daphnia.<br>NOEC = 1.7 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. EC50 = 2.8 mg/l from the algal study |
| Marine water | PNEC aqua (marine water): 0.0034mg/L<br>Intermittent releases: | Assessment factor: 500<br>Extrapolation method: assessment factor<br>PNEC aqua (marine water)<br>Two chronic NOEC values in algae and Daphnia, with further 10 x factor for freshwater to marine.<br>NOEC = 1.7 mg/l |
| Sediments (freshwater) | PNEC sediment (freshwater): 3.3mg/kg sediment dw | Assessment factor: 500<br>Extrapolation method: assessment factor<br>PNEC sediment (freshwater)<br>Equilibrium partitioning based on freshwater aquatic PNEC and Kd value of 994 ml/g. The tenfold safety factor is added to account for ingestion of compound bound to sediment |


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| | | |
|---|---|---|
| Sediments (marine water) | PNEC sediment (marine water): 0.34mg/kg sediment dw | Assessment factor: 5000<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. The tenfold safety factor is added to account for ingestion of compound bound to sediment |
| Sewage treatment plant | PNEC STP: 100mg/L | Assessment factor: 10<br>Extrapolation method: assessment factor<br>PNEC STP<br>Activated sludge Respiration/inhibition test. NOEC = 1000mg/l |
| Soil | PNEC soil: 3.4mg/kg soil dw | Assessment factor: 500<br>Extrapolation method: assessment factor<br>PNEC soil<br>Equilibrium partitioning based on aquatic PNEC and Kd value of 994. The tenfold safety factor is added to account for ingestion of compound bound to soil |
| Air | no hazard identified: | |
| Secondary poisoning | no potential for bioaccumulation: | Bioaccumulation of Mn is not expected to occur. Hence no secondary poisoning risk exists. |

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

8.2 **Exposure controls:** See Exposure scenarios on, Annex 1

**8.2.1** Appropriate engineering controls: Dust is trapped and recycled where possible. Waste water is collected for treatment and recycled. Amend as per your company's 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)


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**a)** Eye/face protection: complete as per your company procedures e.g type of goggles

**b)** Skin protection: Overalls, gloves and boots are not mandatory, however, they are encouraged for good industrial hygiene. Please specify type of overall, gloves, boots including the thickness of material)

**c)** Respiratory protection: N95 Mask (Amend as per your company procedures)

**d)** Thermal hazards: Not applicable

**8.2.3** Environmental exposure controls: The substance is harmful to the environment. See Annex I, 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 | Grey |
| Odour | Odourless |
| Melting point (Mpt) / Freezing point | >723 K (>450°C), Regulation (EC) No. 440/2008, Annex, A1 |
| Boiling point or initial boiling point/boiling range | Melting pt >300°C, hence study not applicable |
| Flammability of solids | Not highly flammable, Regulation (EC) No. 440/2008, Method A10 |
| Lower and upper explosion limit | 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 |
| Solubility | Insoluble: 7.0 x 10-4 g/L, Regulation (EC) No. 440/2008, Annex A6 |
| Partition Coefficient | Not applicable for inorganic substances |
| Vapour pressure | Study not conducted as Mpt >300°C |
| Density/Relative density | 7.40 at 19°C, Regulation(EC) No. 440/2008, Annex, A3 |
| Relative Vapour density | Not applicable to solids |
| Particle characteristics | PSD < 1mm in diameter |
| **9.2 Other information** | None |
| **9.2.1 Physical hazard classes** | |
| Explosives properties | Non explosive |
| Flammable gases | Not applicable as the substance is a solid |


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| | |
|---|---|
| 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 |
| 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 |
| **9.2.2 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:** No specific test data related to reactivity available for this substance.

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 Incompatible Materials:** Include your company's information

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

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

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

**11.1 Information on toxicological effects:**

**a) Acute toxicity:**

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)


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**b) Skin corrosion/irritation:**

Not irritating in rabbits (one study according to OECD guideline 404 and EU method B.4, GLP), applied to the intact skin for 24 hours 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:**

Not irritating in 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. Cornea score: 0 of Max 4; Iris score: 0 of max 2 and Chemosis score: 1 of max 4. Fully reversible within 72hrs.

**d) Respiratory or skin sensitization:**

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.

**e) Germ cell mutagenicity:**

Data lacking for the substance as such. However, data on MnCl2 – 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:**

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:**

An extended one generation study is not available for this substance. However, a 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.

A prenatal-developmental toxicity study using MnCl2 via inhalation (OECD 414, GLP) concluded: No fetal abnormalities at not specified at 15 mg/m³ (Dettwiler M, 2016)

**h) Specific target organ toxicity (Single exposure):**

Based on available data the classification criteria are not met.

**i) Specific target organ toxicity (repeated exposure):**


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Based on available data (90 days chronic inhalation 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 mandatory exposure limits. However, the metal at zero valency has no data demonstrating such toxicity outside lung irritation from overload upon inhalation exposure.

**j) Aspiration hazard:**
Data lacking

**11.2 Information on other hazard**

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

**11.2.2 Harmful to the environment –** The substance in powder/smaller particle sizes (PSD < 1mmin diameter)is harmful to the environment.

## SECTION 12: ECOLOGICAL INFORMATION:

**12.1 Toxicity:**

**Acute (short-term) toxicity:**

**a) Fish:** OECD guideline 203, EU method C1 and GLP. LD50 (96h) for freshwater fish: >3.6 mg/L

**b) Crustacean:** OECD guideline 202, EU method C2 and GLP. EC50/LC50 (48h) for freshwater invertebrates: >1.6 mg/L

**c) Algae/aquatic plants:** OECD 201, EU method C3 and GLP. EC50/LC50 (72h): 4.5 mg/L. EC10/LC10 (72h): 3.4 mg/L. NOEC (72h): 2.5 mg/L

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

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

**Crustacean- Daphnia reproductive test:** OECD guideline 211 and GLP. NOEC (8d): 1.7 mg/L.

12.2 **Persistence and degradation:** The substance does not have the potential for persistence.

12.3 **Bioaccumulation potential:** The substance does not have the potential to bioaccumulate.

12.4 **Mobility in soil:** The substance does not have the potential to move into ground water.

12.5 **Results of PBT and vPvB assessment:** No assessment was carried out as the substance is a naturally occurring ore which is except from REACH registration. However, based on its properties, it is predicted not to be PBT or vPvB.

**12.6 Endocrine disrupting properties:**

The substance is not considered an endocrine disruptor based on available literature – Data lacking.

**12.7: Other adverse effects:** None known

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

**13.1 Waste treatment methods:** Waste disposal in accordance with local and national laws covering waste and dangerous waste. Include additional company specific information


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**a) Waste treatment-relevant information**: Include your company's /national law information.

**b) Physical/chemical properties that affect waste treatment option:** None known

**c) Sewage disposal-relevant information:** Include your company's/national laws information.

**d) Precautions for recommended waste treatment options:** Include your company's information.

**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:** Include number or use not applicable if this is the case

**14.2 UN proper shipping name:** Include name or use not applicable if this is the case

**14.3 Transport hazard class: Not hazardous**

**14.4 Packaging group:** Include packaging group or use not applicable if this is the case

**14.5 Environmental hazard**: Not hazardous to the environment

**14.6 Special precautions for users:** Always transport in close containers, avoid generating dust [Amend as appropriate]

**14.7 Maritime transport in bulk according to IMO instruments** Complete as appropriate or used not applicable if this is the case

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

**15.1 Safety, health and environmental regulations/legislation for the substance:**

**UN GHS - UN Globally Harmonized System of Classification and Labeling of Chemicals (GHS):** According to Chapter 1.5.2 of the UN Globally Harmonized System of Classification and Labeling 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 meets these criteria; hence a safety data sheet is required.

**EU CLP – Classification Labeling 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 harmonized criteria for physical, health or environmental hazards. Mn metal powders meets this criterion, hence a SDS according to 453/2010/EC is needed – this template is designed to meet this criteria.

**EU REACH – Registration, Evaluation and Authorisation of Chemicals:** 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. Ask your REACH/Chemical regulatory team.

**15.2 Chemical Safety Report (CSR):** A chemical safety assessment has been carried for this substance.

**SECTION 16: OTHER INFORMATION:**

a) **If using this template to develop your company's SDS** in the case of a revised safety data sheet, a clear indication of where changes have been made to the previous version of the safety data sheet is required in this section, unless such indication is given elsewhere in the


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safety data sheet, with an explanation of the changes, if appropriate. A supplier of a substance or mixture shall be able to provide an explanation of the changes upon request.

b) A key/legend to abbreviations and acronyms used in the SDS should be added in this section.

**c) Key Literature:**

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Add **ANNEX 1: EXPOSURE SCENARIO FOR COMMUNICATION -ask reach@manganese.org**


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