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SAFETY DATA SHEET: MANGANESE CHLORIDE; MANGANESE DICHLORIDE
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:

Substance name: Manganese dichloride
Other names: Manganese chloride, MnCl2
EINECS number: 231-869-6
CAS number: 7773-01-5
Molecular Formula: MnCl2
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

Used in fertilizers and fertilizer products PC12.(Both industrial and consumer uses)
Used on non-fertilizer products – coatings, paints thinners PC9a.
Used in the manufacture of other manganese-based substances- intermediates, PC20.

Sector of use: SU 8: Manufacture of bulk, large scale chemicals (including petroleum products); SU 9: Manufacture of fine chemicals ; SU 12: Manufacture of plastics products, including compounding and conversion ; SU 16: Manufacture of computer, electronic and optical products, electrical equipment

Add or delete the above to suit your company's needs.

No known uses advised against

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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 HAZARD IDENTITIFCATION

2.1 Classification of the substance or mixture:

Classification according to Regulation (EC) No. 1272/2008 [CLP] and the UN GHS: Classified as; Acute Tox. 3; STOT RE 2; Eye Dam.1;

2.2 Label elements:

Classification	Acute Tox. 3; STOT RE 2; Eye Dam.1
Pictogram GHS05, GHS08 and GHS06 respectively	
Signal word	Danger
Hazard statement	H301: Toxic if swallowed. H373: May cause serious damage to the brain through prolonged or repeated exposure via inhalation. H318: Causes serious eye damage.
Precautionary statement Prevention	P264, P270, P260, P280
Precautionary statement Response	P301+ P312, P330, P314, P305+351+338, P310,
Precautionary Statement Disposal	P305+P351+P338, P310, P314 P501

2.3 **Other Hazards:**

The substance is an inorganic metallic salt. 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. Data lacking.

Include other hazards if known.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substance(s) [Amend as appropriate]

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

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Chemical name	EC No.	CAS number	Nominal % w/w	REACH Registation number
Manganese dichloride	231-869-6	7773-01-5	>95 - 100% (Amend as appropriate)	xx-xxxxxx-xx
Add other constituents			Information based on your company's material	

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

Avoid contact with eyes and inhalation as the substance damages the eyes and can cause long term effects if inhaled. In case of accident or unwellness, seek medical advice immediately.

4.1.2 Following Inhalation: Do not inhale. Wear an appropriate mask. The substance could irritate the lungs due to its chloride properties. Upon prolong exposure may cause subtle neurological effects. Include other relevant information based on your company's procedures as well as the specific mask type used.

4.1.3 Following Skin Contact: Wear appropriate protective equipment Include information based on your company's procedures.

4.1.4 Following Eye Contact: Eye protection is a must. The substance causes serious eye damage. Include information based on your company's procedures as well as the recommended specific goggle type.

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: Wear PPE especially eye protection. Include other information based on your company's procedures.

4.2 Most important symptoms and effects, both acute and delayed: Avoid eye contact, as contact with eyes will cause serious eye damage both immediate and delayed.

4.3 Indication of any immediate medical attention and special treatment needed: If in contact with eyes or if accidentally ingested, seek medical attention immediately. Include information based on your company's procedures.

SECTION 5: FIRE-FIGHTING MEASURES:

5.1 Extinguishing media:

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

5.2 Special hazards arising from substance or mixture:

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

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5.3 Advice for fire-fighters: Avoid contact with eyes. Flames could produce toxic gases, therefore wear appropriate respiratory protection equipment. 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) Dust mask and goggles are a must. Overalls are encouraged for good industrial hygiene see section 8 for more details.

b) Sufficient ventilation is essential. 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 not considered an environmental hazard based on available studies. However, it is advisable to keep away from drains/waterways as it could change their pH profile. Collect and reuse or dispose of according to the national laws.. 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 – Amend as per company procedures-Include cleaning and vacuuming techniques.

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 spillages and avoid generating dust. Wear personal protective clothing especially eye protection. (see Section 8). Include other information based on your company's procedures.

b) Avoid handling with incompatible substances/mixtures: Avoid contact with acides. (List incompatible substances if known)

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

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d) Capture dust if possible and if generated, vacuum and compress into pellets to minimize environmental exposure- 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.

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

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 atmosphere: The substance is not explosive, however, store 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: Acids. (List others if known) **Include information based on company's procedures.**

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

e) 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.

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7.3 Specific end uses(s):

Recommendations: 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 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 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	neurotoxicity
Inhalation	Systemic effects - Acute	no-threshold effect and/or no dose-response information available	
Inhalation	Local effects - Long-term	no-threshold effect and/or no dose-response information available	
Inhalation	Local effects - Acute	no-threshold effect and/or no dose-response information available	
Dermal	Systemic effects - Long-term	DNEL (Derived No Effect Level) 0.004mg/kg bw/day	neurotoxicity
Dermal	Systemic effects - Acute	no-threshold effect and/or no dose-response information available	
Dermal	Local effects - Long-term	no-threshold effect and/or no dose-response information available	
Dermal	Local effects - Acute	no-threshold effect and/or no dose-response information available	
Eyes	Local effects	high hazard (no threshold derived)	

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Hazard Assessment conclusion for the Environment: PNECs

Compartment	**Hazard conclusion**	**Remarks/Justification**
Freshwater	PNEC aqua (freshwater): 0.013mg/L Intermittent releases: 0.03mg/L	Assessment factor: 5 Extrapolation method: sensitivity distribution PNEC aqua (freshwater) Based on an HC5 of 0.064 mg/L (with 50% confidence limits of 0.031 and 0.131 mg Mn/L) calculated from 13 NOECs from 11 species. **PNEC intermittent release hazard assessment conclusion:** PNEC aqua (intermittent releases) **PNEC intermittent release assessment factor:** 100.0 **PNEC intermittent release extrapolation method:** assessment factor **PNEC intermittent release justification:** Lowest overall L(E)C50 value was from a study with Hyalella azteca (LC50 = 3.0 mg Mn/L)
Marine water	PNEC aqua (marine water): 0mg/L Intermittent releases:	Assessment factor: 50 Extrapolation method: assessment factor PNEC aqua (marine water) Based on the freshwater HC5 and the long-term NOEC from a study on the marine species; Pacific oyster (NOEC of 0.02 mg Mn/L).
Sediments (freshwater)	PNEC sediment (freshwater): 0.011mg/kg sediment dw	Assessment factor: 50 Extrapolation method: assessment factor PNEC sediment (freshwater) Based on the lowest endpoint (NOEC of 0.57 mg Mn/kg sediment dwt) from studies on two sediment dwelling organisms.
Sediments (marine water)	PNEC sediment (marine water): 0.001mg/kg sediment dw	Assessment factor: 500 Extrapolation method: assessment factor PNEC sediment (marine water) Based on the freshwater endpoints with an increased AF factor.

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Sewage treatment plant	PNEC STP: 20.4mg/L	Assessment factor: 10 Extrapolation method: assessment factor PNEC STP Activated sludge respiration/inhibition test; NOEC = 204 mg Mn/L (560 mg $MnSO_4$/L). Readacross considered acceptable due to common Mn^{2+} cation and limited toxicity of the anions.
Soil	PNEC soil: 14.8mg/kg soil dw	Assessment factor: 10 Extrapolation method: assessment factor PNEC soil Based on the lowest NOEC (148 mg Mn/kg soil d.w.) from a range of long-term studies
Air	no hazard identified:	
Secondary poisoning	no potential for bioaccumulation:	According to the Guidance on information requirements and chemical safety assessment, Chapter R.11: PBT assessment, “the PBT and vPVB criteria of Annex XIII to the regulation do not apply to inorganic substances”. Therefore Mn^{2+} is not considered to require any further assessment of PBT properties

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. Wastewater 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: Goggles and masks are a must. Please state the quality/standard/thickness of the personal protective equipment used by your organisation)

a) Eye/face protection: Eye protection is a must. 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 ŧ (Please specify type of overall, gloves, boots including the thickness of material)

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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 not considered as harmful 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	Light Pink
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 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
Water Solubility	Soluble: 799 g/l of manganese in solution at 20±0.5°C., 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	2.54 at 21.5°C, Regulation (EC) No. 440/2008, Annex, A3
Relative Vapour density	Not applicable to solids
Particle characteristics	Data lacking
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 properties	Non-oxidizing, Method A17
Gases under pressure	Not applicable as the substance is a solid

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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 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.

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: Toxic if ingested (LD50: 138 mg/kg bw)

Acute dermal toxicity: Not classified as a dermal irritant (LD50 2000mg/kg bw

Acute inhalation toxicity: No adverse effects observed (LD50 4.45mg/m3

b) Skin corrosion/irritation:

Not corrosive to the skin. However, in some cases it can cause mild skin irritation (OECD guideline 404 and EU method B.4, GLP)

c) Serious eye damage/irritation:

Substance is irritating to the eyes (one study according to OECD guideline 405 and EU method B. 5, GLP)

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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 no information available for respiratory sensitization. However, it is predicted not to be a respiratory sensitizer.

e) Germ cell mutagenicity:

No concerns on mutagenicity based on studies below:

- 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. However, carcinogenicity report (NTP, 1993) on analogue substance MnSO4 and an expert review by Jenkinson, 2009 on genotoxicity as well as peer review article (Assem et al, 2011) concluded – no concerns, carcinogenicity in humans is not expected.

g) Reproductive toxicity:

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):

Based on published literature the substance is relatively non-toxic via the oral route however, inhalation exposure is expected to cause harm upon repeated exposure over long periods of time. The analogue substance MnSO4 has a harmonized classification as STOT RE 2. This classification is therefore readacross to MnCl2.

j) Aspiration hazard:

Data lacking

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.

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SECTION 12: ECOLOGICAL INFORMATION:

12.1.1 Toxicity: Not toxic to the environment.

Acute (short-term):

Aquatic vertebrates:

a) Fish: LC50 (96h): 49.9 mg/L Mn based on mortality (test material-MnSO4 based on readacross)
b) Fish: LC50 (96h): 27.5 mg/L Mn based on: mortality (150 Hardness. 95 % 23.4 - 31.6 mg/L.) and LL50 (96h): 5.12 mg/L Mn based on: mortality (30 Hardness. 95 % CL 4.6 - 5.7 mg//L.) (test material -MnCl2)

Aquatic invertebrates:

a) Daphnia magna: LC50 (48h): 9.8 mg/L dissolved (meas. (arithm. mean)) based on: as Mn2+ (Without Food) (test material -MnCl2)

Chronic (long-term) toxicity:

Aquatic vertebrates:

a) Fish early-life stage toxicity: NOEC (4mo): 0.6 mg/L Mn (test material – MnCl2)
b) Fish early-life stage toxicity: NOEC (4mo): 2.03 mg/L Mn (test material – MnCl2)
c) Oncorhynchus mykiss (previous name: Salmo gairdneri): Early life: NOEC (4mo): 0.6 mg/L Mn (test material-MnSO4 based on readacross)

Aquatic invertebrates:

a) Fresh water Ceriodaphnia dubia: LC50 (48h): 5.7 mg Mn/L (Average) test mat. (estimated) based on soft water survival (test material -MnCl2)
b) Aquatic worm Aeolosoma sp. : LC50 (48h): 39.46 mg/L dissolved (meas. (arithm. mean)) based on: mortality (95 % CL); LOEC (48h): 53.67 mg/L dissolved (meas. (arithm. mean)) based on: Survival; NOEC (48h): 27.2 mg/L dissolved (meas. (arithm. mean)) based on: Survival (test material - MnCl2)
c) ASRI: No effects were seen on microbial activity (OECD Guideline 209, Activated Sludge, Respiration Inhibition- ASRI) at 3 hours exposure: 560 mg/L test material and EC50 (3h) >1000 mg/L test material (nominal) based on: inhibition of total respiration - respiration rate (test material - MnCl2)

Other Environmental studies

a) Soil macro-organisms at levels up to 157 mg/kg soil dw Mn during 28 days exposure (Kuperman RG, et al DJ 2002)

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Based on available studies conducted at different trophic levels, the substance is not harmful to aquatic life.

12.2 Persistence and degradation	No potential for persistence	According to the Guidance on information requirements and chemical safety assessment, Chapter R.11: PBT assessment, "the PBT and vPVB criteria of Annex XIII to the regulation do not apply to inorganic substances". Therefore, MnCl2 is not considered to require any further assessment of PBT properties.
12.3 Bioaccumulative potential	No potential for bioaccumulation	According to the Guidance on information requirements and chemical safety assessment, Chapter R.11: PBT assessment, "the PBT and vPVB criteria of Annex XIII to the regulation do not apply to inorganic substances". Therefore MnCl2 is not considered to require any further assessment of PBT properties.
12.4 Mobility in soil	No potential to move into ground water	Data lacking

12.5 Results of PBT and vPvB assessment:
According to the Guidance on information requirements and chemical safety assessment, Chapter R.11: PBT assessment, "the PBT and vPVB criteria of Annex XIII to the regulation do not apply to inorganic substances". Therefore, MnCl2 is not considered to require any further assessment of PBT properties.
12.6 Endocrine disrupting properties:
The substance is not considered an endocrine disruptor based on available literature – Data lacking. (An analysis on a possible endocrine disruption effect is ongoing – completion end 2023)
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.
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

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14.4 Packaging group: Not applicable

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. MnCl2 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:

16 **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 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

17 **A key/legend to abbreviations and acronyms used in the SDS should be added in this section**

18 **Key Literature:**

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

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