SAFETY DATA SHEET

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier
- Substance name: MANGANESE SULPHATE MONOHYDRATE
- Product code: -
- Formula: MnSO4.H2O
- Index #: -
- EC #.: 600-072-9
- REACH Registration No.: Exempted according to article 2(7)(b) of the regulation [EC] 1907/2006 [REACH]
- CAS #: 10034-96-5

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

1.2.1. Relevant identified uses (Exposure Scenario = ES)
Manufacturing of manganese sulphate (ES1), Manufacture of fungicides (ES2), Use of substance in the manufacture of other manganese based compounds and as intermediate (ES3), Leather tanning (ES4), Printing (ES5), Packing and cleaning (ES6), Laboratory reagent (ES7), Surface treatment (ES8), Fertilizer (ES9), Nutritional Additive (Not under REACH)

1.2.2. Uses advised against
There are no known uses advised against

1.3. Details of the supplier of the SDS
Manufacturer/Supplier: Erachem Mexico SA de CV
Domicilio Conocido Carretera Tampico Valles Km28, C.P. 92018 Tamos, Pánuco, Verac ruz México
Telephone number: 52 833 357 5800 and 52 833 357 5801
E-mail: SDSMEX@erametgroup.com

1.4. Emergency telephone number
Dial your national emergency number see section 16

2. HAZARDS IDENTIFICATION

2.1. Classification of the substance

2.1.1. Classification according to Regulation (EC) No 1272/2008 [CLP]
Eye Damage 1
STOT Rep Exp. 2
Aquatic Chronic 2

2.1.2. Classification according to Directive 67/548/EEC [DSD]
Xn, R48/20
Xi, R41
N, R51/53

2.1.3. Additional information
Full text of R- and S- phrases.: see section 16

2.2. Label elements

Signal Word: DANGER

Hazard Statement:
H318: Causes serious eye damage
H373: May cause damage to brain through prolonged or repeated inhalation.
H411: Toxic to aquatic life with long lasting effects.

Precautionary Statement:
P260: Do not breathe dust/fume
P280: Wear protective gloves/protective clothing/eye protection/face protection
P273: Avoid release to the environment
P310: Immediately call a POISON CENTER or doctor/physician
P305+351+338: IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing
P501: Dispose of contents/container accordingly to the current regulation

3. COMPOSITION / INFORMATION ON INGREDIENTS

Index#	CAS#	EINECS#	Chemical Name	%
-	10034-96-5	232-089-9	MANGANESE SULPHATE MONOHYDRATE	≥ 95

4. FIRST AID MEASURES

4.1. Description of first aid measures
As a general rule, in case of doubt or if symptoms persist, always call a doctor. NEVER induce swallowing in an unconscious person.

Inhalation:
If the person is unconscious, place in the recovery position and call an ambulance.

Eye Contact:
Wash thoroughly with soft, clean water for 15 minutes holding the eyelids open.

Skin Contact:
Remove contaminated clothing and wash the skin thoroughly with soap and water or a recognised cleaner.

Ingestion:
Call a doctor immediately and show him the label.

4.2. Most important symptoms and effects, both acute and delayed
Eye redness

4.3. Indication of immediate medical attention and special treatment needed
Eye contact: If there is any redness, pain or visual impairment, consult an ophthalmologist.

5. FIRE-FIGHTING MEASURES

5.1. Extinguishing media
Suitable extinguishing media: Extinguish with water fog (spray).
Unsuitable extinguishing media: Do not use water jet to extinguish.

5.2. Special hazards arising from the substance or mixture
Hazardous decomposition products: may produce toxic fumes (SO_x) if case of fire.

5.3. Advice for fire-fighters
Due to the toxicity of the gas emitted on thermal decomposition of the products, fire-fighting personnel are to be equipped with autonomous insulating breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures
Restrict access to keep out unauthorized or unprotected personnel. Wear appropriate personal protective equipment during all clean-up activities. Avoid inhalation and direct contact.

6.1.1. For non-emergency personnel
Protective equipment: Wear suitable protective equipment (including personal protective equipment referred to under Section 8 of the safety data sheet) to prevent any contamination of skin, eyes and personal clothing;
Emergency procedures: Evacuate the danger area and consult an expert.

6.1.2. For emergency responders
If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

6.2. Environmental precautions
Keep away from drains, surface and ground water

6.3. Methods and material for containment and cleaning up

6.3.1. For containment
Contain spillage by any means available.

6.3.2. For cleaning up
Place waste in an appropriate container for disposal. Use care during clean-up to avoid exposure to the material and injury from broken containers.

6.3.3. Other information
Seek specialist advice for decontamination procedures.

6.4. Reference to other sections
See Section 1 for emergency contact information.
See Section 8 for information on appropriate personal protective equipment.
See Section 13 for additional waste treatment information.

7. HANDLING AND STORAGE

7.1. Precautions for safe handling
Prevent access by unauthorised personnel.

7.1.1 Protective measures
Measures to prevent fire: Store away from sources of heat, flame and sparks
Measures to prevent aerosol and dust generation: Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers.
Measures to protect the environment: Use appropriate containment to avoid environmental contamination.

7.1.2. Advice on general occupational hygiene
Store away from food and drink.

7.2. Conditions for safe storage, including any incompatibilities
Technical measures and storage conditions: Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials.
Packaging materials: Containers that have been opened must be carefully resealed and kept upright to prevent leakage.

7.3. Specific end use(s)
Recommendations: Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.
Industrial sector specific solutions: Chemistry (see ES1 and ES3 in section 1.2)

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

8.1.1 Occupational Exposure limit values
OSHA PEL: 5mg/CBM Ceiling for manganese compounds as Mn
ACGIH TLV: 0.2 mg/CBM(TWA) for manganese, elemental and inorganic compounds as Mn.
In Belgium, the threshold limit value (average over 8 hours VME / TWA) for Manganese compounds is 0.2 mg Mn/m3.
In France, the threshold limit value (average over 8 hours VME / TWA) for Manganese compounds is 1 mg Mn/m3.

8.1.2. Information on monitoring procedures
Workers :
DNEL dermal = 0,00414 mg/kg/day
DNEL inhalation = 0,2 mg/kg/day

Population :
DNEL dermal = 0,0021 mg/kg/day
DNEL inhalation = 0,043 mg/m³

Environment:
PNEC aqua (Freshwater) = 0.0128 mg/l
PNEC aqua (Marinewater) = 0.0004 mg/l
PNEC aqua (Intermittent releases) = 0.03 mg/l
PNEC STP = 56 mg/l
PNEC sediment (freshwater) = 0.0114 mg/kg sediment dw
PNEC sediment (marinewater) = 0.00114 mg/kg sediment dw
PNEC soil = 25.1 mg/kg soil dw

8.2 Exposure controls

8.2.1 Appropriate engineering controls
Use adequate exhaust ventilation to keep airborne concentrations below the allowable exposure limit.

8.2.2 Personal protection equipment

8.2.2.1 Eye and face protection
Wear safety goggles with side protections.

8.2.2.2 Skin protection
Hand protection: Wear gloves
Body protection: Wear work clothes made of acid-resistant fabric that can be washed as often as necessary.
Other protection: Good personal hygiene is particularly recommended.

8.2.2.3 Respiratory protection
Check the atmosphere periodically.
In case of exceeding the TLV, wear breathing apparatus according to EN 149 FFP3

8.2.2.4 Thermal hazards
No specific data

8.2.3 Environmental exposure controls
Instruction measures to prevent exposure: Avoid discharge to sewers, storm drains, surface waters and soil
Technical measures to prevent exposure: Collect the quantities of products spilled on the ground.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Appearance	Extremly pale pink solid powder
Odour	Not relevant
Odour threshold	Not relevant
pH	6.5, 450g/L, 20°C
Melting point / freezing point	450°C
Initial boiling point and boiling range	Not determined
Flash point	Not applicable
Evaporation rate	Not determintated
Flammability (solid, gas)	Not flammable
Upper/lower flammability or explosive limits	Not explosive
Vapour pressure	Not determinated
Vapour density	Not determinated
Relative density	2.93 (22°C)
Solubility	45% w/w (20°C)
Partition coefficient: n-octanol/water	Not applicable
Auto-ignition temperature	Not self-igniting
Decomposition temperature	850°C
Viscosity	Not determinated
Explosive properties	Non-explosive
Oxidising properties	Non-oxidizing

10. STABILITY AND REACTIVITY

10.1 Reactivity
No specific test data related to reactivity available for this product or its ingredients. The substance does not contain organic atoms and covalent bonds hence it is predicted to be stable.

10.2 Chemical stability
Under normal conditions of storage and use (see section 7), the product is stable.

10.3 Possibility of hazardous reactions
In case of fire, may give rise to sulphur oxides and manganese oxides emissions

10.4 Conditions to avoid
No specific data.

10.5 Incompatible materials
No specific data.

10.6 Hazardous decomposition products
Thermal decomposition may give rise to sulphur oxides and manganese oxides emissions.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity:
- Oral: LD50 > 2000mg/kg
- Dermal: MnSO4 is unlikely to be absorbed through the skin.
- Inhalation: LC50 > 4.98 mg/L

Skin corrosion/irritation: Not irritating
Serious eye damage/irritation: Irreversible ocular damage (base on one rabbit only)
Respiratory or skin sensitisation : not sensitising
Germ cell mutagenicity: non - mutagenic
Carcinogenicity: insufficient evidence for classification
Reproductive toxicity: no effects
STOT-single exposure : insufficient evidence for classification
STOT-repeated exposure: STOT Rep 2 by inhalation exposure
Aspiration hazard: insufficient evidence for classification

12. ECOLOGICAL INFORMATION

12.1. Toxicity

Fish short-term toxicity (Oncorrhynchus mykiss): LC50 (96h):14.5 mg/l Mn (Freshwater)
Fish long-term toxicity (Oncorrhynchus mykiss): NOEC(4month): 0.6 mg/L Mn (Freshwater)
Aquatic invertebrates short-term toxicity (Daphnia): LC50 (48h): 9.8 mg/L as Mn2+
Aquatic invertebrates long-term toxicity (Daphnia): LC50 (3weeks): 5700µg/L as Mn2+

12.2. Persistence and degradability

Manganese sulphate contains an inorganic cation (Mn^{2+}), and as such the criterion "persistence" is not relevant for the metal and its inorganic compounds in a way as it is applied to organic substances.

12.3. Bioaccumulative potential

A hazard assessment concluded that manganese and manganese compounds including MnSO4 do not bioaccumulate or biomagnify.

12.4. Mobility in soil

No specific data

12.5. Results of PBT and vPvB assessment

A hazard assessment concluded that manganese and manganese compounds including MnSO4 are not PBT nor VPvB.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

13.1.1 Product / Packaging disposal

Empty container completely. Keep label(s) on container. Give to a certified disposal contractor.

13.1.2 Waste treatment options

Recycle or dispose of waste in compliance with current legislation, preferably via a certified collector or company.

13.1.3 Sewage disposal options

Do not release into the environment

13.1.5 Other disposal recommendations

Do not contaminate the ground or water with waste, do not dispose of waste into the environment.

14. TRANSPORT INFORMATION

Classification

Hazard label(s): 

Environmental Hazard: 

Land transport (ADR/RID):
UN-No.: UN3077
Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (MANGANESE SULPHATE MONOHYDRATE)
Class : 9
Classification Code: M7
Packing group: III

Inland water ways transport (ADN):
UN-No.: UN3077
Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (MANGANESE SULPHATE MONOHYDRATE)
Class : 9
Classification Code: M7
Packing group: III

Inland water ways transport in tank vessels (ADN):
UN-No.: UN3077
Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (MANGANESE SULPHATE MONOHYDRATE)
Class : 9
Classification Code: M7
Packing group: III

Sea transport (IMDG Code):
UN-No.: UN3077
Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, (MANGANESE SULPHATE MONOHYDRATE)
Class: 9
Packing group: III
Marine Pollutant: YES

Air transport (ICAO-TI/IATA-DGR):
UN-No.: UN3077
Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (MANGANESE SULPHATE MONOHYDRATE)
Class : 9
Classification Code: M7
Packing group: III

15. REGULATORY INFORMATION

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

Classification according to Directive 67/548/EEC [DSD]

Indication of danger:
Xi, Irritant
Xn, Harmful
N, Dangerous for the environment

R-phrases:
R48/20: Harmful: danger of serious damage to health by prolonged exposure through inhalation
R41: Risk of serious damage to eyes
R51/53: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment
S-phrases:
S61: Avoid realease to the environment. Refer to spéial instructions/ Safety Data Sheet
S22: Do not breathe dust
S36/37/39: Wear suitable protective clothing, gloves and eye/face protection

15.2 Chemical Safety Assessment

A Chemical Safety Assessment has been carried out for MANGANESE SULPHATE MONOHYDRATE

16. OTHER INFORMATION

Indication of changes:
This safety data sheet is compliant with Regulation (EC) 1272/2008 [CLP] and Regulation (EC) 453/2010 modifying Regulation (EC) 1907/2006 [REACH] and is based upon the present state of our knowledge.

Relevant Hazard- and Precautionary phrases [CLP] (number and full text):

Hazard Statement:
H318: Causes serious eye damage
H373: May cause damage to brain through prolonged or repeated inhalation.
H411: Toxic to aquatic life with long lasting effects.

Precautionary Statement:
P260: Do not breathe dust/fume
P280: Wear protective gloves/protective clothing/eye protection/face protection
P273: Avoid release to the environment
P310: Immediately call a POISON CENTER or doctor/physician
P305+351+338: IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing
P501: Dispose of contents/container accordingly to the current regulation

Emergency Numbers:
The common european emergency number is **112**

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Further information:
The following acronyms may be found in this document:

ACGIH	American Conference of Governmental Industrial Hygienists
CAS	Chemical Abstract Service
DNEL	Derived No Effect Level
EINECS	European Inventory of Existing Commercial Chemical Substances
LC50	Lethal Concentration 50 (concentration in water having 50% chance of causing death to aquatic life)
LD50	Lethal Dose 50 (concentration of a toxicant that will kill 50% of the test animals within a designated period)
LTEL	Long Term Exposure Limit
NIOSH	National Institute of Occupational Safety and Health
NOEC	No Observed Effect Concentration
NOHSC	National Occupational Health & Safety Commission
OEL	Occupational Exposure Limits
OSHA	Occupational Safety and Health Administration
PBT	PBT: Persistent, Bioaccumulative and Toxic
PEL	Permissible Exposure Limit
PNEC	Predicted No Effect Concentration
SCOEL	Scientific Committee on Occupational Exposure Limits
STEL	Short Term Exposure Limit
STOT	Specific Target Organ Toxicity
STP	Sewage Treatment Plant
TLV	Threshold Limit Value
TWA	Time Weighted Average
vPvB	very Persistent and very Bioaccumulative