MATERIAL SAFETY DATA SHEET (MSDS)

SECTION 1: Identification

1.1 Product identifiers

Product Name : **Manganese sulfate monohydrate**

CAS No. : 10034-96-5

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

Recommended uses : Laboratory chemicals

Uses advised against: Food, drug, pesticide or biocidal product use.

1.3 Details of the supplier of the safety data sheet

Company : Krishna Solvechem Limited.
B/503, Sahayog, S. V. Road,
Kandivali (West), Mumbai – 400067. India.

Telephone : +91-22-6123 0222

Email : exports@kscl.co.in

1.4 Emergency telephone number

Emergency Phone : +91-8657457330

SECTION 2: Hazards identification

2.1 Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Serious Eye Damage/Eye Irritation	(Category 1)
Specific target organ toxicity (Repeated exposure)	(Category 2)
Target Organs - Brain	
Chronic aquatic hazard	(Category 2)

2.2 Label elements

Pictogram :

Signal word Danger

Hazard statement (s) May cause damage to organs (Brain) through prolonged or repeated exposure if inhaled

	Causes skin irritation Causes serious eye irritation May cause respiratory irritation
Precautionary statement (s)	
Prevention	Wash face, hands and any exposed skin thoroughly after handling Wear protective gloves/protective clothing/eye protection/face protection Avoid breathing dust/fume/gas/mist/vapors/spray Use only outdoors or in a well-ventilated area
	Inhalation : IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing Call a POISON CENTER or doctor/physician if you feel unwell
	IF ON SKIN (or hair): If skin irritation occurs: Get medical advice/attention IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower Wash contaminated clothing before reuse
	Eyes: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing If eye irritation persists: Get medical advice/attention
Supplemental Hazard	None
Other hazards	This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) atlevels of 0.1% or higher.

SECTION 3: Composition / information on ingredients

3.1

Component	CAS-No	Weight %
Manganese sulfate monohydrate	10034-96-5	<=100

SECTION 4: First aid measures

4.1	**Description of first aid measures**	
	General Advice:	If symptoms persist, call a physician.
	If inhalation :	Remove to fresh air. If not breathing, give artificial respiration. Get medical attention if symptoms occur.
	In case of skin contact :	Wash off immediately with plenty of water for at least 15 minutes. If skin irritation persists, call a physician.
	In case of eye contact :	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.
	Ingestion :	Clean mouth with water and drink afterwards plenty of water.
4.2	**Most important symptoms and effects :**	Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting
4.3	**Notes to Physician :**	Treat symptomatically

SECTION 5: Firefigh effects

5.1	**Extinguishing media**	
	Suitable extinguishing media :	Water spray, carbon dioxide (CO2), dry chemical, alcohol-resistant foam.
	Unsuitable Extinguishing Media: :	No information available
5.2	**Flash Point :**	Not applicable
	Method :	No information available

	Autoignition Temperature:	No information available
	Explosion Limits:	
	Upper	No data available
	Lower	No data available
	Sensitivity to Mechanical Impact	No information available
	Sensitivity to Static Discharge	No information available
	Specific Hazards Arising from the Chemical :	Not combustible. Ambient fire may liberate hazardous vapours
	Hazardous Combustion Products :	Sulfur oxides, manganese/manganese oxides
5.4	**Protective Equipment and Precautions for Firefighters:**	Stay in danger area only with self-contained breathing apparatus. Prevent skin contact bykeeping a safe distance or by wearing suitable protective clothing.
5.5	**Further information:**	Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Avoid inhalation of dusts. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.
For personal protection see section 8.

6.2 Environmental precautions

Do not let product enter drains

6.3 Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up dry. Dispose of properly. Clean up affected area. Avoidgeneration of dusts.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling
Work under hood. Do not inhale substance/mixture.

Hygiene measures
Change contaminated clothing. Preventive skin protection recommended. Wash hands after working with substance. For precautions see section 2.2.

7.2	Conditions for safe storage

Storage conditions
Tightly closed. Dry.
Storage stability
Recommended storage
temperature2 - 8 °C
Keep in a dry place.
Storage class
Storage class (TRGS 510): 13: Non Combustible Solids

SECTION 8: Exposure controls/personal protection

8.1	Exposure controls

Personal protective equipment -

Eye / Face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Tightly fitting safetygoggles

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.
The selected protective gloves have to satisfy the specifications of Regulation (EU) 2016/425 and the standard EN 374 derived from it.

Body protection
Protective clothing

Respiratory protection
For nuisance exposures use type P95 (US) or type P1 (EU EN 143) particle respirator.For higher level protection use type OV/AG/P99 (US) or type ABEK-P2 (EUEN 143) respirator cartridges. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure
Do not let product enter drains

SECTION 9: Physical and chemical properties

9.1	Information on basic physical and chemical properties	
	a) Appearance	Pink solid
	b) Odour	Odorless
	c) Odour Threshold	No information available
	d) pH	3,0 - 3,5 at 50 g/l at 20 °C
	e) Melting point / freezing point	> 449 °C - OECD Test Guideline 102
	f) Initial boiling point and	Not applicable

boiling range	
g) Flash point	Not applicable
h) Evaporation rate	No information available
i) Flammability (solid, gas)	Not applicable
j) Upper/lower flammability or explosive limits	No data available No data available
k) Vapour pressure	No information available
l) Vapour density	2,95 g/cm3 at 20 °C
m) Specific Gravity	No data available
n) Solubility	762 g/l at 20 °C
o) Partition coefficient: n octanol/water	No data available
p) Auto-ignition temperature	No information available
q) Decomposition temperature	400 - 450 °C Elimination of water of crystallization 850 °C (anhydrous substance)
r) Viscosity	No information available
s) Molecular formula	MnO4S . H2O
t) Molecular Weight	169.02 g/mol

SECTION 10: Stability and Reactivity

10.1	**Reactive Hazard :**	No data available
10.2	**Chemical stability :**	Stable under standard ambient conditions (room temperature)
10.3	**Possibility of hazardous reactions :**	violent reactions possible with : acids
10.4	**Conditions to avoid :**	Avoid moisture
10.5	**Incompatible materials:**	No data available
10.6	**Hazardous decomposition products :**	In the event of fire : see section 5
10.7	**Hazardous Polymerization**	No information available

SECTION 11: Toxicological information

11.1

Information on toxicological effects

Acute toxicity:

LD50 Oral - Rat - male and female - 2.150 mg/kg
Remarks: (anhydrous substance)(ECHA)
Symptoms: After uptake of large quantities:, Nausea, Vomiting, Diarrhea, gastric pain, Irritations of mucous membranes in the mouth, pharynx, oesophagus and gastrointestinal tract.
LC50 Inhalation - Rat - male and female - 4 h - > 4,45 mg/l - dust/mist
(OECD Test Guideline 403)
remarks: (anhydrous substance)
Symptoms: Possible damages:, mucosal irritations, tissue damage, PneumoniaDermal: No data available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

skin corrosion/irritation :	skin – Rabbit, result : No skin irritation – 4h (OECD Test guideline 404) remarks : (anhydrous substance
Serious eye damage/eye irritation:	eyes – Rabbit, result : irreversible effects on the eye (OECD Test guideline 405) remarks : (anhydrous substance)
Carcinogenicity :	No data available
Mutagenic Effects:	Test type : Ames test, result : negative Remarks : (National toxicology Program)
Reproductive Effects:	No information available.
Developmental Effects :	No information available.
Teratogenicity:	No information available.
STOT - single exposure :	None known
STOT - repeated exposure:	Inhalation- may cause damage to organs through prolonged or repeated exposure. brain
Aspiration hazard :	No information available.

Endocrine Disruptor Information : Men exposed to manganese dusts showed a decrease in fertility. Chronic manganese poisoning primarily involves the central nervous system. Early symptoms include languor, sleepiness and weakness in the legs. A stolid mask-like appearance of the face, emotional disturbances such as uncontrollable laughter and a spastic gait with tendency to fall in walking are findings in more advanced cases. High incidence of pneumonia has been foundin workers exposed to the dust or fume of some manganese compounds., Prolonged or repeated inhalation may cause:, Pneumonia

Other Adverse Effects : The toxicological properties have not been fully investigated.

SECTION 12: Ecological information

12.1 Toxicity:

Toxicity to algae : static test NOEC - Desmodesmus subspicatus (green algae) - 1 mg/l - 72 h (OECD Test Guideline 201) static test ErC50 - Desmodesmus subspicatus (green algae) – 61 mg/l – 72 h (OECD Test guideline 201)

12.2	**Persistence and degradability:**	The methods for determining the biological degradability are not applicable to inorganicsubstances.
	Bioaccumulation/ Accumulation	No information available
12.3	**Mobility:**	No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods: Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

SECTION 14: Transport information

14.1	**UN number :**	ADR/RID: 3077 IMDG: 3077 IATA: 3077		
14.2	**UN proper shipping name**			
	ADR/RID :	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N. O. S.		
	IMDG :	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N. O. S.		
	IATA :	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N. O. S.		
14.3	**Transport hazard class(es)**	ADR/RID: 9	IMDG: 9	IATA: 9
14.4	**Packaging group:**	ADR/RID: III	IMDG: III	IATA: III
14.5	**Environmental hazards :**	ADR/RID: Yes	IATA: Yes	IMDG Marine pollutant : Yes

SECTION 15: Regulatory information

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

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.

National legislation

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances : ENVIRONMENTAL HAZARDS

Other regulations

Observe work restrictions regarding maternity protection in accordance to Dir 92/85/EEC or stricter national regulations where applicable.

Take note of Dir 94/33/EC on the protection of young people at work.

15.2 Chemical safety Assessment

For this product a chemical safety assessment was not carried out

SECTION 16: Other information

16.1 Prepared By:	Regulatory affairs Krishna Solvechem Limited
Email:	exports@kscl.co.in
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Print Date:	19-Apr-2023
Revision Summary:	This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under29 C F R 1910.1200 to align with the Globally Harmonized System ofClassification and Labeling of Chemicals (GHS).

16.2 Disclaimer:

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.