

MATERIAL SAFETY DATA SHEET

October 22, 2008

Product Name **Manganese Sulfate**

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This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200).

SECTION I. MATERIAL IDENTIFICATION.....

Common Name	Manganese Sulfate
Synonyms	Manganous Sulfate Monohydrate
Molecular Formula	MnSO ₄ · H ₂ O
Molecular Weight	169.02
CAS Number	10634-96-5

SECTION II. COMPOSITION/INFORMATION ON INGREDIENTS.....

Manganese (II) Sulfate (1:1)	98-100%
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SECTION III. HAZARD INFORMATION.....

WARNING! Harmful if swallowed or inhaled. Affects lungs, central nervous system, blood and kidneys. May cause irritation to skin, eyes and respiratory tract.

Health Rating: 2- Moderate

Flammability Rating: 0 –none

Reactivity Rating: 1- Slight

Contact Rating: 2 – Moderate

Lab Protective Equipment: Goggles and face shield; lab coat and apron should be worn; use a ventilation hood; proper gloves should be worn.

POTENTIAL HEALTH EFFECTS

Inhalation: Inhalation can cause a flu-like illness (metal Fume fever). This 24-to-48 hour illness is characterized by chills, fever, aching muscles, dryness in the mouth and throat and headache. May irritate the respiratory tract. May increase the incidence of upper respiratory infections (pneumonia). Absorption of inorganic manganese salts through the lungs is poor but may occur in chronic poisoning salts.

Ingestion: May cause abdominal pain and nausea. Although they are poorly absorbed through the intestines, inorganic manganese salts may produce hypoglycemia and decreased calcium blood levels should absorption occur.

Skin Contact: May cause irritation, redness and pain.

Eye Contact: May cause irritation, redness and pain.

Chronic Exposure: Chronic manganese poisoning can result from excessive inhalation and ingestion exposure and involves impairment of the central nervous system. Early symptoms include sluggishness, sleepiness and weakness in the legs. Advanced cases have shown fixed facial expression, emotional disturbances, spastic gait and falling. Illness closely resembles Parkinson's disease. Kidney effects, blood changes and manganese psychosis also may occur as a result of chronic exposure. Chronic inhalation exposure can cause lung damage.

Aggravation of Pre-existing Conditions: Persons with impaired respiratory function, psychiatric or neurological disturbances and nutrition deficiencies may be more susceptible to the effect of this substance.

SECTION IV. FIRST AID PROCEDURES.....

Ingestion Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention.

Skin Immediately flush skin with plenty of water for at least 15 minutes. Remove and wash contaminated clothing and shoes before reuse. Get medical attention if irritation develops.

Eyes Immediately flush eyes with plenty of water for 15 minutes, occasionally lifting upper and lower eyelids. Hold eyelids apart during irrigation. Call a physician.

Inhalation Remove person to fresh air. If breathing is difficult, give oxygen. If not breathing administer artificial respiration. Get medical attention.

SECTION V. FIRE AND EXPLOSION DATA.....

Fire: Not considered to be a fire hazard.

Explosion: not considered to be as explosion hazard.

Fire Extinguishing media: Use any means suitable for extinguishing surrounding fire. In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode.

SECTION VI. ACCIDENTAL RELEASE MEASURES.....

Ventilate area of leak or spill. Keep unnecessary and unprotected people away from area of spill. Wear appropriate personal protective equipment. Spills: Pick up and place in a suitable container for reclamation or disposal, using a method that does not generate dust. US regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. Use clean-up measures that avoid dust generation. Wear NIOSH or MSHA approved respirator if dust will be generated. Prevent accidental entry of solution into streams or other bodies of water. Shovel spills into plastic bags and seal with tape.

SECTION VII. HANDLING AND STORAGE.....

Keep in a tightly closed container and store in a cool, dry, ventilated area. Protect against physical damage. Containers of this material may be hazardous when empty since they may retain product residues. Observe all warnings and precautions listed for the product.

SECTION VIII. EXPOSURE CONTROLS/PERSONAL PROTECTION.....

Airborne exposure limits:

OSHA permissible exposure limit (PEL): 5 mg/m³ ceiling for manganese compounds as Mn
ACGIH Treshhold Limit Value (TLV): 0.2 mg/m³ (TWA) for manganese, elemental and inorganic compounds as Mn.

Ventilation System: A system of local and/or general exhaust is recommended to keep employee exposures below the airborne limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its' source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, Industrial Ventilation, A Manual of Practices, most recent addition, for details.

Personal Respirators (NIOSH Approved): If the exposure limit is exceeded and engineering controls are not feasible, a half face piece particulate respirator (NIOSH type N95 or better filters) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece particulate respirator (NIOSH type N100 filters) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency or respiratory supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerin, etc.) are present, use a NIOSH Type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-face piece positive-pressure, air-supplied respirator.

WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection: Wear protective gloves and clean body-covering clothing.

Eye Protection: Wear safety glasses. Maintain eyewash fountain and quick-drench facilities in work area.

SECTION IX. PHYSICAL AND CHEMICAL PROPERTIES.....

Appearance	Slightly pink
Boiling Point	850 degrees C. Decomposes.
Melting Point	700 Degrees C. Loses all water @ 400-500 Degrees C.
Density	2.95
Vapor Density:	No information found
Solubility:	Soluble in 1 part water
% volatiles by volume @ 21 degrees C (70 degrees F):	0
Odor	Odorless
pH	5.0-7.0

SECTION X. REACTIVITY DATA.....

Stability	Stable under ordinary conditions of use and storage.
Conditions to Avoid	Product is highly soluble, but does not react with water.
Incompatibilities	Powdered metals, strong oxidizers.
Hazardous	
Decomposition products	Oxides of sulfur and the contained metal.

Hazardous Polymerization Will not occur.
Conditions to Avoid Incompatibles.

SECTION XI. TOXICOLOGICAL INFORMATION.....

Toxicological Data: Oral rat LD50: 2150 mg/kg. Investigated as a tumorigen, mutagen, reproductive effector.

Reproductive Toxicity: For Manganese metal: May damage the reproductive system. Has shown teratogenic effects in laboratory animals.

Cancer lists:

Ingredient IARC Category	---NTP Carcinogen	
	Known	Anticipated
Manganese (II) Sulfate (1:1) None (10634-96-5)	No	No

SECTION XII. ENVIRONMENTAL AND DISPOSAL INFORMATION.....

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with local requirements.

SECTION XIII. REGULATORY INFORMATION.....

NOTICE: The information herein is presented in good faith and believed to be accurate. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ from one location to another. It is the buyer's responsibility to ensure that its activities comply with Federal, State and local laws.

SARA 311/312: acute: yes. Chronic: Yes. Fire: No, Pressure: No, Reactivity: No (Pure/Solid)

SECTION XIV. SHIPPING INFORMATION.....

Not regulated.

SECTION XV MISCELLANEOUS INFORMATION.....

NFPA Ratings: Health: 2 Flammability: 0 Reactivity: 0.

Label Hazard Warning:

Warning! Harmful if swallowed or inhaled. Affects lungs, central nervous system, blood and kidneys. May cause irritation to skin, eyes and respiratory tract.

LABEL PRECAUTIONS:

- Wash thoroughly after handling.
- Avoid contact with eyes, skin and clothing.
- Avoid breathing dust.
- Keep container closed.
- Use only with adequate ventilation.

Label First Aid:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. In all cases, get medical attention.

SECTION. MSDS PREPARATION INFORMATION.....

Prepared By: Regulatory Department
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