

Super Conductor Materials, Inc.

391 Spook Rock Industrial Park, Suffern, NY 10901 · 845.368.0240 · Fax 845.368.0250 · www.scm-inc.com

Chemtrec: (800) 424-9300
Poison Center: (800) 562-8236
Revision Date: January 8th, 2019

SAFETY DATA SHEET

Identity: Manganese

Formula: Mn

SECTION I - GENERAL INFORMATION

Manufacturer: Super Conductor Materials, Inc.

The information below is believed to be accurate and represents the best information available to Super Conductor Materials, Inc. However, SCM makes no warranty, expressed or implied with respect to such information and assumes no liability resulting from its use.

SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Molecular Weight: 54.94

| CAS # | OSHA PEL | ACGIH TLV | % |
|-----------|----------|-----------|------------|
| 7439-96-5 | 5mg/m3 | 0.2mg/m3 | 0.0-100.0% |

SECTION III – PHYSICAL/CHEMICAL CHARACTERISTICS

Physical States: Solid

Boiling Point: 2095.00°C

Melting Point: 1246.00°C

Evaporation Rate: N/A

Solubility in water: Insoluble/

Soluble in aqueous solutions of sodium or potassium bicarbonate

Vapor Pressure: (vs. air or mmHg): 1mm at 1292.00°C

Vapor Density: (vs. air=): N/A

Specific Gravity: (H₂O=1): 7.3 g/cm³

Flash Point: N/A

Appearance and odor: Grey-pink silvery, brittle, metallic powder and pieces, no odor.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA:

Method Used: Flammable solid

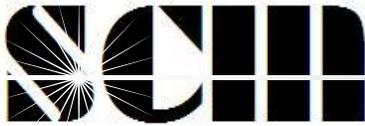
Explosive limits: LEL: N/A

UEL: N/A

Extinguishing Media: Use suitable extinguishing media for surrounding materials and type of fire

Special Fire Fighting Procedures:

Firefighters must wear full face, self-contained breathing apparatus with full protective clothing to prevent contact with skin and eyes. Fumes from fire are hazardous. Isolate runoff to prevent environmental pollution.



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Unusual Fire and Explosive Hazards:

- Violent reaction with NO₂ + oxidants.
- Incandescent reaction with phosphorus, nitryl fluoride, nitric acid.
- Will react with water (at 212F) or steam to produce hydrogen.
- May react with oxidizing agents.

SECTION V - REACTIVITY DATA

Stability: Stable

Conditions to Avoid (Stability): None

Incompatibility – Materials to avoid: Carbon dioxide, aluminum dust, ammonium nitrate, fluorine, chlorine + heat, hydrogen peroxide, bromine pent fluoride, sulfur dioxide + heat, NO₂ + oxidants, phosphorous, nitryl fluoride, nitric acid, oxidizing agents, water and steam.

Hazardous Decomposition or Byproducts: Hydrogen gas and manganese oxide

Hazardous Polymerization: Will not occur.

Conditions to Avoid (hazardous polymerization): None

SECTION VI - HEALTH HAZARD DATA

Routes of entry: Inhalation? Yes Skin? Yes Eyes? Yes Ingestion? Yes Other? No

Some manganese compounds are experimental tumorigens. They can cause central nervous and pulmonary system damage by inhalation of fumes and dust. Very few poisonings have occurred from ingestion. Chronic manganese poisoning is a clearly characterized disease which results from inhalation of fumes or dusts of manganese. The central nervous system is the chief site of damage. Exposure to dusts and fumes can possibly increase the incidence of upper respiratory infections and pneumonia. (Sax, Dangerous Properties of Industrial Materials, eighth edition)

Signs and Symptoms of Overexposure:

Inhalation: May cause red, dry throat plus chills, fever, muscle aches, sleepiness, weakness in the legs, muscular twitching, and cramps. Other symptoms like slurred speech, tremors, insomnia, and mental confusion, will resemble Parkinson's disease. Other symptoms of manganese include: inflammation of the kidneys, cirrhosis of the liver, anorexia, muscular fatigue, sexual impotence, reduction of the white blood cells and anemia.

Ingestion: None acute or chronic health effects recorded.

Skin: May cause redness and itching.

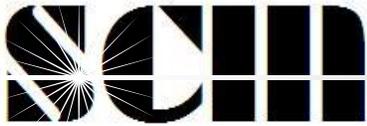
Eye: May cause redness, itching, and watering.

Health Hazards (Acute and Chronic):

Inhalation:

Acute: Inhalation of manganese compounds is considered the primary route of exposure, they may cause irritation of the respiratory tract and mucous membranes. Inhalation of manganese compounds' fine dusts and fumes may cause metal fume fever.

Chronic: Chronic inhalation of manganese compounds' dust particles, approximately 3 um in size, for a period of a few months may cause pulmonary pneumonitis. However, dust particles approximately 5 um in size, inhaled for about 4 hours daily for three months did not produce pneumonitis, but may cause



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fibrotic changes in the lungs, decrease in hemoglobin and a change in erythrocyte levels. Manganese compounds may also cause manganism, psychic and neurological disorders effecting the central nervous system, to develop (manganism is not fatal but, can cause permanent disability).

Ingestion:

Acute: Absorption of manganese compounds from the gastrointestinal tract is poor under normal conditions.

Chronic: No chronic health effects recorded.

Skin:

Acute: May cause irritation. Moderately toxic by subcutaneous route.

Chronic: May cause dermatitis.

Eye:

Acute: May cause irritation.

Chronic: Irritant dusts may cause conjunctivitis damage.

Target Organ: May affect the central nervous system, kidneys, respiratory system, eyes, skin and blood.

Carcinogenicity: NTP? No IARC Monographs? No OSHA Regulated? No

Medical Conditions Aggravated by Exposure: Upper respiratory infections and pneumonia.

Emergency and First Aid Procedures:

Inhalation: Remove victim to fresh air, keep warm and quiet, and give oxygen if breathing is difficult; seek medical attention

Ingestion: Not Applicable.... Seek medical advice.

Skin: Remove contaminated clothing, brush material off skin, wash affected area with mild soap and water, and seek medical attention if symptoms persist.

Eye: Flush eyes with lukewarm water, lifting upper and lower eyelids for at least 15 minutes and seek medical attention if symptoms persist.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be taken in case material is released or spilled:

Wear appropriate respiratory and protective equipment specified in section VIII-control measures. Isolate spill area, provide ventilation and extinguish sources of ignition. Vacuum up spill using a high efficiency particulate absolute (HEPA) air filter and place in a closed container for proper disposal. Take care not to raise dust. Use non-sparking tools.

Waste disposal method:

Dispose of in accordance with state, local, and federal regulations.

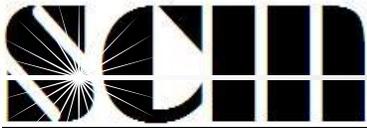
Hazard Label Information:

Store in cool, dry area and in tightly sealed container. Wash thoroughly after handling.

SECTION VIII - CONTROL MEASURES

Protective Equipment Summary (Hazard Label Information):

NIOSH approved respirator, impervious gloves, safety glasses, clothes to prevent contact, goggles or face shield.



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Ventilation:

Local Exhaust: Local exhaust ventilation may be necessary to control any air contaminants to within their PELs or TLVs during the use of this product.

Special: Handle in a controlled environment

Mechanical (Gen): Not recommended

Other: Handle in an inert gas such as argon

Work/Hygienic/Maintenance Practices:

Implement engineering and work practice controls to reduce and maintain concentration of exposure at low levels. Use good housekeeping and sanitation practices. Do not use tobacco or food in work area. Wash thoroughly before eating or smoking. Do not blow dust off clothing or skin with compressed air.

Please be advised that N/A can either mean Not Applicable or No Data Has Been Established