

**1. PRODUCT AND COMPANY IDENTIFICATION**

**Trade Name:** Manganese Dioxide

**Chemical Formula:** MnO<sub>2</sub>

**Manufacturer Item Number:** MA-3215

**Manufacturer:** Lorad Chemical Corporation  
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United States of America

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**2. HAZARD IDENTIFICATION**

**Signal Word:** Warning

**Pictograms:**



**Hazard Statements:** H302 Harmful if swallowed.  
H319 Causes serious eye irritation.  
H332 Harmful if inhaled.  
H335 May cause respiratory irritation.

**Precautionary Statements:** P261 Avoid breathing dust / fumes / gas / mist / vapors / spray.  
P264 Wash thoroughly after handling.  
P270 Do not eat drink or smoke when using this product.  
P271 Use only outdoors or in a well-ventilated area.  
P301+312 IF SWALLOWED: Call a POISON CENTER or physician if you feel unwell.  
P304+312+340 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or physician if you feel unwell.  
P305+351+338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do - continue rinsing.  
P312 Call a POISON CENTER or physician if you feel unwell.  
P330 Rinse mouth.  
P337+313 If eye irritation persists: Get medical advice / attention.  
P403+233 Store in a well ventilated place. Keep container tightly closed.  
P405 Store locked up.  
P501 Dispose of contents / containers in accordance with local / regional / national / international regulations.

**HMIS Health Ratings (0-4)**

- Health: 2\*  
- Flammability: 0  
- Physical: 0

**3. COMPOSITION**

**Additional Names:** Manganese(IV) Oxide

Percentage: 100 wt%

CAS #: 1313-13-9

EC #: 215-202-6

#### 4. FIRST AID PROCEDURES

**General Treatment** Consult a physician. Show this SDS to the physician in attendance. Move out of dangerous area.

**Special Treatment:** No Data Available.

**Important Symptoms:** Nausea, vomiting, severe eye irritation. Other symptoms may include stinging, tearing, redness, swelling, and blurred vision. May cause respiration irritation or coughing.

**Inhalation:** If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

**Ingestion:** Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

**Skin:** Wash off with soap and plenty of water. Consult a physician.

**Eyes:** Do not rub eyes. Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.

#### 5. FIREFIGHTING MEASURES

**Flammability:** Not Flammable.

**Special Hazards from Substance:** No Data Available.

**Extinguishing Media:** Use water spray, alcohol-resistant foam, dry chemical, or carbon dioxide. Do not use water jet as extinguisher, this will spread the fire.

**Special Fire Fighting Procedures:** Wear self-contained breathing apparatus for firefighting if necessary.

#### 6. ACCIDENTAL RELEASE MEASURES

**If Material is Released / Spilled:** Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist, or gas. Ensure adequate ventilation. Avoid breathing dust. Evacuate personnel to safe area. Pick up and arrange dispose without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

**Environmental Precautions:** Prevent further leakage or spills if safe to do so. Do not allow to enter drains, sewers, or watercourses.

#### 7. HANDLING AND STORAGE

**Handling Conditions:** Avoid breathing dust, vapor, mist, or gas. Avoid contact with skin and eyes. Avoid prolonged or repeated exposure. Avoid formation of dust or aerosols. Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs.

**Storage Conditions:** Store in a tightly closed container in a dry, well ventilated place.

**Work / Hygienic Maintenance:** Do not eat, drink, or smoke when working with this product. Wear protective gloves and wash skin thoroughly after handling. Keep formation of airborne dusts to a minimum. Guard against dust accumulation. In case of insufficient ventilation, wear suitable respiratory equipment.

**Ventilation:** Keep in well ventilated area.

**SAFETY DATA SHEET**
**8. EXPOSURE CONTROLS AND PERSONAL PROTECTION**

<b>Permissible Exposure Limits:</b>	<b>Authority</b>	<b>Basis</b>	<b>Limit</b>	<b>Remarks</b>
	OSHA	PEL	5.0 mg/m <sup>3</sup>	Manganese Compound, Table Z-1 Limits for Air Contaminants
	OSHA	PEL	5.0 mg/m <sup>3</sup>	Manganese Fumes, Table Z-1 Limits for Air Contaminants
	California	PEL	0.2 mg/m <sup>3</sup>	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
<b>Threshold Limit Value:</b>	<b>Authority</b>	<b>Basis</b>	<b>Limit</b>	<b>Remarks</b>
	ACGIH	TLV	0.02 mg/m <sup>3</sup>	Central nervous system impairment (respirable particulate matter fraction)
	ACGIH	TLV	0.1 mg/m <sup>3</sup>	Central nervous system impairment (inhalable fraction)
	NOISH	STEL	3.0 mg/m <sup>3</sup>	Manganese Fumes, Recommended Exposure Limits (5-minute work period)
	NOISH	TWA	1.0 mg/m <sup>3</sup>	Manganese Fumes, Recommended Exposure Limits (10-hour work shift)
<b>Special Equipment:</b>	Use proper lab equipment while handling this product.			
<b>Respiratory Protection:</b>	For nuisance exposures use type P95 (US) or type P1 (EU EN 143) particle respirator. For higher levels of protection use type OV/AG/P99 (US) or type ABEK-P2 (EU EN 143) respirator cartridges. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).			
<b>Protective Gloves:</b>	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.			
<b>Eye Protection:</b>	Safety glasses with side shield. Use equipment for eye protection tested and approved under government standards such as NIOSH (US) or EN 166 (EU).			
<b>Body Protection:</b>	Wear appropriate protective clothing.			

**9. PHYSICAL AND CHEMICAL CHARACTERISTICS**

<b>Color:</b>	Black	<b>Molecular Weight:</b>	86.94 g/mol
<b>Forms:</b>	Powder	<b>Density:</b>	5.03 g/cm <sup>3</sup>
<b>Odor:</b>	Odorless	<b>pH:</b>	No Data Available.
<b>Water Solubility:</b>	No Data Available.	<b>Auto-Ignition Temperature:</b>	No Data Available.
<b>Boiling Point:</b>	No Data Available.	<b>Evaporation Rate:</b>	No Data Available.
<b>Melting Point / Freezing Point:</b>	> 535°C (> 995°F)	<b>Flammability or Explosive Limits:</b>	No Data Available.
<b>Vapor Pressure:</b>	No Data Available.	<b>Partition Coefficient: n-octanol/ water</b>	No Data Available.
<b>Vapor Density:</b>	No Data Available.	<b>Decomposition Temperature:</b>	No Data Available.
<b>Flash Point:</b>	No Data Available.	<b>Viscosity:</b>	No Data Available.

**10. REACTIVITY**

<b>Stability:</b>	Stable under recommended storage conditions.
<b>Reacts with:</b>	Oxidizing agents, sulfur, sulfides, phosphides, hypophosphites, chlorates, peroxides, aluminum powder, rubidium acetylide, potassium azide, chlorine trifluoride. Reacts with hydrochloric acid to form corrosive chlorine gas. Heating or rubbing with organic material can cause fire hazard.
<b>Incompatible Conditions:</b>	Reactive with reducing agents, combustible materials, organic materials, acids.
<b>Hazardous Decomposition Products:</b>	Manganese oxides

**11. TOXICOLOGICAL INFORMATION**

<b>Potential Health Effects:</b>	<p>Eyes: Causes serious eye irritation, stinging, tearing, redness, swelling, and blurred vision.</p> <p>Skin: No adverse effects due to skin contact are expected.</p> <p>Ingestion: Harmful if swallowed, may cause respiratory irritation, coughing.</p> <p>Inhalation: Harmful if inhaled, may cause respiratory irritation, coughing.</p> <p>Chronic: Prolonged skin contact may cause temporary irritation.</p>
<b>Signs and Symptoms:</b>	<p>In high concentrations, vapors are anesthetic and may cause headache, fatigue, dizziness, and central nervous system effects.</p> <p>Men exposed to manganese dusts show 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 have been found in workers exposed to the dust or fume of some manganese compounds.</p>
<b>Aggravate Medical Conditions:</b>	No Data Available.
<b>Median Lethal Dose:</b>	Acute Toxicity (oral / rat) - lethal dose (50% kill) 3,478 mg/kg Acute Toxicity (oral / rat) - lethal dose (lowest published toxic dose) 1,000 mg/kg Acute Toxicity (intratracheal / rat) - lethal dose 50 mg/kg Acute Toxicity (intravenous / rabbit) - lethal dose 45 mg/kg
<b>Carcinogen:</b>	<p>IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable or confirmed human carcinogen by IARC.</p> <p>ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.</p> <p>NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.</p> <p>OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.</p>

**12. ECOLOGICAL INFORMATION**

<b>Aquatic Toxicity:</b>	No Data Available.
<b>Persistence and degradability:</b>	No Data Available.
<b>Bioaccumulative potential:</b>	No Data Available.
<b>Notes:</b>	No Data Available.

**13. DISPOSAL CONSIDERATIONS**

**Disposal:** Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Empty containers should be taken to an appropriate waste handling site for recycling or disposal. Dispose of in accordance with local, state, or national regulations.

**14. TRANSPORTATION DATA**

<b>Hazardous:</b>	<b>DoT:</b> Not Dangerous Goods <b>IMDG:</b> Not Dangerous Goods <b>IATA:</b> Not Dangerous Goods
<b>Pictogram:</b>	N/A
<b>Hazard Class:</b>	N/A
<b>Packing Group:</b>	N/A
<b>UN Number:</b>	N/A
<b>Proper Shipping Name:</b>	<b>DoT:</b> N/A <b>IMDG:</b> N/A <b>IATA:</b> N/A

**15. REGULATORY INFORMATION**

<b>SARA 302 Components</b>	No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
<b>SARA 313 Components</b>	The following components are subject to reporting levels established by SARA Title III, Section 313:  Manganese Dioxide (CAS No. 1313-13-9)
<b>SARA 311/312 Hazards</b>	Acute Health Hazard, Chronic Health Hazard
<b>Massachusetts Right to Know Components</b>	No components are subject to the Ma. Right to Know Act.
<b>Pennsylvania Right to Know Components</b>	Manganese Dioxide (CAS No. 1313-13-9)
<b>New Jersey Right to Know Components</b>	Manganese Dioxide (CAS No. 1313-13-9)
<b>California Prop. 65 Components</b>	This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive harm.

**16. OTHER INFORMATION**

Copyright 2018 Lorad Chemical Corporation. The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document does not constitute a hazard assessment and should not be used in place of the user's own assessment of work place risks as required by other health and safety legislation. The information in this sheet does not represent a guarantee of the properties of the product. Lorad Chemical Corporation and its Affiliates make no warranty with respect to the accuracy of the information or the suitability of this product for any particular application, and shall not be held liable for any damage resulting from handling or from contact with the above product.

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