# Safety Data Sheet: Active Manganese Dioxide for Organic Oxidation

**Revision Date:** 2026-03-03

## 1. Identification

**Product Name:** Active Manganese Dioxide for Organic Oxidation **Product Code:** (To be determined, if available) **Recommended Use:** Laboratory and industrial oxidation reactions, selective oxidation of alcohols. **Restrictions on Use:** Not for food, drug, or household use.

**Supplier Details: Company Name:** BTLnewmaterial **Address:** Room 706, No. 154, Wuyi East Road, Niezhou Residential Committee, Caizichi Sub-district Office, Leiyang City, Hengyang City, Hunan Province, China **Email:** lixifirm@outlook.com **Phone/WhatsApp:** +8618273793022 **Website:** manganesesupply.com

**Emergency Phone Number:** (To be determined)

## 2. Hazard(s) Identification

**GHS Classification:** Acute toxicity, Category 4 (Oral), Acute toxicity, Category 4 (Inhalation), Specific target organ toxicity - repeated exposure, Category 2 (Brain) **Signal Word:** Warning **Hazard Statements:** H302: Harmful if swallowed. H332: Harmful if inhaled. H373: May cause damage to organs (brain) through prolonged or repeated exposure if inhaled. **Precautionary Statements:** P260: Do not breathe dust. P264: Wash skin thoroughly after handling. P271: Use only outdoors or in a well-ventilated area. P301 + P312: IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. P304 + P340 + P312: IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell. P314: Get medical advice/attention if you feel unwell.

## 3. Composition/Information on Ingredients

**Substance/Mixture:** Substance **Chemical Name:** Manganese Dioxide **Common Name:** Active Manganese Dioxide **CAS No.:** 1313-13-9 **EC No.:** 215-202-6 **Concentration:** $MnO_2$ Content: 85–92 %

## 4. First-Aid Measures

**General Advice:** Consult a physician. Show this safety data sheet to the doctor in attendance. **If Inhaled:** If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician. **In Case of Skin Contact:** Wash off with soap and plenty of water. Consult a physician. **In Case of Eye Contact:** Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. **If Swallowed:** Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician. **Most Important Symptoms and Effects:** (To be determined) **Indication of Immediate Medical Attention and Special Treatment Needed:** (To be determined)

## 5. Fire-Fighting Measures

**Suitable Extinguishing Media:** Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. **Specific Hazards Arising from the Chemical:** Manganese oxides. **Special Protective Equipment for Firefighters:** Wear self-contained breathing apparatus for firefighting if necessary.

## 6. Accidental Release Measures

**Personal Precautions, Protective Equipment and Emergency Procedures:** Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. **Environmental Precautions:** Do not let product enter drains. **Methods and Materials for Containment and Cleaning Up:** Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

## 7. Handling and Storage

**Precautions for Safe Handling:** Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed. **Conditions for Safe Storage, Including Any Incompatibilities:** Keep container tightly closed in a dry and well-ventilated place. Store under inert gas. Air sensitive.

## 8. Exposure Controls/Personal Protection

**Control Parameters:**

- **Manganese dioxide as Mn (related to Manganese compounds):**
  - OSHA PEL: Ceiling 5 $mg/m^3$
  - ACGIH TLV: TWA 0.02 $mg/m^3$ (respirable fraction), TWA 0.1 $mg/m^3$ (inhalable fraction)
  - NIOSH REL: TWA 1 $mg/m^3$, STEL 3 $mg/m^3$, IDLH 500 $mg/m^3$ **Engineering Controls:** Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday. **Personal Protective Equipment:**
- **Eye/Face Protection:** Safety glasses with side-shields conforming to EN166. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).
- **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.
- **Body Protection:** Impervious clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.
- **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 (EU EN 143) respirator cartridges. Use respirators and

components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

## 9. Physical and Chemical Properties

**Appearance:** Solid, black powder **Odor:** Odorless **Odor Threshold:** Not applicable **pH (5% slurry):** 3.0–5.5 **Melting Point/Freezing Point:** Not available **Initial Boiling Point and Boiling Range:** Not available **Flash Point:** Not applicable **Evaporation Rate:** Not applicable **Flammability (solid, gas):** Not flammable **Upper/Lower Flammability or Explosive Limits:** Not applicable **Vapor Pressure:** Not applicable **Vapor Density:** Not applicable **Relative Density:** (To be determined) **Bulk Density:** 0.35–0.60 g/cm$^3$ **Water Solubility:** Insoluble **Partition Coefficient n-octanol/water:** Not applicable **Auto-ignition Temperature:** Not applicable **Decomposition Temperature:** Not available **Viscosity:** Not applicable **Explosive Properties:** Not explosive **Oxidizing Properties:** Oxidizing agent **Particle Size (D50):** 10–30 µm **Surface Area (BET):** 80–150 m$^2$/g

## 10. Stability and Reactivity

**Reactivity:** (To be determined) **Chemical Stability:** Stable under recommended storage conditions. **Possibility of Hazardous Reactions:** (To be determined) **Conditions to Avoid:** (To be determined) **Incompatible Materials:** Strong reducing agents, strong acids. **Hazardous Decomposition Products:** Other decomposition products - not available.

## 11. Toxicological Information

**Acute Toxicity:**

- **Oral LD50:** >3478 mg/kg (Rat) [Source: NIST SDS]
- **Inhalation LC50:** (No data available, but harmful if inhaled based on GHS classification) **Skin Corrosion/Irritation:** May cause skin irritation. (Based on general chemical properties) **Serious Eye Damage/Eye Irritation:** May cause eye irritation. (Based on general chemical properties) **Respiratory or Skin Sensitization:** Not classified as a respiratory or skin sensitizer. (Based on available SDS data) **Germ Cell Mutagenicity:** No data available.

**Carcinogenicity:** IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC. (Note: Some sources classify Manganese compounds as suspected carcinogens, but Manganese Dioxide itself is not consistently classified as such at these levels.) **Reproductive Toxicity:** No data available. **STOT-Single Exposure:** No data available. **STOT-Repeated Exposure:** May cause damage to organs (brain) through prolonged or repeated exposure if inhaled. (Based on GHS classification) **Aspiration Hazard:** Not classified as an aspiration hazard.

## 12. Ecological Information

**Toxicity:**

- **Aquatic Vertebrate:** LC50 other aquatic organisms (freshwater) – 100% v/v (Manganese Dioxide) [Source: Columbus Chemical SDS]
- Manganese in excess can poison plants by generating reactive oxygen species (ROS) and triggering oxidative stress [Source: PMC, R Wu, 2022]. **Persistence and Degradability:** The methods for determining the biological degradability are not applicable to inorganic substances like manganese dioxide [Source: Sigma-Aldrich SDS]. **Bioaccumulative Potential:** No specific data available for manganese dioxide. However, manganese compounds can bioaccumulate in organisms. **Mobility in Soil:** Manganese is released to air mainly as particulate matter, and its fate and transport depend on particle size and density. Iron-manganese oxides in waters can act as carriers for other inorganic and organic pollutants [Source: dcceew.gov.au]. **Other Adverse Effects:** (To be determined)

## 13. Disposal Considerations

**Waste Treatment Methods:** Product - Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Contaminated packaging - Dispose of as unused product.

## 14. Transport Information

**DOT (US):** Not regulated as a hazardous material. **IMDG:** Not regulated as a hazardous material. **IATA:** Not regulated as a hazardous material.

## 15. Regulatory Information

**Safety, Health and Environmental Regulations/Legislation Specific for the Substance or Mixture:** (To be determined)

## 16. Other Information

**Further Information:** 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 is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. BTLnewmaterial and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product.

**References:**