

# Safety Data Sheet: Manganese Dioxide Coating for Rapid Sand Filters

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

## 1. Identification

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### 1.1 Product identifiers

- **Product Name:** Manganese Dioxide Coating for Rapid Sand Filters
- **Chemical Name:** Manganese Dioxide ( $\text{MnO}_2$ )
- **CAS-No.:** 1313-13-9

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

- **Identified uses:** Filtration media for oxidation and removal of iron and manganese in pressurized water treatment systems (municipal, industrial, potable water plants, groundwater treatment facilities).
- **Uses advised against:** No information available.

### 1.3 Details of the supplier of the safety data sheet

- **Company:** 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

### 1.4 Emergency telephone number

- **Emergency Phone #:** +8618273793022 (General)

## 2. Hazards identification

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### 2.1 Classification of the substance or mixture

According to OSHA Hazard Communication Standard (29 CFR 1910.1200) and GHS Rev. 3 [1]:

- **Acute toxicity (oral):** Category 4
- **Acute toxicity (inhalation):** Category 4

### 2.2 GHS label elements, including precautionary statements

- **Pictogram:** GHS07 (Exclamation Mark)
- **Signal word:** Warning
- **Hazard statement(s):**
  - H302: Harmful if swallowed.

- H332: Harmful if inhaled.
- **Precautionary statement(s):**
  - **Prevention:**
    - P261: Avoid breathing dust/fume/gas/mist/vapours/spray.
    - P264: Wash skin thoroughly after handling.
    - P270: Do not eat, drink or smoke when using this product.
    - P271: Use only outdoors or in a well-ventilated area.
  - **Response:**
    - P301 + P312 + P330: IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.
    - P304 + P340 + P312: IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.
  - **Disposal:**
    - P501: Dispose of contents/container to an approved waste disposal plant.

### 3. Composition/information on ingredients

Chemical Name	CAS-No.	Concentration (wt%)
Manganese Dioxide	1313-13-9	>98%

### 4. First aid measures

#### 4.1 Description of first aid measures

- **If inhaled:** Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention if symptoms persist.
- **If on skin:** Wash with plenty of soap and water. Remove contaminated clothing and shoes. Get medical attention if irritation develops and persists.
- **If in eyes:** Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.
- **If swallowed:** Rinse mouth. Do NOT induce vomiting. Call a POISON CENTER or doctor/physician if you feel unwell.

#### 4.2 Most important symptoms and effects, both acute and delayed

- **Symptoms:** Irritation, nausea, headache, shortness of breath.

#### 4.3 Indication of any immediate medical attention and special treatment needed

- Treat symptomatically. Provide SDS to medical personnel.

### 5. Firefighting measures

#### 5.1 Extinguishing media

- **Suitable extinguishing agents:** Use water spray, dry chemical, foam, or carbon dioxide. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- **Unsuitable extinguishing agents:** No information available.

## 5.2 Special hazards arising from the substance or mixture

- May emit toxic fumes under fire conditions. Non-combustible, but may intensify fire if in contact with combustible materials (strong oxidizer).

## 5.3 Advice for firefighters

- Wear self-contained breathing apparatus and full protective gear. Evacuate personnel to safe areas.

# 6. Accidental release measures

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## 6.1 Personal precautions, protective equipment and emergency procedures

- Ensure adequate ventilation. Avoid dust formation. Avoid breathing dust. Wear appropriate personal protective equipment.

## 6.2 Environmental precautions

- Do not allow product to enter drains, sewers, or waterways. If contamination of rivers, lakes or drains occurs, inform appropriate authorities.

## 6.3 Methods and material for containment and cleaning up

- Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

## 6.4 Reference to other sections

- For disposal considerations, see Section 13.
- For personal protective equipment, see Section 8.

# 7. Handling and storage

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## 7.1 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. Do not eat, drink or smoke when using this product.

## 7.2 Conditions for safe storage, including any incompatibilities

- Keep container tightly closed in a dry and well-ventilated place. Store away from incompatible materials (strong acids, strong bases, organic materials).

## 7.3 Specific end use(s)

- No information available.

# 8. Exposure controls/personal protection

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## 8.1 Control parameters

- **Occupational Exposure Limits (OELs):**
  - **Manganese Dioxide (CAS 1313-13-9):**
    - ACGIH TLV TWA (inhalable particles): 0.02 mg/m<sup>3</sup> [1]
    - OSHA PEL TWA (Total Dust): 0.2 mg/m<sup>3</sup> [1]

## 8.2 Exposure controls

- **Engineering controls:** Use adequate ventilation, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.
- **Personal protective equipment (PPE):**
  - **Eye/face protection:** Safety glasses with side-shields or chemical safety goggles.
  - **Skin protection:** Impervious gloves (e.g., nitrile, PVC). Protective clothing to prevent skin exposure.
  - **Body protection:** Protective work clothing.
  - **Respiratory protection:** If exposure limits are exceeded or irritation is experienced, NIOSH-approved respirator with N100 or P3 filter cartridge is recommended.
- **General hygiene considerations:** Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

## 9. Physical and chemical properties

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### 9.1 Information on basic physical and chemical properties

- **Appearance:** Black powder (from product webpage and general knowledge)
- **Odor:** Odorless (general knowledge)
- **Odor threshold:** Not determined [1]
- **pH:** Not determined [1]
- **Melting point/freezing point:** 535 °C (995 °F) [1]
- **Initial boiling point and boiling range:** Not determined [1]
- **Flash point:** Not applicable (inorganic solid)
- **Evaporation rate:** Not applicable (solid)
- **Flammability (solid, gas):** Non-flammable [1]
- **Upper/lower flammability or explosive limits:** Not determined [1]
- **Vapor pressure:** Not determined [1]
- **Vapor density:** Not determined [1]
- **Relative density:** 5.026 g/cm<sup>3</sup> [1](#)
- **Bulk Density:** 1.3–1.6 g/cm<sup>3</sup> (from product webpage)
- **Specific Gravity:** ≥3.5 g/cm<sup>3</sup> (from product webpage)
- **Water solubility:** Insoluble (general knowledge)
- **Partition coefficient n-octanol/water (log value):** Not determined [1]
- **Auto-ignition temperature:** Not determined [1]
- **Decomposition temperature:** Not determined [1]
- **Viscosity:** Not applicable (solid)
- **Explosive properties:** Not explosive
- **Oxidizing properties:** Strong oxidizer [1]

### 9.2 Other information

- No additional information available.

## 10. Stability and reactivity

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### 10.1 Reactivity

- Non-reactive under normal conditions [1].

### 10.2 Chemical stability

- Stable under normal conditions [1].

### 10.3 Possibility of hazardous reactions

- None under normal processing [1].

### 10.4 Conditions to avoid

- Incompatible materials [1].

### 10.5 Incompatible materials

- Strong acids, strong bases, organic materials [1].

### 10.6 Hazardous decomposition products

- None under normal conditions of storage and use [1].

## 11. Toxicological information

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### 11.1 Information on toxicological effects

- **Acute toxicity:**
  - **Oral LD50:** >3478 mg/kg (Rat) [2](#)
  - **Inhalation LC50:** No data available
  - **Dermal LD50:** No data available
- **Skin corrosion/irritation:** No data available.
- **Serious eye damage/eye irritation:** No data available.
- **Respiratory or skin sensitization:** No data available.
- **Germ cell mutagenicity:** No data available.
- **Carcinogenicity:** Not classified as a carcinogen by ACGIH, IARC, NTP, or OSHA [1].
- **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 [3].
- **Aspiration hazard:** Not an aspiration hazard.

## 12. Ecological information

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### 12.1 Toxicity

- **Ecotoxicity:** No additional information available [1].

## 12.2 Persistence and degradability

- No additional information available [1].

## 12.3 Bioaccumulative potential

- No additional information available [1].

## 12.4 Mobility in soil

- No additional information available [1].

## 12.5 Results of PBT and vPvB assessment

- No information available.

## 12.6 Other adverse effects

- No additional information available [1].

# 13. Disposal considerations

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## 13.1 Waste treatment methods

- **Product:** Dispose of in accordance with local, regional, national, and international regulations. Contact a licensed professional waste disposal service to dispose of this material.
- **Contaminated packaging:** Dispose of as unused product.

# 14. Transport information

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## 14.1 UN number

- Not regulated [1].

## 14.2 UN proper shipping name

- Not regulated [1].

## 14.3 Transport hazard class(es)

- Not regulated [1].

## 14.4 Packing group

- Not regulated [1].

## 14.5 Environmental hazards

- Not a marine pollutant [1].

## 14.6 Special precautions for user

- No special precautions.

## 14.7 Transport in bulk according to Annex II of MARPOL <sup>73</sup>/<sub>78</sub> and the IBC Code

- Not applicable.

## 15. Regulatory information

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

- **US Federal Regulations:**
  - **SARA 313:** Manganese Compounds (CAS 1313-13-9) are subject to reporting requirements [1].
  - **TSCA:** All ingredients are listed on the TSCA inventory [1].
- **California Proposition 65:** Not listed [1].
- **Canadian Regulations:**
  - **DSL:** All ingredients are listed on the Canadian Domestic Substances List [1].

## 16. Other information

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### 16.1 Date of preparation or last revision

- **Preparation Date:** February 11, 2026
- **Revision Date:** N/A

### 16.2 Abbreviations and acronyms

- **ACGIH:** American Conference of Governmental Industrial Hygienists
- **CAS:** Chemical Abstracts Service
- **CFR:** Code of Federal Regulations
- **DOT:** US Department of Transportation
- **GHS:** Globally Harmonized System of Classification and Labelling of Chemicals
- **HMIS:** Hazardous Materials Identification System
- **IATA:** International Air Transport Association
- **IMDG:** International Maritime Code for Dangerous Goods
- **LD50:** Lethal Dose, 50%
- **LC50:** Lethal Concentration, 50%
- **NFPA:** National Fire Protection Association
- **NIOSH:** National Institute for Occupational Safety and Health
- **NTP:** National Toxicology Program
- **OEL:** Occupational Exposure Limit
- **OSHA:** Occupational Safety and Health Administration
- **PEL:** Permissible Exposure Limit
- **PBT:** Persistent, Bioaccumulative, and Toxic
- **PNEC:** Predicted No-Effect Concentration
- **RCRA:** Resource Conservation and Recovery Act
- **SARA:** Superfund Amendments and Reauthorization Act
- **SDS:** Safety Data Sheet
- **STOT:** Specific Target Organ Toxicity

- **TLV:** Threshold Limit Value
- **TSCA:** Toxic Substances Control Act
- **TWA:** Time-Weighted Average
- **UN:** United Nations
- **vPvB:** very Persistent and very Bioaccumulative
- **WHMIS:** Workplace Hazardous Materials Information System

### 16.3 References

- [1] Fisher Scientific. (2014). *Safety Data Sheet: Manganese Dioxide*. Retrieved from <https://www.fishersci.com/store/msds?partNumber=S25420A&productDescription=MANGANESE+DIOXIDE+PWD+500G+LG&vendorId=VN00115888&countryCode=US&lan>
- [2] NIST. (2015). *Safety Data Sheet: Manganese Dioxide*. Retrieved from <https://tsapps.nist.gov/srmext/msds/25D-MSDS.pdf> [3]
- Sigma-Aldrich. (2025). *Safety Data Sheet: Manganese(IV) oxide*. Retrieved from [https://www.sigmaaldrich.com/US/en/sds/aldrich/529664?srltid=AfmBOoq6plcbHp07pUIELfC6qePPMgIMn2Om0iTkJLySkwy2q\\_xDtXDB](https://www.sigmaaldrich.com/US/en/sds/aldrich/529664?srltid=AfmBOoq6plcbHp07pUIELfC6qePPMgIMn2Om0iTkJLySkwy2q_xDtXDB)