Safety Data Sheet: Manganese Dioxide Filter Media

Effective Date: 2026-02-11

Section 1: Identification

1.1 Product Identifier

- **Product Name:** Manganese Dioxide Filter Media
- **Chemical Name:** Manganese Dioxide
- **Synonyms:** Manganese(IV) oxide
- **CAS Number:** 1313-13-9

1.2 Recommended Use of the Chemical and Restrictions on Use

- **Recommended Use:** Catalytic oxidation and removal of iron and manganese in drinking water systems, suitable for potable water purification.
- **Restrictions on Use:** For industrial and municipal water treatment applications only. Not for direct human consumption or medical use.

1.3 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

1.4 Emergency Telephone Number

- **Emergency Phone:** Consult local emergency services or poison control center.

Section 2: Hazard Identification

2.1 Classification of the Substance or Mixture

- **GHS Classification:**
  - Acute toxicity (oral), Category 4
  - Acute toxicity (inhalation), Category 4

2.2 GHS Label Elements, Including Precautionary Statements

- **Signal Word:** Warning
- **Hazard Statements:**
  - H302: Harmful if swallowed.
  - H332: Harmful if inhaled.
- **Precautionary Statements:**
  - **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 or doctor/physician if you feel unwell. Rinse mouth.
    - P304 + P340 + P312: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.
  - **Disposal:**
    - P501: Dispose of contents/container to an approved waste disposal plant.

2.3 Other Hazards Not Otherwise Classified

- **WHMIS Classification:** D2B
- **NFPA/HMIS Ratings:**
    - **Health:** 1
    - **Flammability:** 0
    - **Reactivity:** 0
    - **Special Hazards:** OX (Oxidizer - *Note: Some sources classify MnO2 as a strong oxidizer, but the referenced SDS does not explicitly state this in Section 2. However, it is a known property of manganese dioxide and will be considered in other sections if relevant.*)

Section 3: Composition/Information on Ingredients

3.1 Substances

Chemical Name	CAS Number	Concentration (wt%)
Manganese Dioxide	1313-13-9	>98%

3.2 Mixtures

Not applicable (product is a substance).

Section 4: First Aid Measures

4.1 Description of First Aid Measures

- **General Advice:** Show this safety data sheet to the doctor in attendance. If medical advice is needed, have product container or label at hand.

- **If Inhaled:** Move exposed individual to fresh air. Loosen clothing as necessary and position individual in a comfortable position. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical assistance if cough or other symptoms appear.
- **If on Skin:** Rinse/flush exposed skin gently using soap and water for 15-20 minutes. Seek medical advice if discomfort or irritation persists.
- **If in Eyes:** Protect unexposed eye. Rinse/flush exposed eye(s) gently using water for 15-20 minutes. Remove contact lens(es) if able to do so during rinsing. Seek medical attention if irritation persists or if concerned.
- **If Swallowed:** Rinse mouth thoroughly. Do not induce vomiting. Have exposed individual drink sips of water. Seek medical attention if irritation, discomfort or vomiting persists. Never give anything by mouth to an unconscious person.

4.2 Most Important Symptoms and Effects, Both Acute and Delayed

- Irritation, nausea, headache, shortness of breath.

4.3 Indication of Any Immediate Medical Attention and Special Treatment Needed

- Physician should treat symptomatically.

Section 5: Firefighting Measures

5.1 Extinguishing Media

- **Suitable Extinguishing Agents:** Use appropriate fire suppression agents for adjacent combustible materials or sources of ignition. Recommended agents include water, dry chemical, chemical foam, carbon dioxide, or alcohol-resistant foam.
- **Unsuitable Extinguishing Agents:** None known.

5.2 Special Hazards Arising from the Substance or Mixture

- Combustion products may include carbon oxides or other toxic vapors. Thermal decomposition can lead to the release of irritating gases and vapors.

5.3 Advice for Firefighters

- **Protective Equipment:** Firefighters should wear NIOSH-approved respiratory protection/breathing apparatus and full protective gear.
- **Additional Information:** Move product containers away from fire or keep cool with water spray as a protective measure, where feasible. Avoid inhaling gases, fumes, dust, mist, vapor, and aerosols. Avoid contact with skin, eyes, and clothing.

Section 6: Accidental Release Measures

6.1 Personal Precautions, Protective Equipment and Emergency Procedures

- Wear protective equipment. Ensure that air-handling systems are operational. Ensure adequate ventilation.

6.2 Environmental Precautions

- Prevent from reaching drains, sewer or waterway. Collect contaminated soil for characterization per Section 13. Should not be released into the environment.

6.3 Methods and Material for Containment and Cleaning Up

- Keep in suitable closed containers for disposal. Wear protective eyewear, gloves, and clothing. Refer to Section 8 for personal protective equipment. Always obey local regulations. Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration. Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air). Collect solids in powder form using a vacuum with a HEPA filter. Evacuate personnel to safe areas.

6.4 Reference to Other Sections

- Refer to Section 8 for personal protective equipment and Section 13 for disposal considerations.

Section 7: Handling and Storage

7.1 Precautions for Safe Handling

- Minimize dust generation and accumulation. Follow good hygiene procedures when handling chemical materials. Refer to Section 8 for personal protective equipment. Do not eat, drink, smoke, or use personal products when handling chemical substances. Avoid contact with eyes, skin, and clothing.

7.2 Conditions for Safe Storage, Including Any Incompatibilities

- Store away from incompatible materials. Protect from freezing and physical damage. Keep away from food and beverages. Provide ventilation for containers. Store in cool, dry conditions in well-sealed containers. Store with like hazards.
- **Incompatible Materials:** Strong acids, strong bases, organic materials.

Section 8: Exposure Controls/Personal Protection

8.1 Control Parameters

- **Occupational Exposure Limits (OELs):**
  - **Manganese dioxide (CAS 1313-13-9):**
    - ACGIH TLV TWA (inhalable particles): 0.02 mg/m^3
    - OSHA PEL TWA (Total Dust): 0.2 mg/m^3

8.2 Appropriate Engineering Controls

- Emergency eye wash fountains and safety showers should be available in the immediate vicinity of use/handling.

- Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapor or dusts (total/respirable) below the applicable workplace exposure limits (OELs).
- It is recommended that all dust control equipment such as local exhaust ventilation and material transport systems involved in handling of this product contain explosion relief vents or an explosion suppression system or an oxygen deficient environment.
- Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment).
- Use under a fume hood.

8.3 Individual Protection Measures, Such as Personal Protective Equipment (PPE)

- **Eye/Face Protection:** Wear equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU). Safety glasses or goggles are appropriate eye protection.
- **Skin Protection:** Select glove material impermeable and resistant to the substance. Select glove material based on rates of diffusion and degradation. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Use proper glove removal technique without touching outer surface. Avoid skin contact with used gloves. Wear protective clothing.
- **Respiratory Protection:** Not required under normal conditions of use. Where risk assessment shows air-purifying respirators are appropriate, use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. When necessary, use NIOSH approved breathing equipment.
- **General Hygienic Measures:** Perform routine housekeeping. Wash hands before breaks and at the end of work. Avoid contact with skin, eyes, and clothing. Before wearing, wash contaminated clothing.

Section 9: Physical and Chemical Properties

9.1 Information on Basic Physical and Chemical Properties

Property	Value
Appearance	Solid, granular
Color	Black to brownish-black
Odor	Odorless
Odor Threshold	Not determined
pH	Not determined
Melting/Freezing Point	535 °C (995 °F)
Boiling Point/Range	Not determined
Flash Point	Not determined
Evaporation Rate	Not determined
Flammability	Not determined
Explosion Limits	Not determined
Vapor Pressure	Not determined
Vapor Density	Not determined
Relative Density	5.026 g/cm^3
Solubility	Insoluble in water
Partition Coefficient	Not determined
Auto-ignition Temp.	Not determined
Decomposition Temp.	Not determined
Viscosity	Not determined

9.2 Other Information

No additional information available.

Section 10: Stability and Reactivity

10.1 Reactivity

- Nonreactive under normal conditions.

10.2 Chemical Stability

- Stable under normal conditions.

10.3 Possibility of Hazardous Reactions

- None under normal processing.

10.4 Conditions to Avoid

- Incompatible materials.

10.5 Incompatible Materials

- Strong acids, strong bases, organic materials.

10.6 Hazardous Decomposition Products

- None known.

Section 11: Toxicological Information

11.1 Information on Toxicological Effects

- **Acute Toxicity:**
  - Oral: Harmful if swallowed (Category 4).

    - Inhalation: Harmful if inhaled (Category 4).
    - Dermal: No additional information.
- **Skin Corrosion/Irritation:** No additional information.
- **Serious Eye Damage/Irritation:** No additional information.
- **Respiratory or Skin Sensitization:** No additional information.
- **Germ Cell Mutagenicity:** No additional information.
- **Carcinogenicity:** No additional information.
- **Reproductive Toxicity:** No additional information.
- **STOT-Single Exposure:** No additional information.
- **STOT-Repeated Exposure:** No additional information.
- **Aspiration Hazard:** No additional information.

11.2 Symptoms Related to the Physical, Chemical and Toxicological Characteristics

- Irritation, nausea, headache, shortness of breath.

11.3 Delayed and Immediate Effects as well as Chronic Effects from Short and Long-Term Exposure

- Chronic manganese poisoning primarily involves the central nervous system. Men exposed to manganese dusts showed a decrease in fertility.

11.4 Numerical Measures of Toxicity (Acute Toxicity Estimates)

- **Manganese dioxide (CAS 1313-13-9):**
    - Rat, Oral LD50: >3478 mg/kg

Section 12: Ecological Information

12.1 Ecotoxicity

- No additional information.

12.2 Persistence and Degradability

- No additional information.

12.3 Bioaccumulative Potential

- No additional information.

12.4 Mobility in Soil

- No additional information.

12.5 Other Adverse Effects

- No additional information.

Section 13: Disposal Considerations

13.1 Waste Treatment Methods

- **Waste Disposal Recommendations:** Contact a licensed professional waste disposal service to dispose of this material. Dispose of empty containers as unused product. Product or containers must not be disposed with household garbage. It is the responsibility of the waste generator to properly characterize all waste materials according to applicable regulatory entities (US 40CFR262.11). Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations. Ensure complete and accurate classification.

Section 14: Transport Information

14.1 UN Number

- ADR, ADN, DOT, IMDG, IATA: Not Regulated.

14.2 UN Proper Shipping Name

- Not Regulated.

14.3 Transport Hazard Class(es)

- None.

14.4 Packing Group

- Not Regulated.

14.5 Environmental Hazards

- **Marine Pollutant:** No.

14.6 Special Precautions for User

- None.

14.7 Transport in Bulk According to Annex II of MARPOL $^{73}/_{78}$ and the IBC Code

- Not applicable.

Section 15: Regulatory Information

15.1 Safety, Health and Environmental Regulations/Legislation Specific for the Substance or Mixture

- **United States (USA):**
    - **SARA Section $^{311}/_{312}$ (Specific toxic chemical listings):** Acute
    - **SARA Section 313 (Specific toxic chemical listings):** 1313-13-9 N450 Manganese Compounds.
    - **RCRA (hazardous waste code):** None of the ingredients are listed.

- **TSCA (Toxic Substances Control Act):** All ingredients are listed.
- **CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act):** None of the ingredients are listed.
- **Proposition 65 (California):** None of the ingredients are listed as chemicals known to cause cancer, reproductive toxicity for females, reproductive toxicity for males, or developmental toxicity.

- **Canada:**
  - **Canadian Domestic Substances List (DSL):** All ingredients are listed.
  - **Canadian NPRI Ingredient Disclosure list (limit 0.1%):** None of the ingredients are listed.
  - **Canadian NPRI Ingredient Disclosure list (limit 1%):** None of the ingredients are listed.

Section 16: Other Information

16.1 Disclaimer

This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations. The responsibility to provide a safe workplace remains with the user. The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment. The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by the use of this material. It is the responsibility of the user to comply with all applicable laws and regulations applicable to this material.

16.2 Abbreviations and Acronyms

- **IMDG:** International Maritime Code for Dangerous Goods
- **IATA:** International Air Transport Association

- **GHS:** Globally Harmonized System of Classification and Labelling of Chemicals
- **ACGIH:** American Conference of Governmental Industrial Hygienists
- **CAS:** Chemical Abstracts Service (division of the American Chemical Society)
- **NFPA:** National Fire Protection Association (USA)
- **HMIS:** Hazardous Materials Identification System (USA)
- **WHMIS:** Workplace Hazardous Materials Information System (Canada)
- **DNEL:** Derived No-Effect Level (REACH)
- **PNEC:** Predicted No-Effect Concentration (REACH)
- **CFR:** Code of Federal Regulations (USA)
- **SARA:** Superfund Amendments and Reauthorization Act (USA)
- **RCRA:** Resource Conservation and Recovery Act (USA)
- **TSCA:** Toxic Substances Control Act (USA)
- **NPRI:** National Pollutant Release Inventory (Canada)
- **DOT:** US Department of Transportation