

SAFETY DATA SHEET

SECTION 1: Identification of the substance/mixture and of the company/undertaking

- **1.1 Product identifier**

- Product name: Granular Manganese Dioxide
- Chemical name: Manganese Dioxide
- CAS No.: 1313-13-9
- EC No.: 215-202-6

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

- Identified uses: Groundwater arsenic treatment media, iron & manganese removal systems, catalytic oxidation filters.

- **1.3 Details of the supplier of the safety data sheet**

- Company Name: BTLnewmaterial
- Email: lixifirm@outlook.com
- Phone/WhatsApp: +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

- **1.4 Emergency telephone number**

- Emergency phone: +8618273793022

SECTION 2: Hazards identification

- **2.1 Classification of the substance or mixture**

- GHS Classification (Globally Harmonized System): Harmful if swallowed (Category 4), Harmful if inhaled (Category 4) [1] [2]. May cause damage to organs (Brain) through prolonged or repeated exposure [1].

- **2.2 Label elements**

- Pictogram: GHS07 (Exclamation Mark)
- 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 [1].
- Precautionary statements:
 - P261: Avoid breathing dust/fume/gas/mist/vapours/spray [1].
 - P264: Wash hands thoroughly after handling [1].
 - P270: Do not eat, drink or smoke when using this product.
 - 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: IF INHALED: Remove person to fresh air and keep comfortable for breathing.
 - P312: Call a POISON CENTER/doctor if you feel unwell.
 - P330: Rinse mouth.

- P501: Dispose of contents/container in accordance with local/regional/national/international regulations.

- **2.3 Other hazards**

- Fine dust may cause respiratory irritation. Prolonged exposure to manganese dust may affect the central nervous system.

SECTION 3: Composition/information on ingredients

- **3.1 Substances**

- Chemical name: Manganese Dioxide
 - Common name: Pyrolusite
 - CAS No.: 1313-13-9
 - EC No.: 215-202-6
 - Purity: ≥ 85% MnO₂
 - Molecular Formula: MnO₂
 - Molecular Weight: 86.94 g/mol

SECTION 4: First aid measures

- **4.1 Description of 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 if irritation develops [3].
 - **In case of eye contact:** Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Remove contact lenses, if present and easy to do. Continue rinsing.
 - **If swallowed:** Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

- **4.2 Most important symptoms and effects, both acute and delayed**

- The most important known symptoms and effects are described in the labelling (Section 2.2) and/or in Section 11.

- **4.3 Indication of any immediate medical attention and special treatment needed**

- No data available.

SECTION 5: Firefighting measures

- **5.1 Extinguishing media**

- Suitable extinguishing media: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

- **5.2 Special hazards arising from the substance or mixture**

- Hazardous combustion products: Manganese/manganese oxides [1]. Ambient fire may liberate hazardous vapours [1].

- **5.3 Advice for firefighters**

- Wear self-contained breathing apparatus for firefighting if necessary. Full firefighting turnout gear is recommended [4].

SECTION 6: Accidental release measures

- **6.1 Personal precautions, protective equipment and emergency procedures**

- Use personal protective equipment. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Avoid breathing dust. For personal protection see section 8.

- **6.2 Environmental precautions**

- Do not let product enter drains. Discharge into the environment must be avoided.

- **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 see section 13.

SECTION 7: Handling and storage

- **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. For precautions see section 2.2.

- **7.2 Conditions for safe storage, including any incompatibilities**

- Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Keep in a dry place.

- **7.3 Specific end use(s)**

- Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

SECTION 8: Exposure controls/personal protection

- **8.1 Control parameters**

- **Occupational exposure limits:**

- Manganese (as Mn), inhalable fraction: TWA 0.02 mg/m³ (ACGIH)
- Manganese (as Mn), respirable fraction: TWA 0.05 mg/m³ (ACGIH)

- **8.2 Exposure controls**

- **Appropriate 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. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.
- **Body Protection:** Complete suit protecting against chemicals, 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).

SECTION 9: Physical and chemical properties

- **9.1 Information on basic physical and chemical properties**

- Appearance: Granular media, black/dark brown powder [5] [6]
- Odor: Odorless [5] [6]
- Odor Threshold: Not available
- pH: 6.5 – 9.5 (service range) (from product webpage)
- Melting point/freezing point: > 535 °C (Decomposes) [5]
- Initial boiling point and boiling range: Not applicable

- Flash point: Not applicable
- Evaporation rate: Not applicable
- Flammability (solid, gas): Non-flammable
- Upper/lower flammability or explosive limits: Not applicable
- Vapour pressure: Not applicable
- Vapour density: Not applicable
- Relative density: 1.8 – 2.2 g/cm³ (Bulk Density, from product webpage)
- Water solubility: Insoluble
- Partition coefficient: n-octanol/water: Not available
- Auto-ignition temperature: Not applicable
- Decomposition temperature: > 535 °C [5]
- Viscosity: Not applicable
- Explosive properties: Not explosive
- Oxidizing properties: Oxidizing agent

- **9.2 Other information**

- Particle Size Range: 0.3 – 2.5 mm (from product webpage)
- Moisture Content: ≤ 5.0% (from product webpage)
- Operating Temperature: 4 – 50 °C (from product webpage)

SECTION 10: Stability and reactivity

- **10.1 Reactivity**

- No data available.

- **10.2 Chemical stability**

- Stable under recommended storage conditions.

- **10.3 Possibility of hazardous reactions**

- No data available.

- **10.4 Conditions to avoid**

- Heat, flames and sparks. Incompatible materials.

- **10.5 Incompatible materials**

- Strong reducing agents, strong acids, strong bases, organic materials.

- **10.6 Hazardous decomposition products**

- Other decomposition products - No data available. In the event of fire: see section 5.

SECTION 11: Toxicological information

- **11.1 Information on toxicological effects**

- **Acute toxicity:**

- LD50 Oral - Rat - 3,478 mg/kg [5]
- LC50 Inhalation - Rat - 4 h - > 4.98 mg/l [5]

- **Skin corrosion/irritation:** May cause skin irritation.

- **Serious eye damage/eye irritation:** May cause eye irritation.

- **Respiratory or skin sensitisation:** No data available.

- **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.
- **Reproductive toxicity:** No data available.
- **Specific target organ toxicity - single exposure:** No data available.
- **Specific target organ toxicity - repeated exposure:** May cause damage to organs (Brain) through prolonged or repeated exposure [1].
- **Aspiration hazard:** No data available.
- **Additional Information:** RTECS: OO0350000. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

SECTION 12: Ecological information

- **12.1 Toxicity**
 - **Toxicity to fish:** LC50 - Oncorhynchus mykiss (rainbow trout) - > 3.6 mg/l - 96 h [5]
 - **Toxicity to daphnia and other aquatic invertebrates:** EC50 - Daphnia magna (Water flea) - > 2.7 mg/l - 48 h [5]
- **12.2 Persistence and degradability**
 - The methods for determining biodegradability are not applicable to inorganic substances.
- **12.3 Bioaccumulative potential**
 - No data available.
- **12.4 Mobility in soil**
 - No data available.
- **12.5 Results of PBT and vPvB assessment**
 - PBT/vPvB assessment not available as chemical safety assessment not required/not conducted.
- **12.6 Other adverse effects**
 - No data available.

SECTION 13: Disposal considerations

- **13.1 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. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.
 - **Contaminated packaging:** Dispose of as unused product.

SECTION 14: Transport information

- **14.1 UN number**
 - ADR/RID: Not dangerous goods
 - IMDG: Not dangerous goods
 - IATA: Not dangerous goods
- **14.2 UN proper shipping name**
 - ADR/RID: Not dangerous goods
 - IMDG: Not dangerous goods
 - IATA: Not dangerous goods

- **14.3 Transport hazard class(es)**

- ADR/RID: Not dangerous goods
- IMDG: Not dangerous goods
- IATA: Not dangerous goods

- **14.4 Packing group**

- ADR/RID: Not dangerous goods
- IMDG: Not dangerous goods
- IATA: Not dangerous goods

- **14.5 Environmental hazards**

- ADR/RID: No
- IMDG Marine pollutant: No
- IATA: No

- **14.6 Special precautions for user**

- No data available.

SECTION 15: Regulatory information

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

- No data available.

- **15.2 Chemical safety assessment**

- For this product a chemical safety assessment was not carried out.

SECTION 16: Other information

- **Full text of H-Statements referred to under sections 2 and 3:**

- H302: Harmful if swallowed.
- H332: Harmful if inhaled.
- H373: May cause damage to organs (Brain) through prolonged or repeated exposure.

- **References:**

- [1] Sigma-Aldrich. (2025, November 6). *SAFETY DATA SHEET*. Retrieved from <https://www.sigmaaldrich.com/US/en/sds/aldrich/529664>
- [2] Aquaphoenix Scientific. (2018, January 30). *Manganese dioxide (MD1200) - Safety Data Sheet*. Retrieved from https://sds.aquaphoenixsci.com/SDS/186378_MD1200_GHSUnitedStatesSDS_en_2018-01-30.pdf
- [3] Harper College. *MANGANESE DIOXIDE*. Retrieved from <https://dept.harpercollege.edu/chemistry/msds/Manganese%20dioxide%20JTBaker.pdf>
- [4] Spectrum Chemical. *SAFETY DATA SHEET*. Retrieved from https://www.spectrumchemical.com/MSDS/M1107_AGHS.pdf
- [5] Columbus Chemical. (2020, December 3). *Manganese Dioxide, Fine Granular Reagent*. Retrieved from <https://www.columbuschemical.com/MSDS/SDS/Manganese%20Dioxide,%20Fine%20Granular%20Reagent%203330.pdf>
- [6] ChemicalBook. (2025, November 1). *Manganese dioxide - Safety Data Sheet*. Retrieved from <https://www.chemicalbook.com/msds/manganese-dioxide.pdf>

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