Safety Data Sheet: Manganese Dioxide Granules

Revision Date: 2026-02-11

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

1.1 Product identifier

- **Product Name:** Manganese Dioxide Granules for Catalytic Deferrization in Wells
- **Chemical Name:** Manganese(IV) oxide
- **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:** Filter media for catalytic deferrization in water treatment, chemical synthesis.
- **Uses Advised Against:** Not for direct human consumption. Avoid contact with incompatible materials.

1.3 Details of the supplier of the safety data sheet

- **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:** +8618273793022 (BTLnewmaterial)

SECTION 2: Hazard(s) identification

2.1 Classification of the substance or mixture

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

- **Acute toxicity (oral), Category 4** (H302: Harmful if swallowed.)
- **Acute toxicity (inhalation), Category 4** (H332: Harmful if inhaled.)
- **Specific target organ toxicity - repeated exposure (Category 2)** (H373: May cause damage to organs (Brain) through prolonged or repeated exposure if inhaled.)

2.2 GHS Label elements, including precautionary statements

- **Pictogram:**
    - Exclamation Mark (for acute toxicity)
    - Health Hazard (for specific target organ toxicity - repeated exposure)
- **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:**
    - **Prevention:**
        - P260: Do not breathe 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.

2.3 Other hazards

- Nonflammable, noncombustible solid. Strong oxidizer, fire hazard when in contact with combustible materials. When heated to decomposition, may emit toxic fumes.

SECTION 3: Composition/information on ingredients

3.1 Substances

Chemical Name	CAS No.	Concentration (by weight)
Manganese(IV) oxide	1313-13-9	75-85% (Product Specific)
Manganese oxide	1313-13-9	>98% (General SDS)

Note: The product is primarily Manganese(IV) oxide (MnO_2). The concentration of 75-85% refers to the active MnO_2 content in the granules, while general SDS may refer to the purity of the chemical substance itself.

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:** 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 persists.
- **In case of eye contact:** Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.
- **If swallowed:** Rinse mouth with water. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

- Irritation, nausea, headache, shortness of breath. Prolonged or repeated exposure may cause damage to the brain.

4.3 Indication of any immediate medical attention and special treatment needed

- Treat symptomatically. Provide general supportive measures and treat symptomatically.

SECTION 5: Fire-fighting measures

5.1 Extinguishing media

- **Suitable extinguishing media:** Use water spray, dry chemical, carbon dioxide, or alcohol-resistant foam. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- **Unsuitable extinguishing media:** None known.

5.2 Specific hazards arising from the substance or mixture

- Combustion products may include manganese oxides or other toxic vapors. Thermal decomposition can lead to release of irritating gases and vapors. Strong oxidizer, fire hazard when in contact with combustible materials.

5.3 Advice for firefighters

- Wear self-contained breathing apparatus for firefighting if necessary. Use personal protective equipment.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

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

6.2 Environmental precautions

- Do not let product enter drains. Prevent further leakage or spillage if safe to do so. Do not contaminate water sources or sewers.

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.

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

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

- **Occupational Exposure Limits (OELs):**
  - **Manganese (as Mn), inhalable fraction:** ACGIH TLV TWA: 0.02 mg/m^3
  - **Manganese (as Mn), respirable fraction:** ACGIH TLV TWA: 0.02 mg/m^3

- **Manganese (as Mn), total dust:** OSHA PEL TWA: 5 mg/m^3

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. 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.
- **Personal protective equipment (PPE):**
  - **Eye/face protection:** Safety glasses with side-shields conforming to EN166. Use equipment for eye protection tested and approved under appropriate government standards.
  - **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. Recommended glove materials: Nitrile rubber, Neoprene, PVC.
  - **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).

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

- **Appearance:** Black-to-brown powder/granules
- **Odor:** Odorless

- **Odor Threshold:** Not determined
- **pH:** Not determined
- **Melting point/freezing point:** 535 °C (995 °F) (Decomposes)
- **Initial boiling point and boiling range:** Not applicable (Decomposes before boiling)
- **Flash point:** Not applicable
- **Evaporation rate:** Not applicable
- **Flammability (solid, gas):** Non-flammable solid, but strong oxidizer.
- **Upper/lower flammability or explosive limits:** Not determined
- **Vapor pressure:** Not determined
- **Vapor density:** Not determined
- **Relative density:** 5.026 g/cm^3 (General SDS) / Bulk Density: 1.8–2.1 g/cm^3 (Product Specific) / Apparent Density: 3.6–4.0 g/cm^3 (Product Specific)
- **Water solubility:** Insoluble
- **Partition coefficient: n-octanol/water:** Not determined
- **Auto-ignition temperature:** Not determined
- **Decomposition temperature:** >535 °C
- **Viscosity:** Not applicable (Solid)
- **Explosive properties:** Not explosive
- **Oxidizing properties:** Strong oxidizer

SECTION 10: Stability and reactivity

10.1 Reactivity

- Nonreactive under normal conditions. Strong oxidizer.

10.2 Chemical stability

- Stable under normal conditions.

10.3 Possibility of hazardous reactions

- None under normal processing. Reacts violently with strong reducing agents.

10.4 Conditions to avoid

- Heat, incompatible materials, dust generation.

10.5 Incompatible materials

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

10.6 Hazardous decomposition products

- Manganese oxides, oxygen (upon decomposition at high temperatures).

SECTION 11: Toxicological information

11.1 Information on toxicological effects

- **Acute toxicity:**
  - **Oral LD50 (Rat):** >3478 mg/kg (Manganese dioxide, general SDS data)
  - **Inhalation LC50:** No data available for product, but classified as Acute toxicity (inhalation), Category 4.
  - **Dermal LD50:** No data available.
- **Skin corrosion/irritation:** No data available. May cause mechanical irritation.
- **Serious eye damage/eye irritation:** No data available. May cause mechanical irritation.
- **Respiratory or skin sensitisation:** No data available.
- **Germ cell mutagenicity:** No data available.
- **Carcinogenicity:** Not classified as a carcinogen by IARC, NTP, or OSHA.
- **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.
- **Aspiration hazard:** No data available.

SECTION 12: Ecological information

12.1 Toxicity

- **Ecotoxicity:** No data available. Manganese compounds can be harmful to aquatic organisms in high concentrations.

12.2 Persistence and degradability

- Inorganic substance, not readily biodegradable.

12.3 Bioaccumulative potential

- No data available. Manganese can accumulate in organisms, but bioaccumulation potential of MnO_2 is generally low.

12.4 Mobility in soil

- Low mobility in soil due to its insoluble nature.

12.5 Results of PBT and vPvB assessment

- This substance does not meet the PBT/vPvB criteria of REACH, Annex XIII.

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. 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.

- **Contaminated packaging:** Dispose of as unused product.

SECTION 14: Transport information

14.1 UN number

- Not regulated.

14.2 UN proper shipping name

- Not regulated.

14.3 Transport hazard class(es)

- Not regulated.

14.4 Packing group

- Not regulated.

14.5 Environmental hazards

- No data available. Not classified as an environmental hazard.

14.6 Special precautions for user

- Always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

SECTION 15: Regulatory information

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

- **USA Federal Regulations:**
    - **SARA 302 Components:** No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
    - **SARA 313 Components:** The following components are subject to reporting levels established by SARA Title III, Section 313: Manganese compounds

(CAS No. 1313-13-9).

- **SARA $^{311}/_{312}$ Hazards:** Acute Health Hazard, Chronic Health Hazard.
- **TSCA:** All ingredients are listed on the TSCA inventory.

- **California Proposition 65:** This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

SECTION 16: Other information

16.1 Date of preparation or last revision

- **Revision Date:** 2026-02-11

16.2 Abbreviations and acronyms

- **GHS:** Globally Harmonized System of Classification and Labelling of Chemicals
- **CAS:** Chemical Abstracts Service
- **EC:** European Community
- **LD50:** Lethal Dose, 50% (the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals)
- **LC50:** Lethal Concentration, 50% (the concentration of a chemical in air or water that causes the death of 50% (one half) of a group of test animals)
- **OEL:** Occupational Exposure Limit
- **PPE:** Personal Protective Equipment
- **STOT:** Specific Target Organ Toxicity
- **PBT:** Persistent, Bioaccumulative and Toxic
- **vPvB:** very Persistent and very Bioaccumulative
- **REACH:** Registration, Evaluation, Authorisation and Restriction of Chemicals
- **SARA:** Superfund Amendments and Reauthorization Act
- **TSCA:** Toxic Substances Control Act
- **OSHA:** Occupational Safety and Health Administration
- **ACGIH:** American Conference of Governmental Industrial Hygienists

16.3 Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.