

Safety Data Sheet (SDS)

Section 1: Identification

- **Product Identifier:** Manganese Dioxide (MnO₂)
- **Other Means of Identification:** Pyrolusite, Manganese(IV) oxide, Black Manganese Oxide
- **Recommended Use:** Ceramic glaze coloration and tone adjustment. [1]
- **Restrictions on Use:** Not for food or pharmaceutical 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

- **Emergency Contact:** +8618273793022 (General)

Section 2: Hazard Identification

GHS Classification

- **Acute toxicity, Oral:** Category 4 [2]
- **Acute toxicity, Inhalation:** Category 4 [2]
- **Specific target organ toxicity - repeated exposure:** Category 2 (Brain) [2]

Label Elements

- **Hazard Pictograms:** GHS07 (Exclamation Mark), GHS08 (Health Hazard)
- **Signal Word:** Warning

Hazard Statements

- **H302:** Harmful if swallowed. [2]
- **H332:** Harmful if inhaled. [2]
- **H373:** May cause damage to organs (Brain) through prolonged or repeated exposure if inhaled. [2]

Precautionary Statements

- **P260:** Do not breathe dust/fume/gas/mist/vapours/spray. [2]
- **P264:** Wash skin thoroughly after handling. [2]
- **P270:** Do not eat, drink or smoke when using this product. [2]
- **P271:** Use only outdoors or in a well-ventilated area. [2]
- **P301 + P312:** IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. [2]
- **P304 + P340:** IF INHALED: Remove person to fresh air and keep comfortable for breathing. [2]
- **P312:** Call a POISON CENTER/doctor if you feel unwell. [2]
- **P314:** Get medical advice/attention if you feel unwell. [2]
- **P330:** Rinse mouth. [2]
- **P501:** Dispose of contents/container in accordance with local/regional/national/international regulations. [2]

Other Hazards

- May react violently with combustible and reducing materials, generating fire and explosion hazards. [8]
- Reacts with aluminum on heating. [8]

Section 3: Composition/Information on Ingredients

| Chemical Name | Common Name(s) | CAS Number | EC Number | Concentration (%) |
|-------------------|---------------------------------|------------|-----------|-------------------|
| Manganese Dioxide | Pyrolusite, Manganese(IV) oxide | 1313-13-9 | 215-202-6 | 85.0 – 92.0 [1] |
| Iron(III) Oxide | Ferric oxide | 1309-37-1 | 215-168-2 | ≤ 2.5 [1] |

Note: The specific concentration of ingredients may vary slightly based on product grade and source. Impurities such as Iron(III) Oxide are typically present in trace amounts. [1]

Section 4: First-Aid Measures

Description of First-Aid Measures

- **General Advice:** Consult a physician. Show this safety data sheet to the doctor in attendance. [2]
- **If Inhaled:** If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician. [2]
- **In Case of Skin Contact:** Wash off with soap and plenty of water. Consult a physician. [2]
- **In Case of Eye Contact:** Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. [2]
- **If Swallowed:** Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician. [2]

Most Important Symptoms and Effects, Both Acute and Delayed

- The most important known symptoms and effects are described in the labelling (Section 2) and/or in Section 11. [2]

Indication of Any Immediate Medical Attention and Special Treatment Needed

- No data available. [2]

Section 5: Fire-Fighting Measures

Extinguishing Media

- **Suitable extinguishing media:** Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. [2]

Specific Hazards Arising from the Chemical

- Ambient fire may liberate hazardous vapours. [7]
- Hazardous combustion products: Manganese/manganese oxides. [7]

Special Protective Equipment and Precautions for Firefighters

- Wear self-contained breathing apparatus for firefighting if necessary. [4]
- Fight fire with normal precautions from a reasonable distance. [4]

Section 6: Accidental Release Measures

Personal Precautions, Protective Equipment and Emergency Procedures

- Use personal protective equipment. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. [2]

Environmental Precautions

- Do not let product enter drains. [2]

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. [2]

Section 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. [2]

Conditions for Safe Storage, Including Any Incompatibilities

- Store in cool place. Keep container tightly closed in a dry and well-ventilated place. [2]
- Keep in a dry place. [2]
- Incompatible materials: Strong oxidizing agents, strong reducing agents, acids, combustible materials. [8]

Section 8: Exposure Controls/Personal Protection

Control Parameters

- **Occupational Exposure Limits:**
 - **Manganese, elemental and inorganic compounds (as Mn):**
 - **OSHA PEL:** Ceiling 5 mg/m³ [2]
 - **ACGIH TLV:** TWA 0.02 mg/m³ (respirable fraction), 0.1 mg/m³ (inhalable fraction) [2]
 - **NIOSH REL:** TWA 1 mg/m³ (10-hour), STEL 3 mg/m³ (15-minute) [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. [2]

Individual Protection Measures

- **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). [2]
- **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. [2]
 - **Full contact:** Material: Nitrile rubber, Minimum layer thickness: 0.11 mm, Break through time: 480 min. [2]
 - **Splash contact:** Material: Nitrile rubber, Minimum layer thickness: 0.11 mm, Break through time: 480 min. [2]
- **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. [2]
- **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). [2]
- **Control of Environmental Exposure:** Do not let product enter drains. [2]

Section 9: Physical and Chemical Properties

| Property | Value |
|----------------------------------------------|----------------------------------------------------------|
| Appearance | Brown-black solid [12] |
| Odor | Odorless [2] |
| Odor Threshold | No data available [2] |
| pH | No data available |
| Melting point/freezing point | 535 °C (decomposes) [12] |
| Initial boiling point and boiling range | Not applicable |
| Flash point | Not applicable |
| Evaporation rate | No data available |
| Flammability (solid, gas) | The product is not flammable. [4] |
| Upper/lower flammability or explosive limits | No data available |
| Vapor pressure | No data available |
| Vapor density | No data available |
| Relative density | 5.026 g/cm ³ [12] |
| Water solubility | Insoluble in water [15] |
| Partition coefficient: n-octanol/water | No data available |
| Auto-ignition temperature | No data available |
| Decomposition temperature | > 535 °C [11] |
| Viscosity | No data available |
| Explosive properties | No data available |
| Oxidizing properties | The substance or mixture is not classified as oxidizing. |

Other Information

- **Bulk Density:** 0.8 – 1.1 g/cm³ [1]

Section 10: Stability and Reactivity

Reactivity

- Reacts violently with combustible and reducing materials. [8]
- Reacts with aluminum on heating. [8]

Chemical Stability

- Stable under recommended storage conditions. [2]

Possibility of Hazardous Reactions

- No data available. [2]

Conditions to Avoid

- Heat, flames and sparks. Incompatible materials. [2]

Incompatible Materials

- Strong oxidizing agents, strong reducing agents, acids, combustible materials. [8]

Hazardous Decomposition Products

- Hazardous decomposition products formed under fire conditions. - Manganese/manganese oxides. [7]
- Other decomposition products - No data available. [2]
- In the event of fire: see Section 5. [2]

Section 11: Toxicological Information

Information on Toxicological Effects

- **Acute toxicity:**
 - **Oral LD50:** > 2,000 mg/kg (Rat) [2]
 - **Inhalation LC50:** > 5.1 mg/L (Rat, 4 h) [2]
 - **Dermal LD50:** No data available [2]
- **Skin corrosion/irritation:** No data available [2]
- **Serious eye damage/eye irritation:** No data available [2]
- **Respiratory or skin sensitisation:** No data available [2]
- **Germ cell mutagenicity:** No data available [2]
- **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. [2]
- **Reproductive toxicity:** No data available [2]
- **Specific target organ toxicity - single exposure:** No data available [2]
- **Specific target organ toxicity - repeated exposure:** May cause damage to organs (Brain) through prolonged or repeated exposure if inhaled. [2]
- **Aspiration hazard:** No data available [2]

Additional Information

- **RTECS:** OP0350000 [2]
- **Signs and Symptoms of Exposure:** To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. [2]

- **Manganism:** Chronic exposure to manganese compounds, especially through inhalation, can lead to a neurological disorder known as manganism. Symptoms include psychiatric disturbances, motor dysfunction (tremors, rigidity), and cognitive impairment. [9] [10]

Section 12: Ecological Information

Toxicity

- **Toxicity to fish:** No data available [11]
- **Toxicity to daphnia and other aquatic invertebrates:** No data available [2]

Persistence and Degradability

- No data available [2]

Bioaccumulative Potential

- No data available [2]

Mobility in Soil

- No data available [2]

Other Adverse Effects

- No data available [2]

Section 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. [2]

- **Contaminated packaging:** Dispose of as unused product. [2]

Section 14: Transport Information

DOT (US), IMDG, IATA

- **UN number:** Not regulated as a hazardous material for transport. [2]
- **UN proper shipping name:** Not applicable
- **Transport hazard class(es):** Not applicable
- **Packing group:** Not applicable
- **Environmental hazards:** Not applicable
- **Special precautions for user:** No data available [2]

Section 15: Regulatory Information

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

- **US Federal Regulations:**
 - **SARA 302 Components:** No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302. [2]
 - **SARA 313 Components:** The following components are subject to reporting levels established by SARA Title III, Section 313:
 - Manganese compounds (as Mn) - CAS No. 7439-96-5 [2]
 - **SARA ³¹¹/₃₁₂ Hazards:** Acute Health Hazard, Chronic Health Hazard [2]
- **Massachusetts Right To Know Components:** No components are subject to the Massachusetts Right to Know Act. [2]
- **Pennsylvania Right To Know Components:** Manganese Dioxide - CAS No. 1313-13-9 [2]

- **New Jersey Right To Know Components:** Manganese Dioxide - CAS No. 1313-13-9 [2]
- **California Prop. 65 Components:** This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm. [2]
- **EU Regulations:**
 - **REACH Status:** This substance is not subject to registration according to Regulation (EC) No ¹⁹⁰⁷/₂₀₀₆ (REACH). [2]
 - **CLP Classification:** According to Regulation (EC) No ¹²⁷²/₂₀₀₈ (CLP), Manganese Dioxide is classified as:
 - Acute Tox. 4 (H302, H332) - Harmful if swallowed or inhaled.
 - STOT RE 2 (H373) - May cause damage to organs (Brain) through prolonged or repeated exposure if inhaled.

Section 16: Other Information

Further Information

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.

References

- [1] [MnO₂ Supplier for Dark Brown and Black Ceramic Glazes - manganesesupply.com](#)
[2] [Safety Data Sheet - Sigma-Aldrich](#) [3] [Safety Data Sheet - Fisher Scientific](#) [4] [Safety Data Sheet: Manganese\(IV\) oxide - Carl Roth](#) [5] [Manganese-dioxide-MSDS.pdf - The University of Texas at Dallas](#) [6] [Manganese Dioxide - Brazosport College](#) [7] [Safety Data Sheet - Sigma-Aldrich \(Alternative Link\)](#) [8] [ICSC 0175 - MANGANESE DIOXIDE - International Chemical Safety Cards](#) [9] [HEALTH EFFECTS - Toxicological Profile for](#)

[Manganese - NCBI](#) [10] [Manganese Compounds - EPA](#) [11] [safety data sheet - Home Science Tools](#) [12] [Manganese dioxide - Wikipedia](#) [13] [Manganese dioxide | MnO2 | CID 14801 - PubChem](#) [14] [Manganese Dioxide - American Elements](#) [15] [Manganese Dioxide - an overview - ScienceDirect](#)