

MATERIAL SAFETY DATA SHEET (MSDS)

According to GHS (Globally Harmonized System of Classification and Labelling of Chemicals)

SECTION 1: Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product Identifier

- **Product Name:** Manganese Dioxide
- **Chemical Name:** Manganese(IV) Oxide
- **CAS No.:** 1313-13-9
- **EC No.:** 215-202-6
- **Recommended Use:** Municipal water treatment, oxidation catalyst, industrial chemical.

1.2 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
- **Phone:** +8618273793022
- **Email:** lixifirm@outlook.com
- **Website:** manganesesupply.com

1.3 Emergency Telephone Number

- **Emergency Phone:** +8618273793022
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SECTION 2: Hazards Identification

2.1 Classification of the Substance or Mixture

According to GHS classification:

- **Acute Toxicity, Oral (Category 4)**, H302
- **Acute Toxicity, Inhalation (Category 4)**, H332
- **Specific Target Organ Toxicity - Repeated Exposure (Category 2)**, H373 (Brain, Central Nervous System)

2.2 GHS Label Elements

- **Signal Word:** Warning
 - **Hazard Pictograms:**
 - Exclamation Mark (GHS07)
 - Health Hazard (GHS08)
 - **Hazard Statements:**
 - H302+H332: Harmful if swallowed or if inhaled.
 - H373: May cause damage to organs (Brain) through prolonged or repeated exposure if inhaled.
 - **Precautionary Statements:**
 - 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.
 - P301 + P312: IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell.
 - P304 + P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.
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SECTION 3: Composition/Information on Ingredients

3.1 Substances

Ingredient	CAS No.	EC No.	Concentration (w/w)
Manganese Dioxide (MnO ₂)	1313-13-9	215-202-6	85% – 92%
Iron Oxide (Fe ₂ O ₃)	1309-37-1	215-168-2	≤ 1.0%
Silicon Dioxide (SiO ₂)	7631-86-9	231-545-4	≤ 0.5%

SECTION 4: First Aid Measures

4.1 Description of First Aid Measures

- **Inhalation:** Move to fresh air. If breathing is difficult, give oxygen. Seek medical attention if symptoms persist.
 - **Skin Contact:** Wash off with soap and plenty of water. Consult a physician if irritation develops.
 - **Eye Contact:** Flush eyes with water as a precaution. Remove contact lenses if present. Seek medical advice if irritation occurs.
 - **Ingestion:** Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.
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SECTION 5: Firefighting Measures

5.1 Extinguishing Media

- **Suitable:** Use water spray, alcohol-resistant foam, dry chemical, or carbon dioxide.
- **Unsuitable:** None known.

5.2 Special Hazards Arising from the Substance

- Manganese oxides. Manganese dioxide is a strong oxidizer; it may increase the burning rate of combustible materials.

5.3 Advice for Firefighters

- Wear self-contained breathing apparatus for firefighting if necessary.
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SECTION 6: Accidental Release Measures

6.1 Personal Precautions

- Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist, or gas. Ensure adequate ventilation.

6.2 Environmental Precautions

- Do not let product enter drains.

6.3 Methods for Cleaning Up

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

7.2 Conditions for Safe Storage

- Store in a cool, dry, well-ventilated place. Keep container tightly closed. Keep away from heat and sources of ignition. Do not store near combustible materials.
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SECTION 8: Exposure Controls/Personal Protection

8.1 Control Parameters

- **Occupational Exposure Limits (Manganese compounds, as Mn):**
 - TWA: 0.2 mg/m³ (ACGIH)
 - PEL: 5 mg/m³ (OSHA)

8.2 Exposure Controls

- **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:** Safety glasses with side-shields.
 - **Skin:** Handle with gloves. Gloves must be inspected prior to use.
 - **Body:** Choose body protection according to the amount and concentration of the dangerous substance at the work place.
 - **Respiratory:** For nuisance exposures, use type P95 (US) or type P1 (EU EN 143) particle respirator.
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SECTION 9: Physical and Chemical Properties

9.1 Information on Basic Physical and Chemical Properties

Property	Value
Appearance	Black or dark brown granular/powder
Odour	Odourless
pH (10% slurry)	6.5 – 8.5
Melting Point	535 °C (decomposes)
Boiling Point	N/A
Flash Point	N/A
Density	5.02 g/cm ³ (True density)
Bulk Density	0.9 – 1.3 g/cm ³
Solubility in Water	Insoluble
Auto-ignition Temperature	N/A

SECTION 10: Stability and Reactivity

10.1 Reactivity

- Stable under recommended storage conditions.

10.2 Chemical Stability

- Stable under normal conditions.

10.3 Possibility of Hazardous Reactions

- Strong oxidizer. Contact with combustible materials may cause fire.

10.4 Conditions to Avoid

- Avoid moisture and heat.

10.5 Incompatible Materials

- Strong acids, Strong reducing agents, Organic materials, Combustible materials.

10.6 Hazardous Decomposition Products

- Manganese oxides.
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SECTION 11: Toxicological Information

11.1 Information on Toxicological Effects

- **Acute Toxicity:** LD50 Oral - Rat - > 3,478 mg/kg.
 - **Skin Corrosion/Irritation:** No data available.
 - **Serious Eye Damage/Irritation:** No data available.
 - **Respiratory or Skin Sensitization:** 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.
 - **Specific Target Organ Toxicity - Repeated Exposure:** May cause damage to organs (Brain) through prolonged or repeated exposure if inhaled (Manganism).
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SECTION 12: Ecological Information

12.1 Toxicity

- No data available.

12.2 Persistence and Degradability

- Not applicable for inorganic substances.

12.3 Bioaccumulative Potential

- No data available.

12.4 Mobility in Soil

- No data available.
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SECTION 13: Disposal Considerations

13.1 Waste Treatment Methods

- **Product:** Offer surplus and non-recyclable solutions to a licensed disposal company.
 - **Contaminated Packaging:** Dispose of as unused product.
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SECTION 14: Transport Information

14.1 UN Number

- **ADR/RID/IMDG/IATA:** Not regulated as dangerous goods (unless specifically classified due to oxidation properties in certain concentrations).

14.2 UN Proper Shipping Name

- **ADR/RID/IMDG/IATA:** Manganese Dioxide
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SECTION 15: Regulatory Information

15.1 Safety, Health and Environmental Regulations

- This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006 and GHS.
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SECTION 16: Other Information

16.1 Disclaimer

- The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes.