

SAFETY DATA SHEET (SDS / MSDS)

Manganese Dioxide (MnO₂) for Thermite Welding Reactions

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product Identifier

- **Product Name:** Manganese Dioxide (MnO₂) for Thermite Welding Reactions
- **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:** Oxidizing agent for thermite welding, metallurgical additive, industrial applications.
- **Uses Advised Against:** No specific uses advised against.

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:** +8618273793022
- **Website:** manganesesupply.com

1.4 Emergency Telephone Number

- **Emergency Phone:** +8618273793022
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SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the Substance or Mixture (GHS/CLP)

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

2.2 Label Elements

- **Signal Word:** Warning
- **Hazard Pictograms:** GHS07 (Exclamation Mark), GHS08 (Health Hazard)
- **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.
 - 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/doctor if you feel unwell.
 - P304 + P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.

2.3 Other Hazards

- Dust may cause mechanical irritation to eyes and skin.
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SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS No.	EC No.	Concentration (%)
Manganese Dioxide (MnO ₂)	1313-13-9	215-202-6	85% – 92%
Impurities (e.g., Fe, Si, Al oxides)	N/A	N/A	8% – 15%

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 with soap and water. Seek medical attention if irritation develops.
- **Eye Contact:** Flush eyes with water for at least 15 minutes. Seek medical attention if irritation persists.
- **Ingestion:** Rinse mouth. Do NOT induce vomiting. Seek medical attention immediately.

4.2 Most Important Symptoms and Effects, Both Acute and Delayed

- Inhalation of dust may cause respiratory irritation. Chronic exposure may affect the central nervous system (Manganism).

4.3 Indication of Any Immediate Medical Attention and Special Treatment Needed

- Treat symptomatically.
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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 or Mixture

- Strong oxidizer. Contact with combustible materials may cause fire. Decomposes at high temperatures (>535°C) releasing oxygen.

5.3 Advice for Firefighters

- Wear self-contained breathing apparatus and full protective clothing. Use water spray to cool closed containers.
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SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal Precautions, Protective Equipment and Emergency Procedures

- Use personal protective equipment. Avoid dust formation. Ensure adequate ventilation.

6.2 Environmental Precautions

- Do not let product enter drains or water sources.

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.
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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. Keep away from heat and sources of ignition.

7.2 Conditions for Safe Storage, Including Any Incompatibilities

- Store in a cool, dry place. Keep container tightly closed in a well-ventilated area. Do not store near combustible materials or strong reducing agents.
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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 Ceiling)

8.2 Exposure Controls

- **Engineering Controls:** Use local exhaust ventilation or other engineering controls to maintain airborne levels below exposure limits.
 - **Personal Protection:**
 - **Eye:** Safety glasses with side-shields.
 - **Skin:** Protective gloves and clothing.
 - **Respiratory:** Use a NIOSH-approved dust mask or respirator if dust is generated.
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SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

- **Appearance:** Dark brown to black powder
 - **Odor:** Odorless
 - **pH:** 5.0 – 7.0 (as aqueous suspension)
 - **Melting Point:** 535 °C (decomposes)
 - **Boiling Point:** N/A
 - **Flash Point:** N/A
 - **Relative Density:** 5.02 g/cm³ (Bulk density: 1.1 – 1.5 g/cm³)
 - **Solubility in Water:** Insoluble
 - **Purity (MnO₂):** 85% – 92%
 - **Particle Size:** 75 – 300 mesh
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SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity: Strong oxidizer. **10.2 Chemical Stability:** Stable under recommended storage conditions. **10.3 Possibility of Hazardous Reactions:** Risk of explosion in contact with combustible substances or strong reducing agents. **10.4 Conditions to Avoid:** Heat, moisture, and dust formation. **10.5 Incompatible Materials:** Strong reducing agents, strong acids, combustible materials, organic materials. **10.6 Hazardous Decomposition Products:** Manganese oxides, oxygen.

SECTION 11: TOXICOLOGICAL INFORMATION

- **Acute Toxicity:** LD50 Oral (Rat) > 3478 mg/kg.
 - **Skin/Eye Irritation:** May cause mild irritation.
 - **Respiratory/Skin Sensitization:** Not known to be a sensitizer.
 - **Germ Cell Mutagenicity:** Not classified.
 - **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.
 - **Reproductive Toxicity:** Not classified.
 - **STOT-Repeated Exposure:** May cause damage to the central nervous system through prolonged or repeated inhalation.
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SECTION 12: ECOLOGICAL INFORMATION

- **Toxicity:** Not expected to be toxic to aquatic life at low concentrations.
 - **Persistence and Degradability:** Inorganic substance, not biodegradable.
 - **Bioaccumulative Potential:** Low.
 - **Mobility in Soil:** Insoluble in water; low mobility in soil.
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SECTION 13: DISPOSAL CONSIDERATIONS

- **Waste Treatment Methods:** Dispose of in accordance with local, state, and federal regulations. Contact a licensed professional waste disposal service to

dispose of this material.

SECTION 14: TRANSPORT INFORMATION

- **ADR/RID / IMDG / IATA:** Not regulated as a dangerous good (unless in specific hazardous mixtures).
 - **UN Number:** N/A
 - **Proper Shipping Name:** Manganese Dioxide
 - **Hazard Class:** N/A
 - **Packing Group:** N/A
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SECTION 15: REGULATORY INFORMATION

- **Safety, health and environmental regulations/legislation specific for the substance or mixture:**
 - TSCA: Listed on the United States TSCA Inventory.
 - REACH: Registered.
 - SARA 313: This material contains Manganese which is subject to reporting requirements.
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SECTION 16: OTHER INFORMATION

- **Preparation Date:** March 14, 2026
- **Revision:** 1.0
- **Note:** 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.