

Safety Data Sheet: Manganese Dioxide

SECTION 1: Identification

1.1. Product Identifier

- **Product Name:** Manganese Dioxide for Pyrotechnic and Match Industry
- **Synonyms:** Manganese (IV) Oxide, Pyrolusite, Manganese Black
- **CAS Number:** 1313-13-9

1.2. Relevant Identified Uses of the Substance or Mixture and Uses Advised Against

- **Identified Uses:** Oxidizing component in safety matches, fireworks, pyrotechnic compositions, signal and flare mixtures.
- **Uses Advised Against:** No information available.

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

1.4. Emergency Telephone Number

- For chemical emergency, spill, leak, fire, exposure, or accident, call CHEMTREC (USA) at 1-800-424-9300 or +1-703-527-3887 (International).

SECTION 2: Hazards Identification

2.1. Classification of the Substance or Mixture

- **GHS Classification:**
 - Oxidizing solids (Category 3), H272
 - Acute toxicity, Oral (Category 4), H302
 - Acute toxicity, Inhalation (Category 4), H332
 - Specific target organ toxicity — repeated exposure (Category 2), H373

2.2. GHS Label Elements

- **Pictograms:**
 - Flame over circle (GHS03)
 - Exclamation mark (GHS07)
 - Health hazard (GHS08)
- **Signal Word: Warning**
- **Hazard Statements:**
 - H272: May intensify fire; oxidizer.
 - H302: Harmful if swallowed.
 - H332: Harmful if inhaled.
 - H373: May cause damage to organs (lungs) through prolonged or repeated exposure.
- **Precautionary Statements:**
 - **Prevention:** P210, P220, P260, P264, P270, P271, P280
 - **Response:** P301+P312, P304+P340, P314, P370+P378
 - **Storage:** P403+P235
 - **Disposal:** P501

2.3. Hazards Not Otherwise Classified (HNOC)

- None known.

SECTION 3: Composition/Information on Ingredients

Chemical Name	CAS Number	EC Number	Concentration
Manganese Dioxide (MnO ₂)	1313-13-9	215-202-6	90-95%

SECTION 4: First-Aid Measures

- **Inhalation:** Move victim to fresh air. If not breathing, give artificial respiration. Consult a physician.
- **Skin Contact:** Wash off with soap and plenty of water. Consult a physician.
- **Eye Contact:** Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.
- **Ingestion:** Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

SECTION 5: Fire-Fighting Measures

- **Extinguishing Media:** Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
- **Special Hazards:** Oxidizer. Contact with other material may cause fire. May emit toxic fumes under fire conditions.
- **Advice for Firefighters:** Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6: Accidental Release Measures

- **Personal Precautions:** Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas.
- **Environmental Precautions:** Prevent further leakage or spillage if safe to do so. Do not let product enter drains.
- **Methods for Cleaning Up:** Sweep up and shovel. Keep in suitable, closed containers for disposal.

SECTION 7: Handling and Storage

- **Handling:** Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed.
- **Storage:** Store in a cool, dry place. Keep container tightly closed in a dry and well-ventilated place. Store away from combustible materials.

SECTION 8: Exposure Controls/Personal Protection

- **Control Parameters:**
 - **OSHA PEL:** TWA 5 mg/m³ (as Mn)
- **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.
 - **Skin Protection:** Handle with gloves.
 - **Respiratory Protection:** For nuisance exposures use type P95 (US) or type P1 (EU EN 143) particle respirator.

SECTION 9: Physical and Chemical Properties

- **Appearance:** Black to brownish-black powder
- **Odor:** Odorless
- **pH:** Not applicable
- **Melting/Freezing Point:** 535 °C (decomposes)
- **Boiling Point:** Not applicable
- **Flash Point:** Not applicable
- **Density:** 5.026 g/cm³
- **Solubility:** Insoluble in water

SECTION 10: Stability and Reactivity

- **Reactivity:** No data available
- **Chemical Stability:** Stable under recommended storage conditions.
- **Possibility of Hazardous Reactions:** No data available
- **Conditions to Avoid:** Heat, flames, and sparks. Extremes of temperature and direct sunlight.
- **Incompatible Materials:** Reducing agents, organic materials, combustible materials, powdered metals.
- **Hazardous Decomposition Products:** Manganese/manganese oxides.

SECTION 11: Toxicological Information

- **Acute Toxicity:**
 - **Oral LD50 (Rat):** >3478 mg/kg
- **Skin Corrosion/Irritation:** No data available
- **Serious Eye Damage/Irritation:** No data available
- **Carcinogenicity:** This product is not classified as a carcinogen by IARC, ACGIH, NTP, or OSHA.

SECTION 12: Ecological Information

- **Toxicity:** No data available
- **Persistence and Degradability:** The methods for determining biodegradability are not applicable to inorganic substances.
- **Bioaccumulative Potential:** No data available
- **Mobility in Soil:** No data available

SECTION 13: Disposal Considerations

- **Waste Treatment Methods:** Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

SECTION 14: Transport Information

- **DOT (US):** UN number: 1479, Class: 5.1, Packing group: III, Proper shipping name: Oxidizing solid, n.o.s. (Manganese dioxide)
- **IMDG:** UN number: 1479, Class: 5.1, Packing group: III, Proper shipping name: OXIDIZING SOLID, N.O.S. (Manganese dioxide)
- **IATA:** UN number: 1479, Class: 5.1, Packing group: III, Proper shipping name: Oxidizing solid, n.o.s. (Manganese dioxide)

SECTION 15: Regulatory Information

- **SARA 302:** No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
- **SARA 313:** The following components are subject to reporting levels established by SARA Title III, Section 313: Manganese dioxide (CAS 1313-13-9).
- **TSCA:** All components of this product are listed on the TSCA inventory.

SECTION 16: Other Information

- **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.