SAFETY DATA SHEET (SDS/MSDS)

According to GHS (Globally Harmonized System) Standards

Product Name: Water-Soluble Manganese Sulfate ($MnSO_4 \cdot H_2O$)
Date of Issue: April 8, 2026

SECTION 1: IDENTIFICATION

1.1 Product Identifier

Product Name: Water-Soluble Manganese Sulfate (Manganese Sulfate Monohydrate)
Chemical Formula: $MnSO_4 \cdot H_2O$
CAS No.: 10034-96-5
EC No.: 232-089-9

1.2 Recommended Use and Restrictions on Use

This product is **recommended for use** as a micronutrient fertilizer, specifically for foliar spray applications, liquid nutrient formulations, and in hydroponic systems. **Restrictions on use** include industrial and agricultural applications only; it is not intended for food or pharmaceutical use.

1.3 Details of the Supplier

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

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the Substance

The substance is classified under the Globally Harmonized System (GHS) as follows: **Specific Target Organ Toxicity (Repeated Exposure)**, Category 2, affecting the brain and nervous system; **Serious Eye Damage/Eye Irritation**, Category 1; and **Hazardous to the Aquatic Environment, Chronic Hazard**, Category 2.

2.2 GHS Label Elements

Signal Word: DANGER

Hazard Pictograms: The product carries GHS05 (Corrosion), GHS08 (Health Hazard), and GHS09 (Environment) pictograms.

Hazard Statements:

- H318: Causes serious eye damage.
- H373: May cause damage to organs (Brain, Nervous System) through prolonged or repeated exposure if inhaled.
- H411: Toxic to aquatic life with long lasting effects.

2.3 Precautionary Statements

Prevention:

- P260: Do not breathe dust/fume/gas/mist/vapors/spray.
- P273: Avoid release to the environment.
- P280: Wear eye protection/face protection.

Response:

- P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P310: Immediately call a POISON CENTER/doctor.
- P391: Collect spillage.

Disposal:

- P501: Dispose of contents/container in accordance with local/regional/national regulations.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS No.	Concentration (w/w)
Manganese Sulfate Monohydrate	10034-96-5	≥ 98%
(Manganese (Mn) Content)	(7439-96-5)	(31% – 32%)

SECTION 4: FIRST AID MEASURES

4.1 Description of First Aid Measures

Inhalation: If inhaled, remove the person to fresh air and ensure they remain comfortable for breathing. If breathing is difficult, administer oxygen. Seek medical attention if symptoms persist.
Skin Contact: In case of skin contact, wash the affected area thoroughly with plenty of water and soap. Remove any contaminated clothing. Seek medical attention if irritation develops.
Eye Contact: For eye contact, rinse cautiously with water for at least 15 minutes, ensuring to lift both upper and lower eyelids. Remove contact lenses if present and easily removable. Continue rinsing and seek immediate medical attention.
Ingestion: If ingested, rinse the mouth thoroughly. **Do NOT induce vomiting.** Never administer anything by mouth to an unconscious person. Seek medical attention immediately.

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing Media

Suitable Extinguishing Media: Appropriate extinguishing media include water spray, alcohol-resistant foam, dry chemical, or carbon dioxide.
Unsuitable Extinguishing Media: There are no known unsuitable extinguishing media for this product.

5.2 Special Hazards Arising from the Substance

This substance is not combustible. However, in a fire situation, **hazardous combustion products** such as sulfur oxides (SOx) and manganese oxides may be released.

5.3 Advice for Firefighters

Firefighters should wear a self-contained breathing apparatus (SCBA) and full protective clothing. It is crucial to prevent fire-extinguishing water from entering drains or watercourses to avoid environmental contamination.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal Precautions, Protective Equipment, and Emergency Procedures

When dealing with accidental releases, it is essential to use appropriate **personal protective equipment**. Avoid the formation of dust and refrain from breathing vapors, mist, or gas. Ensure adequate ventilation in the area.

6.2 Environmental Precautions

Take measures to prevent further leakage or spillage if it is safe to do so. The product should not be allowed to enter drains, and any discharge into the environment must be avoided.

6.3 Methods and Materials for Containment and Cleaning Up

For containment and cleaning, pick up the spilled material and arrange for disposal without creating dust. Sweep up the substance and shovel it into suitable, closed containers for proper disposal.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for Safe Handling

Precautions for safe handling include avoiding contact with skin and eyes, as well as preventing the formation of dust and aerosols. Provide appropriate exhaust ventilation in areas where dust is likely to form.

7.2 Conditions for Safe Storage

For safe storage, keep the product in a cool, dry place with the container tightly closed in a well-ventilated area. The substance is hygroscopic, meaning it absorbs moisture, so it should be stored away from strong oxidizing agents and moisture to maintain its integrity.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control Parameters

The recommended **Time-Weighted Average (TWA)** for manganese compounds is 0.2 mg/m^3 (as Mn).

8.2 Exposure Controls

Engineering Controls: Implement local exhaust ventilation or other engineering controls to maintain airborne levels below established exposure limits.
Personal Protective Equipment:

- **Eye/Face Protection:** Wear safety goggles or a face shield to protect against splashes and dust.
- **Skin Protection:** Chemical-resistant gloves and protective clothing should be worn to prevent skin contact.
- **Respiratory Protection:** In dusty conditions, use an N95 or P100 dust mask to prevent inhalation of particles.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Crystalline powder
Color: White to light pink
Odor: Odorless
pH Value: 3.0 – 6.0 (for a 5% solution)
Melting Point: Approximately 700 °C (loses water at 400-500 °C)
Boiling Point: Approximately 850 °C (decomposes)
Flash Point: Not applicable
Solubility in Water: $\geq$ 99% (Highly soluble)
Bulk Density: 0.9 – 1.3 g/cm^3
Purity ($MnSO_4 \cdot H_2O$): $\geq$ 98%

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

The product is generally stable under recommended storage conditions.

10.2 Chemical Stability

It remains stable under normal temperatures and pressures, though it is hygroscopic.

10.3 Possibility of Hazardous Reactions

No dangerous reactions are known to occur under normal use conditions.

10.4 Conditions to Avoid

Avoid exposure to moisture, high temperatures, and conditions that promote dust generation.

10.5 Incompatible Materials

Incompatible materials include strong oxidizing agents, strong acids, and powdered metals.

10.6 Hazardous Decomposition Products

Upon decomposition, hazardous products such as sulfur oxides and manganese oxides may be released.

SECTION 11: TOXICOLOGICAL INFORMATION

Acute Toxicity: The oral LD50 (Lethal Dose 50%) for rats is reported as 2,150 mg/kg.
Skin Corrosion/Irritation: The product may cause mild skin irritation.
Serious Eye Damage/Irritation: It causes serious eye damage.
Respiratory or Skin Sensitization: The substance is not classified as a respiratory or skin sensitizer.
Germ Cell Mutagenicity: Not classified as mutagenic.
Carcinogenicity: The product is not classified as a carcinogen by IARC, ACGIH, NTP, or OSHA.
STOT - Repeated Exposure: Prolonged or repeated inhalation may cause damage to the central nervous system, leading to a condition known as Manganism.

SECTION 12: ECOLOGICAL INFORMATION

Toxicity: This substance is toxic to aquatic life with long-lasting effects.
Persistence and Degradability: As an inorganic substance, it is not biodegradable.
Bioaccumulative Potential: There is a potential for bioaccumulation in aquatic organisms.
Mobility in Soil: Due to its water solubility, the product may exhibit mobility in soil.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Treatment Methods: Surplus and non-recyclable solutions should be offered to a licensed disposal company. The material can be dissolved or mixed with a combustible solvent and incinerated in a chemical incinerator equipped with an afterburner and scrubber.
Contaminated Packaging: Contaminated packaging should be disposed of in the same manner as the unused product.

SECTION 14: TRANSPORT INFORMATION

UN Number: UN 3077
Proper Shipping Name: Environmentally hazardous substance, solid, n.o.s. (Manganese sulfate monohydrate)
Transport Hazard Class: 9
Packing Group: III
Marine Pollutant: Yes

SECTION 15: REGULATORY INFORMATION

Safety, health and environmental regulations: The product complies with GHS, REACH, and relevant local agricultural/fertilizer regulations. It is listed on the TSCA (USA), DSL (Canada), and IECSC (China) inventories.

SECTION 16: OTHER INFORMATION

Disclaimer: The information provided in this Safety Data Sheet 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.