

Technical Data Sheet: High Purity Battery Grade Manganese Sulfate Monohydrate ($\text{MnSO}_4 \cdot \text{H}_2\text{O}$)

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1. Product Description

High Purity Battery Grade Manganese Sulfate Monohydrate ($\text{MnSO}_4 \cdot \text{H}_2\text{O}$) is a premium chemical compound specifically engineered for advanced battery applications. It features a high manganese (Mn) content of 32–33% and ultra-low levels of critical impurities such as iron (Fe), lead (Pb), copper (Cu), and zinc (Zn). This product is essential for the synthesis of lithium-ion cathode materials, including Lithium Iron Phosphate (LFP) and Lithium Manganese Iron Phosphate (LMFP), as well as for solid-state battery research and various energy storage systems. Its controlled particle size (100–200 mesh) and stable moisture content ($\leq 0.5\%$) ensure consistent performance and uniform mixing in industrial formulations, addressing common challenges related to impurity interference and material homogeneity in cathode production.

2. Key Features

- High Purity:** Specifically designed for battery applications, ensuring minimal contamination in sensitive electrochemical processes.
- Stable Manganese Content:** Guaranteed Mn content of 32–33% for consistent energy storage performance and reliable material production.
- Ultra-Low Impurities:** Strict control over critical heavy metals (Fe $\leq 0.005\%$, Pb ≤ 1 ppm, Cu ≤ 1 ppm, Zn ≤ 1 ppm) to prevent degradation and enhance the

longevity of cathode materials.

- **Controlled Particle Size:** Optimized particle size distribution (100–200 mesh) facilitates uniform mixing and homogeneity in precursor formulations, crucial for high-performance battery materials.
- **Reliable Moisture Content:** Low moisture content ($\leq 0.5\%$) ensures product stability during storage and processing, preventing caking and degradation.

3. Technical Specifications

Parameter	Typical Value
MnSO ₄ · H ₂ O Purity	$\geq 99\%$
Manganese (Mn) Content	32–33%
Moisture	$\leq 0.5\%$
Particle Size	100–200 mesh
Bulk Density	1.0–1.3 g/cm ³
Iron (Fe)	$\leq 0.005\%$
Calcium (Ca)	$\leq 0.01\%$
Magnesium (Mg)	$\leq 0.01\%$
Lead (Pb)	≤ 1 ppm
Copper (Cu)	≤ 1 ppm
Zinc (Zn)	≤ 1 ppm

4. Applications

- **Lithium-ion Cathode Materials:** Primary raw material for the synthesis of high-performance cathode materials such as LFP and LMFP, critical for electric vehicles and portable electronics.

- **Solid-State Battery Research:** Supports the development of next-generation solid-state batteries, contributing to advancements in energy storage technology.
- **Energy Storage Systems:** Ensures the stability and efficiency of various energy storage solutions, from grid-scale applications to consumer electronics.
- **Precursor Chemicals:** Utilized as a high-purity precursor for producing other manganese-based compounds and specialty chemicals.
- **Electrolytic Manganese Production:** Serves as a high-purity source in industrial processes for the production of electrolytic manganese.

5. Packaging & Supply

High Purity Battery Grade Manganese Sulfate Monohydrate is supplied in robust 25 kg kraft paper bags, each lined with polyethylene (PE) to ensure product integrity and protection against moisture. For international shipping, products are palletized and prepared for container shipment (20GP / 40HQ), ensuring safe and efficient delivery. Samples are available for testing and quality verification.