

TECHNICAL DATASHEET (TDS)

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PRODUCT NAME

Low Impurity Manganese Dioxide for Power Tool Batteries

PRODUCT DESCRIPTION

Low Impurity Manganese Dioxide for Power Tool Batteries is a premium, high-purity electrochemical grade Manganese Dioxide (MnO_2) featuring an active material content of $\geq 99.8\%$. This product is specifically engineered for use in lithium manganese dioxide and alkaline battery cathodes. Its refined chemical composition ensures consistent discharge performance and minimal trace metal contamination, making it an ideal choice for power tool battery applications that demand stable voltage outputs and an extended cycle life.

KEY FEATURES

The product is characterized by several high-performance attributes designed to meet the rigorous demands of modern battery manufacturing:

- **Ultra-Low Impurity Levels:** Enhances overall battery stability and significantly reduces unwanted side reactions within the cell.
- **High Active Oxygen Content:** Supports efficient and robust discharge cycles, which is critical for high-drain power tool applications.

- **Optimized Particle Size Distribution:** Ensures reliable electrode coating and uniform electrochemical performance across all battery units.
- **Strict Trace Metal Control:** Total levels of Fe, Cu, and Pb are maintained below 0.005%, effectively minimizing capacity fade over time.
- **Low Moisture and Fines:** Improves the rheology of the battery slurry and increases the overall yield during cell assembly.

TECHNICAL SPECIFICATIONS

Property	Typical Range	Test Method
MnO ₂ Purity	99.5 – 99.9%	ICP/OES
Active Oxygen (O ₂)	≥ 47.0%	Titration
Iron (Fe)	≤ 0.003%	ICP/OES
Copper (Cu)	≤ 0.002%	ICP/OES
Lead (Pb)	≤ 0.001%	ICP/OES
Moisture Content	≤ 0.2%	Karl Fischer
Particle Size (D50)	5 – 25 µm	Laser Diffraction
Sieve Residue (45 µm)	≤ 0.5%	Sieving
Specific Surface Area	3 – 8 m ² /g	BET

APPLICATIONS

This high-purity Manganese Dioxide is versatile and suitable for a variety of high-performance energy storage solutions:

- **Power Tool Batteries:** Optimized to deliver high power output and maximize run-time for cordless tools.
- **Primary Lithium Batteries:** Ideal for high-drain Li-MnO₂ button and cylindrical cells.

- **Alkaline Batteries:** Enhances the discharge plateau and extends the shelf life of heavy-duty consumer batteries.
- **Industrial Cells:** Used in specialized applications where low impurity and long-term stability are paramount.

PACKAGING & SUPPLY

BTLnewmaterial provides flexible packaging options to ensure product integrity during international transit:

- **Standard Packaging:** 25 kg moisture-proof bags or 500 – 1000 kg Flexible Intermediate Bulk Containers (FIBCs).
- **Protection:** Moisture-barrier bags are utilized inside robust fiber drums or FIBCs based on volume requirements.
- **Compliance:** All packaging is export-ready, including necessary fumigation certificates and adherence to international shipping regulations.
- **Support:** Customization of particle size and surface area is available upon request to meet specific formulation needs.