Technical Datasheet: High-Purity Synthetic MnO_2 for Energy Storage

Company Name: BTLnewmaterial **Email:** lixifirm@outlook.com **Phone:** +8618273793022 **Website:** manganesesupply.com

1. Product Description

Synthetic Manganese Dioxide for High-Performance Energy Storage is a high-purity electrochemical grade MnO_2 formulated for demanding battery and capacitor applications. With >99.5% active MnO_2 content and controlled particle size, it delivers reliable discharge performance and conductivity in alkaline and zinc-manganese systems.

2. Technical Specifications

Specification	Typical Value	Unit
Active MnO_2 (as MnO_2)	99.50–99.90	%
Loss on Ignition (LOI)	≤ 0.30	%
Bulk Density	0.70–0.95	g/cm^3
Tap Density	1.50–1.80	g/cm^3
Particle Size (D50)	5–15	µm
Surface Area (BET)	10–25	m^2/g
pH (10% slurry)	6.5–8.5	
Residual Chloride	≤ 50	ppm
Iron (Fe)	≤ 0.02	%
Lead (Pb)	≤ 0.001	%
Arsenic (As)	≤ 0.0005	%

Other parameters can be adjusted per engineering requirements.

3. Key Features

- **High Electrochemical Activity:** Engineered for high specific capacity and efficient electron transfer in primary and secondary batteries.
- **Consistent Quality & Purity:** >99.5% active MnO_2 with low impurities ensures minimal side reactions and long shelf life.
- **Optimized Particle Size:** Controlled D50 and narrow distribution improve packing density and uniform electrode coating.
- **Stable Physical Properties:** Tight bulk/tap density control enhances processing and battery assembly consistency.
- **Low Residual Chlorides:** Reduced corrosive species support cell stability and reduce electrolyte degradation.

- **Good Wettability:** High surface area facilitates electrolyte penetration and charge acceptance.

4. Applications

- **Alkaline Batteries:** Suitable for AA/AAA, C, D cell cathode mixes requiring high discharge performance.
- **Zinc-Manganese Oxide Cells:** Ideal for primary zinc-manganese systems with high energy demand.
- **Rechargeable Systems:** Applicable in select secondary battery formulations where chemical consistency is critical.
- **Electrochemical Capacitors:** Supports high-rate charge/discharge cycles with stable capacitance.
- **High-Performance Energy Storage Modules:** Used in industrial backup and specialty power systems requiring robust MnO_2 performance.

5. Packaging & Supply

- **Standard Packaging:** 25 kg moisture-resistant kraft bags with inner PE liner.
- **Bulk Supply:** FIBC (1,000 kg) or jumbo bags for large-volume procurement.
- **Export Ready:** Wood-free pallets, stretch-wrapped, labeled per HS and UN chemical specifications for global shipments.
- **Inventory & Lead Time:** Available stock with scheduled production to meet ongoing project demands.

6. Customization & Technical Support

- **Particle Engineering:** Tailored particle sizes and surface area for specific electrode formulations.
- **Density Adjustment:** Bulk and tap density tuning to match coating and pressing requirements.

- **Formulation Support:** Application guidance for cathode mix ratios and process optimization.
- **Quality Documentation:** Certificates of Analysis (CoA), TDS, MSDS, and custom compliance documentation available.