Technical Datasheet: Manganese Dioxide Precursor for Lithium Manganese Oxide (LMO)

Company Information

Parameter	Detail
Company Name	BTLnewmaterial
Email	lixifirm@outlook.com
Phone	+8618273793022
Website	manganesesupply.com

1. Product Description

Manganese Dioxide Precursor for Lithium Manganese Oxide (LMO) is a battery-grade MnO_2 material specifically engineered for the solid-state and liquid-phase synthesis of LMO cathodes. This product is characterized by its controlled purity, precise particle size distribution, and optimized phase composition, all of which are crucial for ensuring stable lithium intercalation performance in the final LMO material. It is ideally suited for the production of LMO cathodes utilized in advanced lithium-ion batteries and various primary lithium systems.

2. Key Features

- Optimized manganese dioxide precursor for efficient lithium manganese oxide (LMO) cathode synthesis.
- Consistent crystal structure that facilitates the formation of stable spinel LMO.

- Low levels of metal impurities, which significantly reduce capacity fade and mitigate undesirable side reactions within battery systems.
- Controlled particle size, ensuring uniform lithium diffusion and predictable calcination behavior during material processing.
- Versatile compatibility with various LMO synthesis methods, including solid-state, hydrothermal, and co-precipitation processes.

3. Technical Specifications

Parameter	Typical Range
MnO_2 Content	≥ 92.0 – 95.0 %
Crystal Phase	γ-MnO_2 / mixed γ-ε (customizable)
Particle Size (D50)	5 – 15 µm
Specific Surface Area	20 – 45 m^2/g
Moisture Content	≤ 0.5 %
Fe Impurity	≤ 0.03 %
Cu Impurity	≤ 0.005 %
Bulk Density	0.8 – 1.2 g/cm^3
pH (10% slurry)	5.5 – 7.0

4. Applications

- **LMO Cathode Material Production**: Serves as a stable and high-quality manganese source essential for the synthesis of spinel lithium manganese oxide.
- **Lithium-ion Batteries**: Applicable in various lithium-ion battery systems, particularly those used in power tools, electric bicycles, and large-scale energy storage systems that rely on LMO cathodes.
- **Primary Lithium Batteries**: Utilized as a manganese dioxide precursor in LMO-based primary lithium battery systems.

- **Cathode Material Research & Development**: Supports the formulation development and pilot-scale research efforts for new LMO materials.

5. Packaging & Supply

- **Packaging Options**: Available in 25 kg kraft paper bags with an internal PE liner for enhanced protection, or in larger 500 kg and 1,000 kg jumbo bags to accommodate bulk requirements.
- **Export Suitability**: All packaging is designed to be moisture-controlled, making it suitable for both sea and air export, ensuring product integrity during transit.
- **Supply Stability**: BTLnewmaterial offers a stable and reliable supply chain capable of supporting pilot, medium-scale, and bulk production needs for cathode materials.

6. Customization & Technical Support

- **Customization**: Purity levels, particle size distribution, and crystal phases can be adjusted to meet specific LMO process requirements.
- **Technical Support**: Comprehensive technical assistance is provided for precursor selection, optimization of calcination processes, and impurity control strategies.
- **Engineering Assistance**: Expert engineering support is available to ensure the manganese dioxide precursor’s performance aligns perfectly with specific lithium manganese oxide (LMO) formulations.