TECHNICAL DATASHEET (TDS)

Manganese Dioxide (MnO_2) for Thermite Welding Reactions

1. Company Information

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2. Product Description

Manganese Dioxide for Thermite Welding Reactions is a metallurgical-grade MnO_2 material specifically designed for use in thermite welding formulations and high-temperature metal joining processes. Functioning as a high-efficiency oxidizing component, it supports stable thermite reactions and controlled heat release, ensuring reliable performance in demanding industrial environments.

3. Key Features

- **High Oxidizing Capability:** Supports stable and efficient thermite reactions at elevated temperatures.
- **Controlled Particle Size:** Optimized distribution (75–300 mesh) ensures uniform mixing with aluminum powder and other components.
- **Consistent Purity:** High MnO_2 content (85–92%) improves repeatability in metallurgical welding operations.

- **Thermal Stability:** Robust oxide structure suitable for extreme high-temperature metal joining.
- **Reliable Oxygen Release:** Provides a steady supply of oxygen during the thermite combustion process.

4. Technical Specifications

Parameter	Typical Value
MnO_2 Purity	85% – 92%
Particle Size	75 – 300 mesh
Surface Area	10 – 35 m^2/g
Moisture (H_2O)	$\leq$ 1.0%
Bulk Density	1.1 – 1.5 g/cm^3
Crystal Phase	Predominantly Pyrolusite
Appearance	Dark Brown to Black Powder

5. Applications

- **Thermite Rail Welding:** Provides a stable oxidizing component in mixtures used to join railway tracks.
- **Metal Repair Welding:** Supports localized thermite reactions for repairing heavy steel structures.
- **Foundry & Metallurgy:** Acts as an oxidizing additive in high-temperature metal bonding processes.
- **Welding Powder Formulations:** Enhances oxygen availability in specialized welding compositions.
- **R&D:** Used in experimental thermite reaction systems for materials development.

6. Packaging & Supply

- **Standard Packaging:** 25 kg fiber drums with PE inner liners to prevent moisture contamination.
- **Export Packaging:** Palletized transport suitable for international shipment.
- **Samples:** Laboratory samples (500 g – 1 kg) are available for testing and evaluation.

7. Storage & Handling

- Store in a cool, dry, and well-ventilated area.
- Keep containers tightly sealed when not in use.
- Avoid contact with strong reducing agents and flammable materials.
- **Shelf Life:** 24 months when stored under recommended conditions.

Disclaimer: The information provided in this TDS is based on our current knowledge and experience. Users should conduct their own tests to determine the suitability of the product for their specific application.