Technical Datasheet: Manganese Dioxide Coating for Rapid Sand Filters

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1. Product Description

Manganese Dioxide Coating for Rapid Sand Filters is a high-activity MnO_2 surface-modified filtration media designed for the efficient oxidation and removal of iron (Fe^{2+}) and manganese (Mn^{2+}) in pressurized water treatment systems. With an MnO_2 content typically ranging from 60–85%, this media provides strong catalytic performance, making it ideal for use in municipal and industrial rapid sand filters, potable water plants, and groundwater treatment facilities. Its robust design ensures long service life and stable performance under continuous backwashing cycles.

2. Key Features

- High catalytic activity for rapid oxidation of Fe^{2+} and Mn^{2+}.
- Durable Manganese Dioxide Coating ensures extended service life.
- Suitable for both pressure and gravity filtration systems.
- Stable performance maintained even with continuous backwashing cycles.
- Exhibits low media loss and high mechanical strength.
- Compatible with various regeneration methods, including chlorine, air, or potassium permanganate ($KMnO_4$).

3. Technical Specifications

Parameter	Typical Value	Test Method
MnO_2 Content	60–85%	Chemical titration
Particle Size	0.5–1.2 mm / 1–2 mm	Sieve analysis
Bulk Density	1.3–1.6 g/cm³	ASTM D854
Specific Gravity	≥3.5 g/cm³	ASTM C127
Crushing Strength	≥95% intact	Hydraulic test
Uniformity Coefficient	≤1.6	Sieve analysis
Operating pH Range	6.5–8.5	Field condition
Filtration Velocity	8–15 m/h	System dependent

4. Applications

- **Municipal Water Treatment Plants:** Effective for iron and manganese removal in rapid sand systems.
- **Groundwater Treatment:** Improves water clarity and significantly reduces dissolved metals.
- **Industrial Process Water:** Protects downstream reverse osmosis (RO) and membrane systems from metal fouling.
- **Drinking Water Facilities:** Ensures compliance with iron and manganese discharge limits.
- **Retrofitting Existing Rapid Sand Filters:** Upgrades performance by adding an MnO_2 catalytic layer.

5. Packaging & Supply

- Available in 25 kg woven bags.
- Also supplied in 1 MT jumbo bags.

- Palletized for efficient export shipment.
- Suitable for containerized sea freight.

6. Customization & Technical Support

Particle size distribution and MnO_2 loading can be customized based on specific raw water quality and filter design requirements. Technical support services include media selection guidance, recommendations for optimal loading depth, and backwash parameter optimization for rapid sand filtration systems. Laboratory testing and pilot evaluation support are available upon request.