Technical Data Sheet: Regeneration-free Manganese Dioxide Filter Media

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1. Product Description

Regeneration-free Manganese Dioxide Filter Material is a high MnO_2 content granular media specifically engineered for the continuous and efficient removal of iron, manganese, and hydrogen sulfide from groundwater. With a typical MnO_2 content of $\geq$75%, this advanced filter media operates through catalytic oxidation, eliminating the need for chemical regeneration. Its robust design makes it suitable for a wide range of municipal and industrial water filtration systems, contributing to improved water quality and reduced operational complexities.

2. Key Features

- **High Catalytic Activity:** Exhibits superior catalytic properties for the rapid oxidation of dissolved ferrous (Fe^{2+}) and manganous (Mn^{2+}) ions, facilitating their precipitation and subsequent removal.
- **Regeneration-free Operation:** Designed to function without the need for chemical regenerants, significantly reducing chemical consumption, operational costs, and environmental impact.
- **Stable Granular Structure:** Possesses a durable and stable granular structure, ensuring minimal attrition loss and consistent performance over an extended service life.
- **Versatile Particle Size Options:** Available in various particle sizes to accommodate diverse filtration system designs and specific water treatment requirements.

- **Long Service Life:** Engineered for continuous operation, offering a prolonged service life and reliable performance in demanding water treatment applications.

3. Technical Specifications

The following table outlines the typical technical parameters for the Regeneration-free Manganese Dioxide Filter Media:

Parameter	Typical Range
MnO_2 Content	75–85%
Appearance	Dark brown to black granules
Particle Size	0.5–1.0 mm / 1–2 mm / 2–4 mm
Bulk Density	1.6–1.9 g/cm^3
Specific Gravity	3.6–4.0 g/cm^3
Crushing Strength	≥95%
Uniformity Coefficient	≤1.6
Recommended Filtration Rate	8–15 m/h
Operating pH Range	6.5–8.5
Backwash Expansion Rate	20–30%

4. Applications

Regeneration-free Manganese Dioxide Filter Media is ideally suited for a variety of water treatment applications, including:

- **Municipal Groundwater Treatment:** Highly effective in the removal of dissolved iron and manganese from municipal water supplies, ensuring compliance with drinking water standards.
- **Industrial Process Water Systems:** Utilized to stabilize water quality as a pre-treatment step before sensitive processes such as Reverse Osmosis (RO) or

softening units, protecting downstream equipment from fouling and scaling.

- **Rural and Community Water Plants:** Provides a low-maintenance and efficient filtration solution for smaller-scale water treatment facilities.
- **Pre-treatment for Potable Water Purification:** Enhances water clarity and significantly reduces metal content, improving the overall quality of water intended for consumption.
- **Replacement Media:** Serves as an excellent replacement for existing media in pressure and gravity filters, particularly in systems designed for regeneration-free operation.

5. Packaging & Supply

BTLnewmaterial ensures reliable packaging and supply options to meet diverse customer needs:

- **Standard Packaging:** Available in durable 25 kg woven polypropylene (PP) bags, each equipped with an inner liner for enhanced protection.
- **Bulk Packaging:** For larger volume requirements, 1 Metric Ton (MT) jumbo bags are readily available.
- **Export Readiness:** All packaging is palletized and optimized for containerized export, ensuring safe and efficient global delivery.
- **Stable Supply Capacity:** BTLnewmaterial maintains a robust and stable supply capacity, capable of fulfilling both bulk orders and long-term contracts consistently.

6. Customization & Technical Support

BTLnewmaterial offers comprehensive customization and technical support services:

- **Customization:** Particle size distribution and MnO_2 content can be precisely adjusted to align with specific raw water quality characteristics and unique system design parameters.
- **Technical Support:** Expert technical assistance is provided, encompassing filtration parameter recommendations, detailed backwash guidance, and integration advice for both new installations and existing treatment systems.

- **Laboratory Testing:** Laboratory testing support is available upon request to further optimize product selection and system performance.