Clack MTM® is used for reducing iron, manganese and hydrogen sulfide from water supplies.

MTM®

Clack MTM® is a granular manganese dioxide filtering media used for reducing iron, manganese and hydrogen sulfide from drinking water. Its active surface coating oxidizes and precipitates soluble iron and manganese. Hydrogen sulfide is oxidized to sulfur. The precipitates are filtered out in the granular bed and removed by backwashing.

MTM® consists of a light weight granular core with a coating of manganese dioxide. MTM® is an example of contact oxidation where the media itself provides the oxidizing potential. This allows for a much broader range of operation than many other iron removal medias. A pH level as low as 6.2 can be treated. Dissolved oxygen is not essential. The media's light weight reduces backwash water requirements.

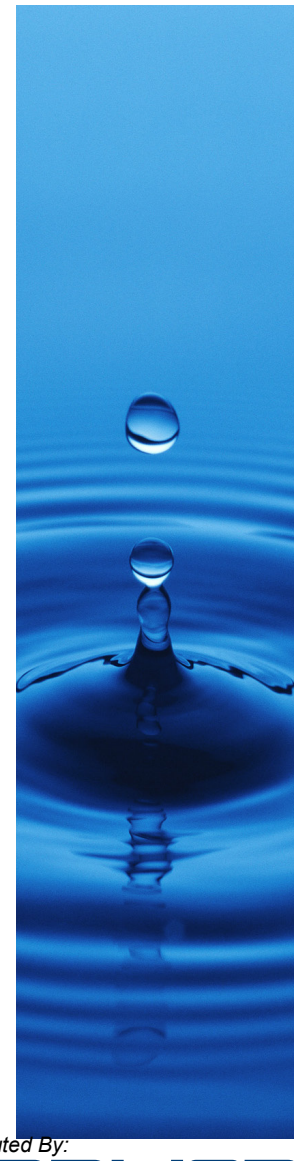
MTM® requires either continuous or intermittent regeneration to maintain its oxidizing capacity. For continuous regeneration a solution of potassium permanganate (or chlorine then potassium permanganate) can be pre-fed to maintain capacity. In the latter case, the manganese dioxide coating acts as a catalyst to enhance the oxidation reaction and as a buffer to reduce any excess potassium permanganate concentration and prevent it from entering the service lines. Continous feed regeneration using Cl_2, $KMnO_4$ or both is required for all systems that are larger than 3 cubic feet.

For intermittent regeneration use of a regenerating solution of 1½ to 2 ounces (dry weight) of potassium permanganate per cubic foot is usually sufficient. Upon start-up a new bed should be backwashed and caution taken to insure that the lightweight media is not backwashed to drain. A new bed should be regenerated the evening of installation. **Operating the filter after its oxidizing capacity is exhausted will reduce its service life and may cause staining.**

Untreated water should periodically be monitored for raw water parameters. Treated water should periodically be monitored for manganese and if present iron and hydrogen sulfide. When using intermittent regeneration take treated water samples shortly before a regeneration and immediately after a regeneration to monitor how the filter system is functioning. Elevated treated water manganese concentrations before regeneration may mean that the filter media is being destroyed or bed reduction capacity has been exceeded. Take corrective actions as necessary.

Low pH, lack of chlorine oxidant or lack of permanganate oxidant are the most likely conditions leading to media destruction.

Addition of other chemicals to influent or backwash water which contacts MTM® media may inhibit iron, manganese or hydrogen sulfide removal or may break down or coat MTM® media. Before adding any chemical to the influent or backwash water, other than chlorine or potassium permanganate, the chemical's compatibility with MTM® should be thoroughly tested.



ADVANTAGES
- Broad operating range for iron reduction
- Lower pressure loss through the bed with high flock holding capacity
- Effective hydrogen sulfide, iron and manganese reduction.
- Light weight requires lower backwash rates and reduces pumping requirements
- Chlorine can be beneficial in extending filter run times
- Low attrition loss for long bed life
- Lower shipping cost

PHYSICAL PROPERTIES
- Color: Dark brown
- Bulk Density: 45-50 lbs./cu. ft.
- Specific Gravity: 2.0 gm/cc
- Effective Size: 0.43 mm
- Uniformity Coefficient: 2.0
- Mesh Size: 12 x 50

CONDITIONS FOR OPERATION
- Water pH range: 6.2-8.5
- Maximum water temp: 100°F/38°C
- Bed depth: 24-36 in.
- Freeboard: 50% of bed depth (min.)
- Service flow rate: Continuous 2-5 gpm/sq. ft., intermittent flows up to 10 gpm/ft.^{2}
- Backwash flow rate: At 60°F 8-10 gpm/sq. ft. for tanks ≤ 12" diameter, 10-12 gpm/sq. ft. for tanks ≥ 13"
- Backwash expansion rate: 20-40% of bed depth (min.)

MAXIMUM PRACTICAL LIMIT
- Iron 15 ppm
- Manganese 5 ppm
- Hydrogen Sulfide 2 ppm

INFLUENT AND BACKWASH LIMITATIONS
- Oil: None present
- Polyphosphates: None present
- Air Scour not allowed

METHODS OF REGENERATION
- Intermittent or continuous feed regeneration can be used on systems up to 3 cubic feet.
- Continuous feed regeneration using Cl_2, $KMnO_4$ or both is required for all systems that are larger than 3 cubic feet.

INTERMITENT $KMnO_4$ REGENERATION REQUIREMENTS
- $KMnO_4$ Dosage 1.5-2.0 oz (by dry weight)/ft^3
- Use an injector size that is two sizes larger than one that is sized for a typical softener application
- Draw/slow rinse time greater than 50 minutes
- Down flow rinse (Fast Rinse) 8 minutes minimum
- Rinse until all traces of $KMnO_4$ are gone

INTERMITTENT CAPACITIES
- 10,000 gallons of water containing 1 mg/L Iron per cu.ft. regeneration
- 5,000 gallons of water containing 1 mg/L Manganese per cu.ft. regeneration
- 2,000 gallons of water containing 1 mg/L Hydrogen Sulfide per cu.ft. regeneration
- For dilute solutions mg/L = ppm
- 37,850 mg $KMnO_4$ demand
- $KMnO_4$ demand = [1 x mg/L Fe] + [2 x mg/L Mn] + [5 x mg/L H_2S]

Example Calculation:

Soluble Fe = 3.0 mg/L Fe, Soluble Mn = 0.3 mg/L Mn, H_2S = 0.2 mg/L H_2S

$KMnO_4$ demand = [1 x 3.0 mg/L Fe] + [2 x 0.3 mg/L Mn] + [5 x 0.2 mg/L H_2S]

$KMnO_4$ demand = [3.0 mg/L] + [0.6 mg/L] + [1.0 mg/L]

$KMnO_4$ demand = 4.6 mg/L

$$\left(\frac{\text{37,850 mg } KMnO_4 \text{ demand per cu. ft. regen.}}{\text{4.6 mg/L } KMnO_4 \text{ demand}}\right) x$$

$$\left(\frac{\text{1 gallon}}{\text{3.785 Liters}}\right) =$$

2,174 gallons per cu. ft. regenerated

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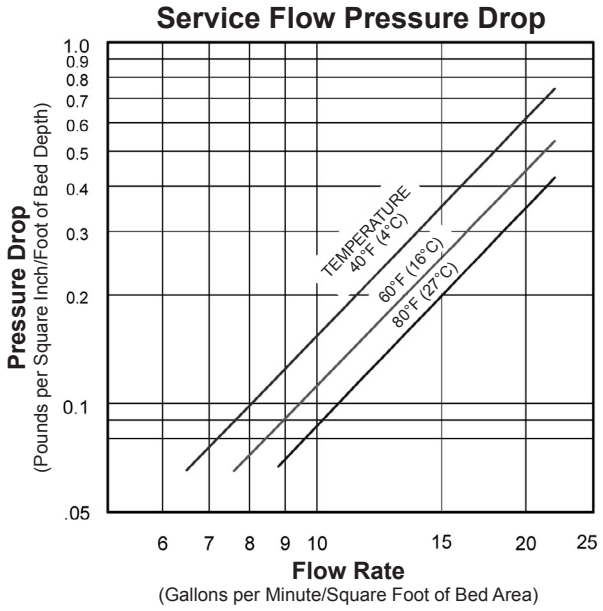

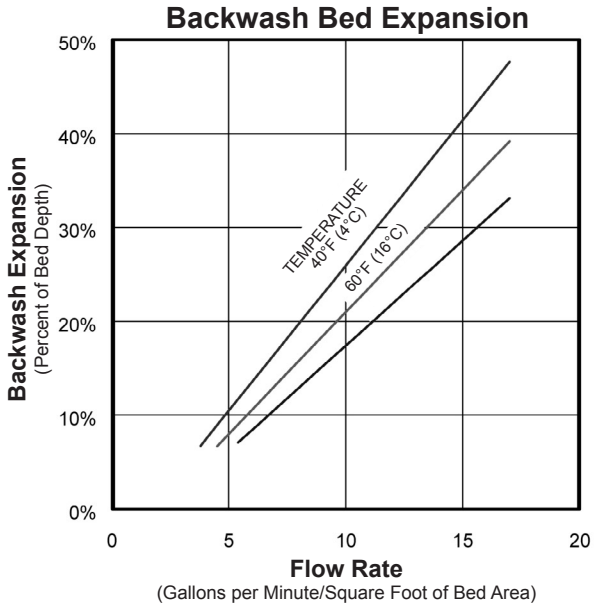

Certified to NSF/ANSI Standard 61

ORDER INFORMATION

Part No.	Description	Cu. Ft./Bag	Wt./Cu. Ft.	Bags/Pallet	Weight/Pallet	Pallet Dimensions
A8012	MTM®	1	45-50 lbs.	40	1850-2050 lbs.	40″ x 48″ x 42″

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NOT FOR INSTALLATION IN CALIFORNIA

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