

Pro-OX Manganese Oxide

High Purity Natural Manganese Granules for Removal of Iron, Manganese, Hydrogen Sulfide and Arsenic

Introduction:

Pro-OX is a black, granular, naturally mined filter media composed of high purity manganese dioxide. Unlike coated filter media such as Birm™ or manganese greensand, Pro-OX is a solid manganese dioxide offering higher flow rates and faster reaction times. Pro-OX media uses an oxidation-reduction filtration process similar to greensand, but at a far higher level of performance, and lasts many years longer due to its solid form and higher purity.

Pro-OX works by adsorbing the oxidized species of iron, manganese or sulfides on the external and porous structures of the media. This is a catalytic process which processes water at a faster flow rate than traditional media. The untreated water is first injected with an oxidizer such as air, chlorine or ozone.

Because of the highly oxidative state of the Pro-OX media, aeration alone is usually sufficient to provide the oxidation required. Chlorine is commonly used as a pre-oxidant which disinfects the water and allows the filter media to work at a faster rate and last longer, in a process known as “continuous regeneration”.

The media can also be regenerated at the end of its service cycle by rinsing with chlorine in a process known as ‘batch regeneration’ or “intermittent regeneration”.

For the removal of hydrogen sulfide, Pro-OX directly oxidizes sulfide and catalyzes the oxidation reaction. Sufficient aeration or chlorine injection prior to the filter media should be used to insure long filter life.

For arsenic removal, chlorine changes arsenite (AsIII) to arsenate (AsV), and iron in the water is converted to ferric hydroxide, which allows the arsenate to form ferric arsenate, which is then removed by the Pro-OX media. For arsenic removal, sufficient iron must be present in the water for arsenic to be removed. A general guideline is 1 mg/L of iron must be present to remove 20 ug/L of arsenic, but this can vary greatly depending on pH and other competing ions in the water.

A strong backwash at the proper flow rate is required to keep the Pro-OX media clean. A rate of 12 to 15 GPM per square foot is recommended @ 60°F, in order to be able to lift and expand the filter media, to wash out the trapped iron and manganese oxides. Since Pro-OX is a solid granule with very high particle strength, frequent backwashing does not harm the media and dramatically extends the life of the media.

Application Data

Active ingredient: > 80% Manganese Dioxide

Effective Size: 0.3—1.0 mm

Mesh size: 20 x 40

Weight: 114 lbs per cubic foot

Packaged in 1/2 cubic foot bags (57 lbs per bag)

Service Flow Rate: 5 to 10 GPM per Square Foot

pH : 6 - 9

Bed depth: 30 “ to 48”

Backwash flow rate: 12 to 15 GPM / sq. ft.

Backwash expansion: 15% to 30%

Oxidant types recommended: air, chlorine, potassium permanganate, ozone. Hydrogen peroxide is not recommended.

Oxidant contact time prior to filter: 10 to 30 seconds

Removes up to 30 PPM Iron, 15 PPM manganese, 30 PPM hydrogen sulfide (chlorine or ozone or peroxide feed prior to Pro-OX filter media is recommended to achieve maximum removal rates).



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