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Episode 13 Show Notes – It’s Not Your Dad’s Manganese Dioxide Anymore!

Pyrolox is concentrated manganese dioxide ore – it’s been used successfully for many years to treat sulfur, iron, and manganese. Its density is 120 per cubic foot. **Pyrolox Advantage is lighter at 86 pound per cubic foot.**

Pyrolox Advantage is manufactured in the US. The substrate is coated with metallurgical grade manganese dioxide. Because of its lighter weight Pyrolox Advantage is easier to apply in residential applications.

Discussion

Pyrolox Advantage was manufactured in small batches at a facility in the UK. After extensive testing Prince Corp. moved production to Alabama. A similar product comes from Brazil, but it is not coated with metallurgical grade manganese dioxide.

With Pyrolox Advantage the oxidation reaction is quicker and treats more water between regenerations than its Brazilian cousins. It can be regenerated with household grade 6.25 % chlorine, air (AIO valves) and weak ozone. Hydrogen Peroxide can be used but must be less than 7%. Excessive hydrogen peroxide will strip the manganese off and create a new problem for the homeowner – manganese staining. Pyrolox Advantage is NSF Certified.

Using Pyrolox Advantage

- The oxidation potential increases with pH. Keep the pH between 7.5 and 8.5. At lower pH it isn’t as effective and there is a risk of manganese sloughing off.
 - If iron exceeds 5 ppm use of a twin system is recommended.
- Pyrolox Advantage reduces up to 5 ppm of iron, 2-3 ppm sulfur, 1-2 ppm manganese (most difficult to remove).
- Capacity: 700-1200 grains of oxidized iron or manganese
- Backwash – Must be sufficient to produce 40% bed expansion until backwash water is clear or for 10 minutes whichever occurs first.
- Mixed Bed – Pyrolox Advantage and Filter-Ag Plus can be successfully combined in one tank. If the Pyrolox Advantages misses something the Filter-Ag Plus can pick it up.
- When determining equipment size all contaminants have to be considered. Each contaminant will take a “seat on the filter bus”.



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- **Contaminant Loading Example**
 - What is the run length for water with 1.7 mg/L (ppm) iron and 0.3 mg/L (ppm) manganese at a 4 gpm/ ft² service rate?
 - = (1 x mg/L Fe) + (2 x mg/L Mn)
 - = (1 x 1.7) + (2 x 0.3)
 - = 2.3 mg/L or 2.3/17.1 grains = 0.13 grains/gal (gpg)
 - At 1,200 grains / ft² loading 0.13 gpg ÷ 1,200 = 9,230 gal/ ft²
 - At 4 gpm / ft² service rate 9,230 ÷ 4 = 2,307 minutes
 - 2,307 min ÷ 60 min = backwash frequency is approximately 32-38 hours of actual operation.

Sizing the System

- Raw water analysis
- Desired outcome – contaminant levels post treatment
- Flow rates – low, average, peak
- Water pressure
- Hours of operation for commercial sites
- Operating pressures
- Operating temperatures
- Electrical requirements

Links to helpful information:

[Filter Media Operational Information](#)

[Pyrolox Advantage Specifications](#)

[Pyrolox Advantage Technical Manual](#)

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