

# Manganese Removal

Manganese is a grey-white metal that resembles iron but is harder and very brittle. It is chemically reactive and slowly decomposes in cold water. Manganese is a naturally occurring element found in rocks, soil, air, groundwater, and surface water. Usually found in water containing iron, manganese makes up approximately 0.1% of the earth's crust.

Continental Carbon Group will design a simple, proven and cost effective manganese removal system based on flow rate, water chemistry, economics and space limitations. The automatic MAG-50 filtration system, along with a polishing vessel are ideal for eliminating manganese contaminants.

## Advantages

Put the power of the MAG-50 system to work for your project.

- Much higher filtration rates compared to typical manganese greensand resulting in significantly smaller systems and footprint
- Smaller systems and smaller footprints reduce costs and interior real estate
- Low capital costs compared to alternatives such as greensand
- Custom designed to fit through any doorway
- Various options to effectively treat your raw water to meet regulatory parameters
- Longer life expectancy on both media and steel vessels compared to greensand and composite vessels
- Less moving parts needing replacements compared to other designs
- Easy access to visually inspect media or for any top-ups
- Performs well over wide range of incoming raw water quality



# What is the Difference Between Types of Filter Media?

The most significant difference between filter media is its purity. Filox, MangOX, and MAG-50 are solid manganese dioxide filter media. The media is made from greater than 80 percent pure manganese, which is collected and processed specifically for water treatment due to its purity. These media are considered the gold standard in filter media compared to those with less than 50 percent purity.

Some filtration systems forgo solid manganese media instead and use coated manganese media like Greensand or Birm. These media use a light coating of manganese oxide over silica to effectively filter manganese from the raw water.

Solid and coated manganese media are both effective, but solid media will last much longer. In fact Continental Carbon Group have customers that have solid manganese media that is over 12 years old and has never been replaced. Greensand on the other hand, will last about 5 years before the manganese coating starts to wear off and the media requires changing. Below is a comparison table for different types of manganese media.

|   | <i>Birm</i> | <i>Filox</i> | <i>Greensand</i> | <i>MangOX</i> | <i>MAG-50</i> |
|---|-------------|--------------|------------------|---------------|---------------|
| Effective PH Range                            | 6.8 - 9.0   | 6.0 - 9.0    | 6.2 - 8.8        | 6.0 - 9.0     | 6.5 - 9.0     |
| Life Expectancy In Years                      | 5           | 15 - 20      | 5                | 15 - 20       | 15 - 20       |
| Density in lb/ft <sup>2</sup>                 | 40 - 45     | 114          | 88               | 125           | 120           |
| Required Backwash Rate in gpm/ft <sup>2</sup> | 10 - 12     | 12 - 15      | 12               | 12 - 15       | 12 - 15       |
| Service Flow Rate in gpm/ft <sup>2</sup>      | 3.5 - 5.0   | 6.0          | 3.0 - 5.0        | 5.0 - 10      | 6.0 - 12      |
| Can be used with Chlorine?                    | No          | Yes          | Yes              | Yes           | Yes           |
| Removes Both Iron and Manganese               | No          | Yes          | Yes              | Yes           | Yes           |
| Removes Hydrogen Sulfide                      | No          | Yes          | Yes              | Yes           | Yes           |

Generally, we prefer using solid manganese media such as MAG-50, because it last longer and is more powerful. It has stronger oxidizing ability than coated media like Greensand, so the service flow rate through the filters tend to be higher.

If you have any further questions or comments about media or other water treatment systems please email us at [info@continental-carbon.com](mailto:info@continental-carbon.com) or called us at (905) 643-7615.

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