

# Crusader Iron Filter

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The Crusader Iron Filter incorporates proprietary filtration media and is capable of removing iron, manganese, & hydrogen sulfide in water at flow rates up to 30 gpm.

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## Operation of the Filter

Water can contain Iron (Fe), Manganese (Mn), and Hydrogen Sulfide (H<sub>2</sub>S). Soluble iron and manganese are oxidized and precipitated by contact with higher oxides of manganese on the proprietary blend of oxidation media. Hydrogen Sulfide is oxidized into an insoluble sulfur precipitate. Precipitates are filtered, retained, and then removed by vigorous back-washing. When the oxidizing capacity of the media is exhausted, the system has to be regenerated with a weak potassium permanganate (KMnO<sub>4</sub>) solution. 1.5 - 2 Oz. of KMnO<sub>4</sub> per cubic foot of media is generally required for proper regeneration.

## Filtration Media

The media is specially formulated using a lightweight, synthetic granular core, which is coated with manganese dioxide. The proprietary media acts through both oxidation & physical filtration. The filtration system also includes a food-grade, FDA-approved gravel under-bedding to ensure uniform flow and consistent performance.

## Controller/Meter

Regeneration of the system is initiated by a simplified electronic control timer, which electronically meters water flow to the home and makes decisions to regenerate based on water consumption and program settings.

## Regeneration

These iron filters are controlled electronically. A fully programmable microprocessor controls Tank Fill, Upflow Regenerant Draw, Slow Rinse, Double Backwash, Rapid Rinse, Tank Fill, and Return-to-Service cycles.

## Control Valve

A hydraulically balanced piston slides effortlessly through seals & spacers. All parts in the waterway are either coated brass or composite Noryl® materials to ensure a long and reliable service life.

## Media Tank

All models feature a non-corrosive fiberglass tank with a one-piece thermoplastic inner liner. The tank has a maximum working pressure of 90 psi and a working temperature up to 120°F. The tank is approved by NSF, UL, and the FDA. It also meets WQA Standard S-100, and all fiberglass tanks carry a limited lifetime warranty.

## Regenerant Tank

A 10" x 16" regenerant tank is included as part of the system. The tank is a combination saturator and regenerant storage vessel and is made of tough, high-density polyethylene. Larger tanks are available for extra regenerant storage capacity, if required. Regenerant tanks feature a grid plate for maximum saturation of regenerant.

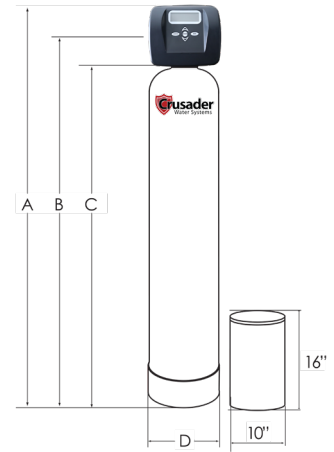
## Regenerant System

Regenerant refill is automatically controlled by the computer to provide the exact amount of regenerant for each cleaning cycle. The regenerant system has a float and safety valve shut-off, which minimizes the chance of overflowing the regenerant tank. All units are equipped with an air check.

**These filters should only be purchased after a water analysis has been completed. The following criteria should be screened: Iron, Manganese, Hydrogen Sulfide, TDS, pH, Oil, and Polyphosphate.**

[www.crusaderwater.com](http://www.crusaderwater.com)

# Commercial Iron Filter



## Crusader Iron Filter

	CS-FE-1	CS-FE-2	CS-FE-3
Maximum System Capacity (ppm)	10,000	20,000	30,000
Economy System Capacity (ppm)	7,000	14,000	21,000
KMnO <sub>4</sub> Used Per Regeneration (Maximum) Oz.	2.0	4.0	6.0
KMnO <sub>4</sub> Used Per Regeneration (Economy) Oz.	1.5	3.0	4.5
Peak Flow Rate (gpm) @ 75 psi inlet, 25 psi drop	10	20	30
Service Flow Rate (gpm) @ 55 psi inlet, 15 psi drop	3	5	8
Maximum Influent Iron Level (ppm)	20	20	20
Maximum Influent Manganese Level (ppm)	5	5	5
Operating pH Range	6.8 - 9.5	6.8 - 9.5	6.8 - 9.5
Water Pressure Range (psi)	45 - 75	45 - 75	45 - 75
Maximum Inlet Pipe Size	1"	1"	1.25"
Dimension A - Overall System Height	61.25"	61.25"	72.25"
Dimension B - System Piping Height	56.09"	56.09"	67.09"
Dimension C - Pressure Vessel Height	54"	54"	65"
Dimension D - Pressure Vessel Diameter	10"	13"	14"
Shipping Weight (lbs)	115	215	305

# Crusader MM-OX

The Crusader Multimedia Oxidizing Filter incorporates proprietary filtration media and is capable of removing iron, manganese, & hydrogen sulfide in water at flow rates up to 20 gpm.

## Operation of the Filter

Water can contain Iron (Fe), Manganese (Mn), and Hydrogen Sulfide (H<sub>2</sub>S). Soluble iron and manganese are oxidized and precipitated by contact with higher oxides of manganese on the proprietary blend of oxidation media. Hydrogen Sulfide is oxidized into an insoluble sulfur precipitate. Precipitates are filtered, retained, and then removed by vigorous back-washing. When the oxidizing capacity of the media is exhausted, the system has to be regenerated and sparged with ambient air, which makes it environmentally friendly.

## Filtration Media

The media is specially formulated using a lightweight, synthetic granular core, which is coated with manganese dioxide. The proprietary media acts through both oxidation & physical filtration. The filtration system also includes a food-grade, FDA-approved gravel under-bedding to ensure uniform flow and consistent performance.

## Controller/Meter

Regeneration of the system is initiated by a simplified electronic control timer, which electronically meters water flow to the home and makes decisions to regenerate based on water consumption and program settings.

## Regeneration

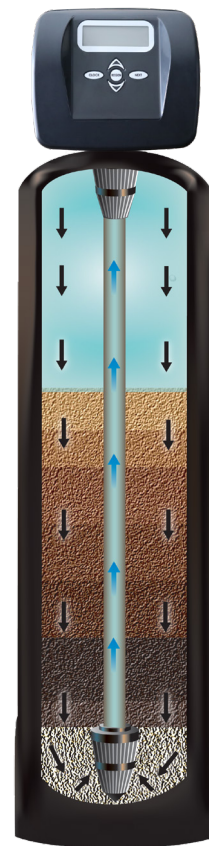
These iron filters are controlled electronically. A fully programmable microprocessor controls Upflow Ambient Air Injection, Slow Rinse, Backwash, Rapid Rinse, Tank Fill, and Return-to-Service cycles.

## Control Valve

A hydraulically balanced piston slides effortlessly through seals & spacers. All parts in the waterway are either coated brass or composite Noryl® materials to ensure a long and reliable service life.

## Media Tank

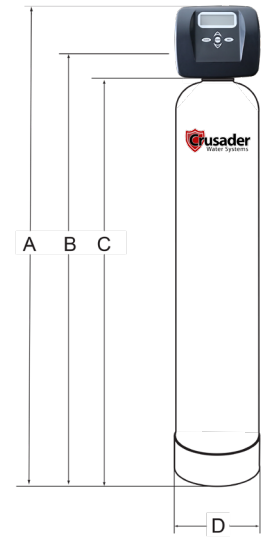
All models feature a non-corrosive fiberglass tank with a one-piece thermoplastic inner liner. The tank has a maximum working pressure of 90 psi and a working temperature up to 120°F. The tank is approved by NSF, UL, and the FDA. It also meets WQA Standard S-100, and all fiberglass tanks carry a limited lifetime warranty.



These filters should only be purchased after a water analysis has been completed. The following criteria should be screened: Iron, Manganese, Hydrogen Sulfide, TDS, pH, Oil, and Polyphosphate.

[www.crusaderwater.com](http://www.crusaderwater.com)

# Commercial Oxidizing Filter



## Crusader Multimedia Oxidizing Filter

	CS-MM-OX-1	CS-MM-OX-2	CS-MM-OX-3
Maximum System Capacity (ppm)	10,000	20,000	30,000
Economy System Capacity (ppm)	7,000	14,000	21,000
Peak Flow Rate (gpm) @ 75 psi inlet, 25 psi drop	10	15	20
Service Flow Rate (gpm) @ 55 psi inlet, 15 psi drop	8	12	16
Maximum Influent Iron Level (ppm)	10	10	10
Maximum Influent Manganese Level (ppm)	1	1	1
Operating pH Range	6.2 - 9.5	6.2 - 9.5	6.2 - 9.5
Water Pressure Range (psi)	45 - 75	45 - 75	45 - 75
Maximum Inlet Pipe Size	1"	1"	1.25"
Dimension A - Overall System Height	61.25"	61.25"	72.25"
Dimension B - System Piping Height	56.09"	56.09"	67.09"
Dimension C - Pressure Vessel Height	54"	54"	65"
Dimension D - Pressure Vessel Diameter	10"	13"	14"
Shipping Weight (lbs)	110	210	290