Iron & Manganese Removal

with Birm, Stirox, Filox, Aquamandix, MnO_2, MTM

Iron and manganese are commonly found in waters. They can cause unsightly staining and they can cause health problems. Catalytic oxidation is a tried and tested method of both oxidising the iron and manganese to form a precipitate and then holding on to it until it is automatically backwashed to drain.

Aquamandix
Used for iron and manganese removal by catalytic oxidation. It is a robust natural mineral conforming to British Standard BS EN 13752. It requires a pH of 7 or more for iron removal and 8 for manganese removal. Aquamandix is a cost effective filter media which can be mixed with sand where the Aquamandix catalyses the metals and then the less expensive sand filters out the precipitate. It can also be mixed with pH media to and increase the pH all in one system.

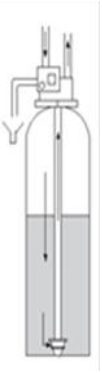
Filox
Filox can be used for iron, manganese and hydrogen sulphide removal by catalytic oxidation. It is a robust media allowing a faster service flow rate than other iron removal media. A pH of 7 is recommended for iron removal and 8 for manganese removal. It is a heavy media requiring a strong backwash. Adding other media is possible but can impair it's service flow rate.

Stirox
Used for iron and manganese removal by catalytic oxidation. It is a robust natural mineral. This mineral is heavy so needs a good flow to backwash.

Birm
Birm is a relatively inexpensive material which can be used for iron and manganese removal by catalytic oxidation. It requires a pH of 7 or more for iron removal and pH 8 for manganese removal. It is advised not to use Birm in combination with chlorination and the water should be free of oil and hydrogen sulphide. If the pH of the water is too low pH correction maybe required. Birm is a light, inexpensive media but often doesn't last quite as long as other natural media.

Manganese Greensand/MTM
These media will remove iron, manganese and hydrogen sulphide which are all oxidised by the media. This oxidation capacity becomes exhausted and is periodically regenerated by potassium permanganate or chlorine. They operate over a wide pH range (6.2 to 8.8), sometimes without requiring pH correction.

How does it work?



Water flows into the valve at the top, down through the media and then up through the 'riser' tube in the middle of the vessel. As the water travels through the media the iron and manganese are oxidised bringing the metals out of solution and trapping them so only clean clear water flows out to service. These systems also act as sediment filters trapping any natural turbidity. As the media act as a catalyst they do not need to be topped up or replaced on a regular basis.
There are timer options that can be set to automatically self clean (backwash) and wash away any of the accumulated iron and manganese.
The Aquamandix, Filox and Birm filters require dissolved oxygen in the water to oxidise the metals. This normally is present naturally but can be added by aerator or as an air filtration option. Greensand and MTM contain a lower concentration of active catalyst so require frequent regenerations with oxidation chemicals like potassium permanganate
All catalytic iron & manganese removal systems rely on there being enough oxygen to be present The air draw kit is an option which can be fitted on 1" clack valve systems (WS1) which forms an air pocket above the media so as the water cascades through it oxygen is adsorbed into the water

How to size.
On average 160 litres of water is used per person per day. This normally occurs in two peak periods, one in the morning and one in the evening. A family of four typically uses 700 litres of water per day but may use 300 litres in an hour in the morning. Larger households, farms, stables and irrigations systems all use more water.

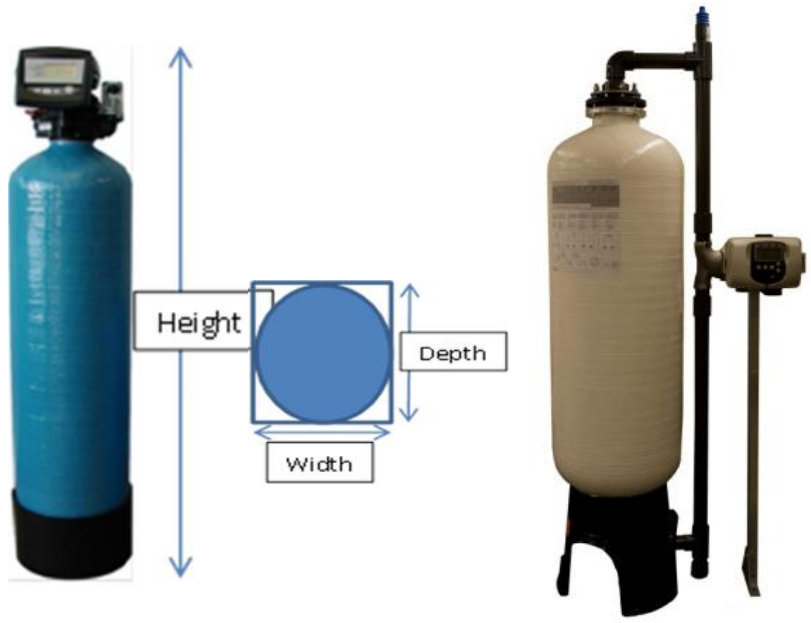
When sizing a system the peak flow rate need to be taken into account. The size of the pump also needs to be taken into account as these filters normally use twice the service flow rate to lift the bed and backwash away the trapped iron and manganese. If the backwash flow is not available two smaller units running side by side is often a good solution. The vessel size is given as the diameter and the height (in inches). Recommended operating pressure range is 20 to 120 psi. Water temperature range from 2 to 38°C.

Aquamandix, Birm MTM & Greensand

Vessel	Service Flow m³/hr	Backwash m³/hr	Connections In / Out	Max Footprint Width mm	Depth mm	Height mm
1054	0.6	1.1	1"	269	390	1597
1252	0.9	1.8	1"	315	390	1548
1354	1.0	2.0	1"	341	390	1584
1465	1.2	2.3	1"	369	390	1870
1665	1.6	3.4	1"	406	406	1875
1865	2.0	3.9	1"	510	510	1997
2160	2.7	5.7	1½" or 2"	552	579	2212
2469	3.6	6.8	2"	610	640	2171
3072	5.6	11.4	2"	770	770	2341
3672	8.0	17.1	2"	927	927	2441
4278	11.0	22.0	2"	1133	1133	2730
4882	14.0	28.0	3"	1290	1290	2745

Filox

Vessel	Service Flow m³/hr	Backwash m³/hr	Connections In / Out	Max Footprint Width mm	Depth mm	Height mm
1054	1.5	2	1"	269	390	1597
1252	2	2.5	1"	315	390	1548
1354	2.5	3	1"	341	390	1584
1465	3	3.3	1"	369	390	1870
1665	3.7	4.6	1"	406	406	1875
1865	4.5	5.7	1" or 1¼	510	510	1997
2160	6.4	7.9	2"	552	579	2212
2469	9	12.1	2"	610	640	2171
3072	15	17	2"	770	770	2341
3672	20	24.5	2"	927	927	2445
4278	35	45	3"	1133	1133	2755
4882	50	50	3"	1290	1290	2770



Softeners, and Crystal Right kits are also available as are other medias such as pH correction, sand, carbon etc.
Sizes and dimensions are for indication purposes only and may change without notice.