

Product Update Bulletin

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How to remove iron using Macrolite® filter?

Iron is one of the most common elements on earth, so it is not surprising that many ground water sources contain varying amounts of dissolved iron. With a guideline value of 0.3 milligrams per litre in the Australian Drinking Water Guidelines, iron in water is generally not considered dangerous to human health. However, iron in water supplies presents many problems of both an aesthetic and management nature, including blockages and staining of plumbing fixtures and laundry items.

The principle methods to remove iron are:

- If iron is in solution as dissolved ferrous iron (clear water iron) by ion exchange (e.g. using a water softener). This will remove iron before it oxidises and precipitates from solution where it can then be seen as ferric iron
- If the iron is already oxidised (ferric iron), then it can be removed by filtration and/or settling. Soluble ferrous iron (Fe^{2+}) is oxidised to insoluble ferric iron (Fe^{3+}) by aeration, chlorination or other processes including extended natural settling and can then be filtered from the water.

Macrolite® filtration can take the place of normal cartridge pre-filtration. While it has a higher initial capital cost there are no on-going costs in terms of frequent cartridge changes incurring expense and labour in replacement. Macrolite® filters simply backwash the trapped oxides to waste automatically and the media should not need replacement.

Macrolite® media offers the finest back-washable media filtration available. The patented process ceramic media removes particles down to 5 microns and below. Iron oxides are typically fine and 5 microns is a good size to trap such oxides. That said, Macrolite® should not be used for iron removal where the iron loading is greater than 5 mg/L – and even then it should be used with caution.

It is recommended that Macrolite® removal iron level needs to be less than 5 mg/L (at maximum) note that filtration will only remove oxidised (ferric)iron, not soluble (ferrous) iron. The reality is that Macrolite® is almost too effective trapping iron oxide – so if the load is high the filter will blind off rapidly.

Like any filter media, the finer the media the more rapidly it will accumulate sediment and blind off (block). To extend the time before cartridge replacement, this is why we recommend you use coarse micron rating cartridges - to protect finer micron rating cartridges which will extend the duty life of the fine cartridge. With Macrolite® filters we can simply increase the backwash frequency to prevent premature blinding off.

Macrolite® experiences minimal pressure drop across the bed and can be expanded in backwash to 100%, totally fluidising during backwash to ensure maximum accumulated sediment removal efficiency. Chemically inert and compatible with all types of polymers, acids, caustics and oxidants, Macrolite® has an indefinite service life and correctly used under normal operating conditions will last for decades.

Note: The use of Macrolite® on surface water supplies high in organics is not recommended unless some form of biocide is applied; the unique nature of the media promotes bacteria growth and bio-fouling of the media unless an oxidising agent such as Acquasafe® or chlorine is used in conjunction with filtration.



Marketing Development Manager – Water and Water Treatment



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