



FILMTEC Membranes

Water Chemistry and Pretreatment: Colloidal and Particulate Fouling Prevention

Other Methods

Methods to prevent colloidal fouling other than those described in the previous sections also exist.

Lime softening has already been described as a method for silica removal - see [Lime Softening \(Section 2.3.6\)](#). Removal of iron and colloidal matter are further benefits.

Strong acid cation exchange resin softening not only removes hardness, but it also removes low concentrations of iron and aluminum that otherwise could foul the membrane. Softened water is also known to exhibit a lower fouling tendency than unsoftened (hard) water because multivalent cations promote the adhesion of naturally occurring colloids, which are usually negatively charged. The iron removal efficiency depends on the Fe species present. Fe^{2+} and Fe^{3+} are removed very well by the SAC resin and, if in excess of 0.05 ppm, have a tendency to foul the membrane and catalyze its degradation. Colloidal or organo-Fe-complexes are usually not removed at all and will pass through into the product water. Insoluble iron-oxides are, depending on their size, filtered out depending on the flow rate and bed-depth used.

When dealing with higher concentration of ferrous iron, one needs special care to avoid ferric iron fouling. It was reported that addition of SMBS was able to prevent membrane fouling

Antifoulants: certain scaling inhibitors, also called antifoulants, can handle iron. This pretreatment process can be used for relatively low concentrations of iron.

FILMTEC™ Membranes

For more information about FILMTEC membranes, call the Dow Liquid

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