



## FILMTEC Membranes

### Water Chemistry and Pretreatment: Prevention of Fouling by Organics

#### Prevention of Fouling by Organics

Adsorption of organic substances on the membrane surface causes flux loss, which is irreversible in serious cases. The adsorption process is favored with high molecular mass compounds when these compounds are hydrophobic or positively charged. A high pH value helps to prevent fouling, because both the membrane and many organic substances assume a negative charge at pH >9. Organics present as an emulsion may form an organic film on the membrane surface. These organics must, therefore, be removed in pretreatment.

Organics occurring in natural waters are usually humic substances in concentrations between 0.5 and 20 mg/L TOC. Pretreatment should be considered when TOC exceeds 3 mg/L. Humic substances can be removed by a coagulation process with hydroxide flocs ([Coagulation-Flocculation, Section 2.5.5](#)), by ultrafiltration ([Microfiltration/Ultrafiltration, Section 2.5.6](#)), or adsorption on activated carbon. Removal of color from high molecular weight organics is also possible by FILMTEC™ nanofiltration membranes.

Coagulation or activated carbon must also be applied when oils (hydrocarbons or silicone-based) and greases contaminate the RO feed water at levels above 0.1 mg/L. These substances are readily adsorbed onto the membrane surface. They can be cleaned off, however, with alkaline cleaning agents if the flux has not declined by more than 15%.

In waste water applications, the rejection and concentration of organics is a major objective. Depending on the kind of substances, organics even in the percent concentration range can be handled and must be evaluated in field tests on a case-by-case basis.

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For more information about FILMTEC membranes, call the Dow Liquid

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