



## FILMTEC Membranes

### Water Chemistry and Pretreatment: Colloidal and Particulate Fouling Prevention

#### Cartridge Microfiltration

A cartridge filter with an absolute pore size of less than 10  $\mu\text{m}$  is the suggested minimum pretreatment required for every RO system. It is a safety device to protect the membranes and the high pressure pump from suspended particles. Usually it is the last step of a pretreatment sequence. A pore size of 5  $\mu\text{m}$  absolute is recommended. The better the prefiltration the less RO membrane cleaning required. If there is a risk of fouling with colloidal silica or with metal silicates, cartridge filtration with 1 to 3  $\mu\text{m}$  absolute pore size is recommended. The filter should be sized on a flow rate according to the manufacturer's recommendation and replaced before the pressure drop has increased to the permitted limit, but at least every 3 months.

Backflushable filters as final safety filters are generally not recommended because of their risk of breakthrough in case of a malfunction of their backflush mechanism, their lower efficiency and the higher biofouling risk. Backflushable fine filters may be used upstream of the cartridge filters to protect them. They are however, no substitute for disposable cartridges.

The cartridge filter should be made of a synthetic nondegradable material (e.g., nylon or polypropylene) and equipped with a pressure gauge to indicate the differential pressure, thereby indicating the extent of its fouling. Regular inspections of used cartridges provide useful information regarding fouling risks and cleaning requirements.

If the differential pressure across the filter increases rapidly, it is an indication of possible problems in the raw water supply or in the pretreatment process. The filter provides some degree of short-term protection for the membranes while corrective action is taking place.

Replacing cartridge filters more often than every 1 to 3 months usually indicates a problem with the pretreatment. The cartridge filter, however, is not meant to be a major component for the removal of high amounts of filterable solids. This would not only be an inefficient use of rather expensive filters, but would probably lead to premature failure of the membrane system due to the high probability that some of the unwanted material will break through. An alternative approach would be to use a second cartridge with larger pore size upstream.

### **FILMTEC™ Membranes**

**For more information about FILMTEC membranes, call the Dow Liquid**

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Notice: The use of this product in and of itself does not necessarily guarantee the removal of cysts and pathogens from water. Effective cyst and pathogen reduction is dependent on the complete system design and on the operation and maintenance of the system.

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