



## FILMTEC Membranes

### Cleaning and Sanitization: Sanitizing RO & NF Membrane Systems

#### Introduction

The sanitization of RO/NF membrane systems as described in this chapter is the application of biocidally effective solutions or hot water to the membranes while the system is offline, i.e. not in production mode. The online dosage of biocidal chemicals while the system is in production mode is dealt with in *Biological Fouling Prevention (Section 2.6)*.

Membrane systems are sanitized in order to keep the number of living microorganisms at an acceptably low level. There are two main reasons why sanitization is required:

- a) **Smooth operation.** Microorganisms may grow into a biofilm at the membrane and feed spacer surface and cause biofouling. Biofouling is a major threat to system operation, and regular sanitization is part of a strategy to control biofouling. Regular sanitization helps to keep the level of biological growth low enough to avoid operational problems. In RO systems operating with biologically active feed water, a biofilm can appear within 3–5 days after inoculation with viable organisms. Consequently, the most common frequency of sanitization is every 3–5 days during peak biological activity (summer) and about every 7 days during low biological activity (winter). The optimal frequency for sanitization will be site-specific and must be determined by the operating characteristics of the RO system.
- b) **Permeate water quality.** Some applications, for example in food and pharmaceutical industries, require a high product water quality with respect to microbiological parameters. Although RO and NF membranes are theoretically rejecting 100% of microorganisms, any minute leakage in the membrane system may allow the permeate water to get contaminated. The risk of contamination is much higher with a biofilm present on the feed side; therefore the membrane has to be kept in a sanitary state. Regular sanitizations in these applications are required to ensure the microbiological quality of the permeate water, even if no operational problems are encountered.

**FILMTEC™ Membranes**  
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