



DOW FILMTEC™ Membranes

Cleaning and Sanitization: Sanitizing RO & NF Membrane Systems

Heat Sanitization

The HSRO series of FILMTEC™ elements can be sanitized with hot water. It is an excellent choice for food and pharmaceutical applications. The advantages of hot water as a sanitization agent are:

- May reach areas chemicals do not (dead legs, etc...)
- Easy to validate
 - Simpler to monitor heat than chemical concentrations
 - Easier to demonstrate complete distribution of heat
- No need to rinse out chemicals
- No need to store chemicals
- Minimizes waste disposal issues
- No need to approve chemicals

New HSRO heat sanitizable spiral elements must be pre-conditioned prior to initial use by exposure to hot water. Suitable quality water must be used during all pre-conditioning steps. This water is chlorine-free, non scaling/fouling water. RO permeate is preferred, but pre-filtered feed water may be used. An appropriate conditioning procedure consists of the following:

- Flush to drain with suitable quality water at low pressure and low permeate flow rate.
- Recycle warm water (45°C or less) at very low pressure (< 25 psig trans-membrane pressure with a maximum feed pressure of 45 psig (3 bar)).
- Introduce hot water to the system to increase temperature to 80°C (176°F).
- Keep trans-membrane pressure below 25 psig (1.7 bar) when warm or hot water (45°C or higher) is being fed to the membranes.
- Maintain temperature for 60-90 minutes.
- Allow system to cool to 45°C or below.
- Flush to drain with suitable water quality at very low pressure (< 25 psig trans-membrane pressure with maximum feed pressure of 45 psig (3 bar)).
- DO NOT recycle permeate during pre-conditioning.
- DO NOT start-up a second pass RO before the first pass RO has been pre-conditioned.

HSRO membranes have high water permeability before they have been pre-conditioned. After pre-conditioning, they attain their specified flow and salt rejection performance during operation at normal temperature. The performance will remain stable irrespective of subsequent additional sanitization cycles. The procedure for regular sanitization may be the same as described above, but ultimately is the responsibility of the end-user. Certain industries have required sanitizing procedures that may be different from our procedures.

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