Membrane & System Preservation Process

Preserving Membranes and System with AM-88

The interior of a spiral membrane element is dark, moist and therefore an excellent breeding ground for microorganisms. When spiral elements are used, tested, or operated intermittently, they will probably be exposed to bacteria. During shutdown or storage periods of more than a few days, spiral elements should be disinfected or sterilized by filling the system with a biocidal solution. Up to 40% flux loss can occur from biological fouling in elements and modules that have been tested on non-sterile water, then stored on the shelf or in non-operating units for long periods.

To prevent biological growth during storage, shipping, or system shutdowns, it is recommended that RO systems and membranes be immersed in a solution of AM-88. This solution will not adversely affect membrane flux or performance.

System and Membrane Preservation Procedure

1. Make a water solution containing 2% by weight of AM-88. Add 75 grams of AM-88 for each gallon of water (use RO permeate if possible).
2. Flush and fill the system with this solution.
3. Drain the system as much as possible.
4. Seal the system.

Long Term Storage Procedure (Membranes Only)

1. Make a water solution containing 2% by weight of AM-88 and 20% by weight glycerin (99%, USP).
2. Drain and seal the membrane in a plastic bag.

(760) 727-3711• FX: (760) 727-4427
sales@appliedmembranes.com

Membrane & System Disinfection Process

Disinfecting Membranes and System with PS-77

Hydrogen peroxide or a mixture of hydrogen peroxide and peracetic acid is used for disinfecting reverse osmosis systems and Thin-Film Composite membranes. Two factors greatly influence the rate of hydrogen peroxide attack on the membrane: Temperature and Iron.

Temperature:
The disinfecting solution should not exceed 77 degrees F (25 degrees C). Thin-Film Composite membranes tested at temperatures higher than 77 degrees F showed decreased salt rejection over a period of time. The higher the temperature, the faster the decrease occurs.

Iron:
The presence of iron or other transition metals in association with hydrogen peroxide will catalyze membrane degradation.

Disinfecting Procedure for Systems

1. Clean the system with AM-22 or AM-23. AM-22 or AM-23 will remove deposits in the system which harbors microorganisms. After cleaning, flush the system with RO permeate.

2. Clean the system with AM-11 to remove iron and other transition metals. After cleaning, flush the system with RO permeate.

3. Circulate a solution of PS-77 or hydrogen peroxide through the system in a ratio of 1:100 with RO permeate for 30 minutes, at a temperature not to exceed 77 degrees F.
   CAUTION: Do NOT exceed this concentration or the membranes will be damaged.

4. Allow the system to soak in the disinfecting solution for 2-12 hours. A soak-time of 2 hours will kill more than 90% of the bacteria, whereas a soak time of 12 hours will kill 99% of the bacteria. After disinfecting, flush the system with RO permeate.

Disinfecting Procedure for Membranes

1. Clean the membrane with AM-22 or AM-23. AM-22 or AM-23 will remove deposits in the membrane which harbor microorganisms. After cleaning, flush the membrane with RO permeate.

2. Clean the membrane with AM-11 to remove iron and other transition metals. After cleaning, flush the membrane with RO permeate.

3. Circulate a solution of PS-77 or hydrogen peroxide through the membrane in a ratio of 1:100 with RO permeate for 30 minutes, at a temperature not to exceed 77 degrees F.
   CAUTION: Do NOT exceed this concentration or the membranes will be damaged.

4. Allow the membrane to soak in the disinfecting solution for 30 minutes. After disinfecting, flush the membrane with RO permeate.

CAUTION: PS-77 or hydrogen peroxide is not recommended in contact with brass, copper, or iron parts and fittings of an RO system. Handle all chemicals with care. Wear protective clothing and eye protection.

APPLIED MEMBRANES INC.®
(760) 727-3711• FX: (760) 727-4427
sales@appliedmembranes.com

Membrane Maintenance Information

Membrane Storage, Shipping & System Shut-Down

Membrane Storage:

- Store Membranes in a cool area out of direct sunlight. Membrane storage temperature limits are 22°F-113°F. Dry (new) elements can go below 22°F.
- Preserve in a solution of 2% AM-88 and 20% AM-225. This will not prevent freezing below 32°F, but the crystals are soft and the membrane is not damaged.
- Keep new elements in their original packaging.
- Examine the preservative in preserved elements every 3 months. If preservative color is not clear, remove and re-preserve the element. The pH of the preservative should not drop below 3.
- Storage time of dry elements is unlimited.

Membrane Shipping:

- Preserve the element in the plastic bag using the recommended procedure. Make sure the plastic bag does not leak and the element is properly identified.
- Make sure the preservative solution is correctly labeled.
- Protect the element package from physical damage.

System Shut-Down:

- Clean the membranes in the system using the cleaning procedure.
- Circulate the preservative solution.
- Shut down the system and close valves to avoid air entering the system.
- Check preservative once a month.

(760) 727-3711• FX: (760) 727-4427
sales@appliedmembranes.com