

STORAGE INSTRUCTIONS

HARD OVERWRAP RO AND NF SPIRAL ELEMENTS

A. SHELF LIFE

The spiral wound elements leave the factory stored in a solution of sorbic acid. From the date of shipment, the element shelf life in the original packaging is one year when stored in glycerin and six months when stored in sorbic acid. This assumes that the sealed bags have not been opened or damaged and the conditions shown in Sections B&C are met.

B. HANDLING

1. The boxes should not be dropped or crushed.
2. The elements should be stored horizontally.

C. NEW ELEMENT STORAGE CONDITIONS

1. Keep the elements in their original packaging.
2. Store indoors out of direct sunlight.
3. Do not allow the elements to freeze and they should be kept at less than 40°C (104°F).
4. The preferred long-term storage temperature range is 10°C to 30°C (50 to 86°F), at relative humidity below 70%.

D. USED ELEMENT STORAGE SOLUTION

1. **Short-term shut-down (up to 24 hours):** Elements should be thoroughly cleaned and left in water at 5-25°C (41 to 77°F).
2. **Mid-term shut-down (up to 30 days):** Elements should be thoroughly cleaned. The following chemicals may be used to fill the vessels:
 - a. KOCHKLEEN® 180 (or equivalent) adjusted to pH 3-4
 - b. 2,000 ppm solution of sodium bisulfite (pH should be 3-4). *Do not use sodium bisulfite or sodium metabisulfite with NF elements.*
3. **Long-term shut-down (30 days or longer):** Elements should be thoroughly cleaned. Follow the same procedure as the mid-term storage, but replace the storage solution every 30 days.

E. POST-STORAGE CLEANING PROCEDURE (MID AND LONG-TERM ONLY)

All elements should be cleaned according to KMS' recommended pre-startup procedures prior to restarting the system on production.

F. WATER QUALITY GUIDELINES

For water quality guidelines for storage solutions please refer to KMS Water quality guidelines for cleaning, diafiltration & storage.