

# SPIRAPAK<sup>TM</sup> PLUS and KPAK<sup>®</sup> PLUS Ultrafiltration Modules Storage Instructions

## STORAGE INSTRUCTIONS

### A. SHELF LIFE

KSS SPIRAPAK PLUS and KPAK PLUS Ultrafiltration modules leave the factory conditioned with a glycerin storage solution. From the date of shipment, the element shelf life in the original packaging is one year. 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 modules should be stored horizontally.

### C. NEW MODULE STORAGE CONDITIONS

1. Modules shall be kept unopened in original packaging.
2. Store modules indoors and out of direct sunlight.
3. Do not allow the modules to freeze and they should be kept at less than 40°C (104°F).
4. Storage temperature must be kept between 10°C and 30°C (50 to 86°F), at relative humidity below 70%.

### D. USED ELEMENT STORAGE SOLUTION

1. **Short-term shut-down (up to 30 days):** The spiral wound membrane modules should be thoroughly cleaned. The modules should then be filled with fresh water at 5-25°C (41 to 77°F). Exchange storage water with fresh water every one to two weeks.
2. **Long-term shut-down (30 days or longer):** The spiral wound modules should be thoroughly cleaned. The modules should then be filled with one of the following chemicals:
  - a. KOCHKLEEN<sup>®</sup> 180 (or equivalent) solution at pH 3-4
  - b. Phosphoric acid solution at pH 3.
  - c. Sodium bisulfite solution at 2,000 mg/l, 5-25°C, and pH 3-4.Replace storage solution every 30 days.

### E. POST-STORAGE CLEANING PROCEDURE

SPIRAPAK PLUS and KPAK PLUS modules should be cleaned according to a KSS recommended procedure prior to restarting the system on production.

### F. WATER QUALITY GUIDELINES

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

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**Koch Separation Solutions, Inc.** 850 Main Street, Wilmington, MA 01887  
Main: +1-978-694-7000 • Fax: +1-978-657-5208 • Toll Free: +1-888-677-5624

For complete contact information and listing of our global locations, visit [www.kochseparation.com](http://www.kochseparation.com)

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