# Technical Service Bulletin

October 2013 TSB108.14

## General Storage Procedures for Composite Polyamideand Polyvinyl Derivative (PVD) RO Membrane Elements

This bulletin provides guidelines for storing Hydranautics' Composite Polyamide Reverse Osmosis (RO) and Nanofiltration (NF) membrane elements.

**Note:** Before undertaking any long-term or short-term storage operation, contact Hydranautics for specific instructions related to the local environment.

## Scope

The general storage procedures included in this bulletin are as follows:

1. Short-term storage of RO/NF membrane elements in place in pressure tubes.
2. Long-term storage of RO/NF membrane elements in place in pressure tubes.
3. Dry storage of RO/NF membrane elements as spares or before start-up of an RO/NF plant.

**Note:** The composite polyamide type of RO/NFmembrane elements may not be exposed to chlorinated water under any circumstances. Any such exposure will cause irreparable damage to the membrane. Absolute care must be taken following any disinfection of piping or equipment or the preparation of cleaning or storage solutions to ensure that no trace of chlorine is present in feedwater to the RO/NF membrane elements. If there is any doubt about the presence of chlorine, perform chemical testing to make sure. Neutralize any chlorine residual with a sodium bisulfite solution, and ensure adequate contact time to accomplish complete dechlorination.

## Short-Term Storage

Short-term storage is for periods where an RO/NF plant must remain out of operation for more than five days, but fewer than thirty days, with the RO/NF elements in place. Prepare each RO/NF train as follows:

1. Flush the RO/NF section with feedwater, while simultaneously venting any gas from the system. Flushing with RO/NF permeate water instead of feedwater has added benefits, and may help remove build up of foulants (reference TSB 107).

2. When the pressure tubes are filled, close the appropriate valves to prevent air from entering the system.

3. Reflush as described above at 5-day intervals.

## Long-Term Storage

Long-term storage is for periods where an RO/NF plant must remain out of operation for more than thirty days with the RO/NF elements in place. Prepare each RO/NF train as follows:

1. Clean the RO/NF membrane elements in place.
2. Flush the RO/NF section with an approved biocide (see TSB110 or check with Hydranautics for recommendations and approvals of currently available products) prepared from permeate.
3. When the RO/NF section is filled with this solution (make sure that it is completely filled), close the valves to retain the solution in the RO/NF section.
4. Repeat Steps 2 and 3 with fresh solution every thirty days if the temperature is below 80°F (27°C), or every fifteen days if the temperature is above 80°F (27°C).
5. When the RO/NF system is ready to be returned to service, flush the system for approximately one hour using low-pressure feedwater with the product dump valve open to drain; then flush it at high pressure for 5 to 10 minutes with the product dump valve open to drain. Before returning the RO/NF system to service, check for any residual biocide in the product.

## Prior To Installation

When RO/NF elements are stored prior to installation, they should be protected from direct sunlight and stored in a cool, dry place with an ambient temperature range of 40°F to 95°F (4.4°C to 35°C). During the period of transit between the factory and the plant site, the elements should not be exposed to temperatures below freezing, 32°F (0°C), or above 113°F (45°C). New Elements are enclosed in a sealed polyethylene bag containing a storage solution, and then packaged in a cardboard box. Large shipments may come packaged in crates strapped to pallets containing 25 single elements. When storing the pallets of elements, they may be stacked 2 high. Pallets should NOT exceed 2 high.

## Length of Storage

RO and NF elements are typically stored with a preservative solution and enclosed in a vacuum sealed bag. The preservative is generally sodium bisulfite (SBS) with or without propylene glycol.

Hydranautics will only accept *unused* elements for return for credit no later than 90 days after purchase, per the guidelines in TSB 116 Returned Goods Authorization (RGA) Procedure. Though Hydranautics acceptance for unused elements is limited to 90 days, elements could be stored for an extended period of time and still perform as expected. If the storage conditions listed within this bulletin are followed and the vacuum in the bag is maintained, it may be possible to successfully store elements in excess of three years.

Installation of elements which are stored for such long periods may result in lower flow rates or higher operating pressures than expected. In such instances, it is recommendable to clean the elements using a caustic solution, as outlined in TSB 107 (Solution 7), in order to improve flux.

## Hydranautics Storage Bags (for customers requesting spares)

HYD P/N: 83060.5000 (7”x48”) for 4”x40” elements
HYD P/N: 83060.9000 (14”x55”) for 8”x40” elements

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