

RoClean[®] L403 is a low pH liquid cleaner designed to remove metal foulants such as iron, manganese, and aluminum as well as calcium carbonate scale deposits from spiral wound thinfilm and cellulose acetate elements. This formulation is temperature compensated to ensure that the cleaning solution remains in the effective pH range regardless of variations in solution temperature.

Performance:

RoClean™ L403 offers an array of performance benefits:

- Compatible with the thinfilm and cellulose acetate elements.
- Contains a special blend of buffers, chelants, and reducing agents, to promote the dissolution of metal deposits.
- Superior results to generic citric and hydrochloric acid solutions.
- Highly buffered to resist pH changes during the cleaning process.
- Can be used in conjunction with other applicable cleaners to remove combination foulants.
- Temperature compensated to maintain optimum pH over a wide temperature range.

Use Instructions:

Below is a summary of the RoClean L403 cleaning guidelines. For detailed procedures, please consult the Avista technical bulletin entitled "Cleaning of Spiral Wound Membrane Systems":

1. Fill the cleaning tank to the desired volume with RO permeate or DI water. Heat the solution to 50°C as this will dramatically increase the cleaning efficiency. Add the RoClean L403 to the tank at a rate of approximately 1 gallon per 50 gallons of water. Recycle the solution through the cleaning tank to ensure adequate mixing.
2. Recirculate the cleaning solution through each RO system stage, one at a time, for a minimum of 60 minutes at the flow rate recommended by the membrane manufacturer. If that rate is not known, use the guidelines listed below:

Element Diameter, (Inches)	Flowrate per Vessel GPM (LPM)
4	10 (38)
6	23 (87)
8	40 (151)

3. If the membranes are heavily fouled and the recirculated cleaning solution becomes discolored or turbid, discard as much as 15% of the solution volume. Heavily fouled elements may also benefit from a soak period (up to 8 hours).
4. Monitor the pH of the solution during the cleaning process. If the pH remains in the desired range of 2.5 to 3.5 and the solution is not turbid, it may be used to clean subsequent stages. In the unlikely event that the pH rises above 3.5, prepare a new batch and repeat steps 1 - 4.
5. When the clean is completed, rinse the membranes by recirculating RO permeate through each pressure vessel. The system can then be returned to service.

Dilution:

For moderate to severe fouling, RoClean L403 should be mixed at a rate of approximately 1 gallon of chemical to 50 gallons of water. For milder fouling, a dilution of 0.5 gallons of chemical to 50 gallons of water may be sufficient.

Packaging:

RoClean L403 is available in 45 pound pails.

Physical Properties:

Appearance: Colorless to amber
 Specific Gravity: 1.15
 pH: 2.5 to 3.5 (2% solution at 25°C)

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