

### Performance:

RoClean L404 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 in the removal of **metal hydroxides, calcium carbonate and iron.**
- 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.
- Environmental benefits from phosphate and EDTA free formulation

**RoClean L404** is a low pH liquid cleaner designed specifically 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.

### Use Instructions:

Below is a summary of the RoClean L404 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 the maximum acceptable temperature (see membrane manufacturer guidelines, or use 50°C) as this will dramatically increase the cleaning efficiency. Add sufficient RoClean L404 to create a 2% wt/wt solution if the fouling is moderate/severe or 1% if the fouling is mild. 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	Flowrate per Vessel, gpm (m <sup>3</sup> /hr)
4"	10 (2.4)
8"	40 (9)

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 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 4.5, 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 cleaner should be flushed with 5 bed/volumes of water before putting the system back on-line.

### Packaging and Storage:

Standard regional pack sizes are listed below. Custom packaging can be provided worldwide to meet customer needs. Information on drumless or bulk tanker delivery is available on request.

Specifications	
Appearance:	Amber liquid
pH (2% solution):	3.5 -4.5
Density (kg/litre):	1.2±0.05

Packaging Formats	Americas	EMEA
Pails	-	20 kg
Drums	-	200 kg
IBC's (totebins)	-	-

