NITTO DENKO

HYDRANAUTICS
A Nitto Denko Company

ESPA2-LD

Energy Saving, High Productivity, Low Fouling Polyamide RO Membranes

ESPA2-LD from the LD Technology™ innovative low fouling membranes, offers significant cost savings with lower operating pressure requirements while providing an optimal flow

When high productivity from a membrane element is important, the ESPA family of products is the right choice. ESPA (Energy Saving Polyamide) membranes achieve high flux without compromising on the standard for high rejection. The ESPA2-LD membranes find wide applications in the industry due to the significant cost savings associated with their use.

The ESPA2-LD has a high rejection of silica and boron, and an enhanced tolerance to high pH cleaning. Combining the energy saving properties of the ESPA membranes with the low biological and colloidal fouling properties of the LD Technology™, the ESPA2-LD membranes provide you an optimum performance and greater cost savings!

With a high boron rejection the ESPA2-LD membrane is most suitable for applications such as irrigation where it is critical to maintain a very low level of boron, bottling operations and other light industrial uses.

Key benefits

- High Permeate Flow - 10,000 gpd (37.9 m^3/d)
- Lower operating pressure
- Lower energy consumption
- High Salt Rejection - 99.6% (99.5% minimum)
- Lowest Biological And Colloidal Fouling
- Higher rejection for impurities including Silica and Boron
- Greater tolerance to high pH cleanings

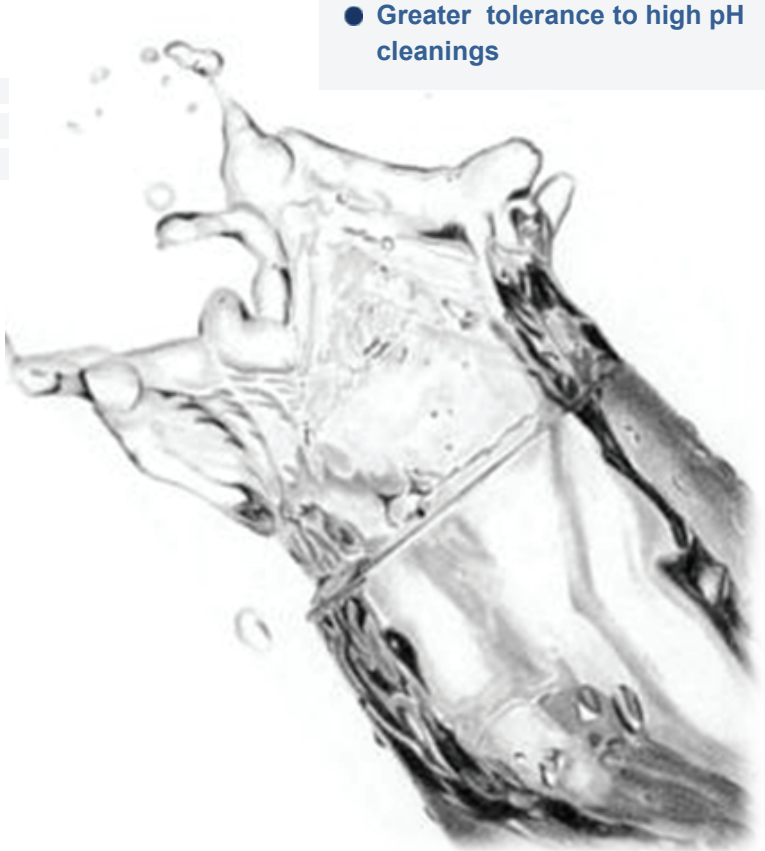
Applications:

- Municipal drinking water treatment
- Water treatment for irrigation in agricultural activities
- Drinking water and beverages bottling operations
- Light industrial uses for treating water low in biodegradable organics

Performance:

Permeate Flow	10,000 gpd (37.9 m^3/d)
Salt Rejection	99.6% (99.5 % minimum)

† When tested at standard test conditions with 5.0 ppm Boron in feed solution



Applications Data:

pH Range, Continuous (Cleaning)	2-11 (1-13)*
Maximum Feedwater SDI (15 min)	5.0
Maximum Feed Flow	75 GPM (17.0 m^3/h)

* The limitations shown here are for general use. For specific projects, operating at more conservative values may ensure the best performance and longest life of the membrane. See Hydranautics Technical Bulletins for more detail on operation limits, cleaning pH, and cleaning temperatures.

Test Conditions:

The stated performance is initial (data taken after 30 minutes of operation), based on the following conditions
1500 PPM NaCl solution
150 psi (1.05 MPa) Applied Pressure
77° F (25° C) Operating Temperature
15% Permeate Recovery
6.5 - 7.0 pH Range

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Features:

- Enhanced membrane chemistry for increased chemical resistance
- Innovative spacer design to minimize trapping of small colloidal particles
- HYDRAblock technology providing biostatic properties to minimize proliferation of biological fouling
- Proprietary Vented Seal Carrier to eliminate pressure-shock damage during system startup.

ESPA2-LD, Energy Saving PolyAmide RO Membranes, For Your Water Treatment Needs!

Nitto Denko-Hydranautics is a global leader in research, including reverse osmosis, nanofiltration, ultrafiltration, and microfiltration. Our membrane products (SWC, CPA, ESPA, LFC, ESNA, HYDRAcap, and HYDRAsub) are used extensively in municipal & industrial water and wastewater treatment.

Nitto Denko and Hydranautics have over 40 years experience in the membrane technology arena and are committed to creating innovative membrane technologies which provide clean water to a thirsty world.

Our global membrane division is headquartered in Oceanside, CA, USA. With three state-of-the-art manufacturing sites located in Oceanside - CA - USA, Shiga - Japan and Shanghai – China, Hydranautics has a combined manufacturing area in excess of 131,000 m2 (1,400,000 ft2). Our world-wide sales and customer service offices are located throughout Europe, Asia, the Middle East, North America and South America.

Solutions You Need.

Technologies You Trust!

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