

# CPA High Rejection Membrane Series

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# CPA - High Rejection Membrane Series

CPA elements have always been equated with the highest quality in the RO industry for desalting brackish waters. This reputation has been earned by the performance of hundreds of thousands of elements in service. Attainment of ISO 9001 Certification for Design and Manufacturing has further solidified our efforts to consistently produce products that meet or exceed the increasingly demanding specifications required by industry.

This product release is intended to educate new customers on the applications and product offering of the CPA membrane series, and to inform existing customers of recent changes in the names and product specifications of the CPA line.

## Description

CPA means high rejection brackish water purification. A composite polyamide, CPA achieves high flows at low pressures. With an average rejection of 99.7% for CPA2 elements, no other membrane line has the breadth and depth of performance of CPA.

## Product Offering

Hydranautics offers four types of 8 inch CPA elements. As described above, the spectrum of the elements is designed to accommodate customers' needs in responding to continuously increasing product quality requirements while maintaining high flow. For smaller systems requiring high flow and high rejection, CPA2-4040 is offered.

The following table presents flow, area, and rejection specifications for the CPA family of products.

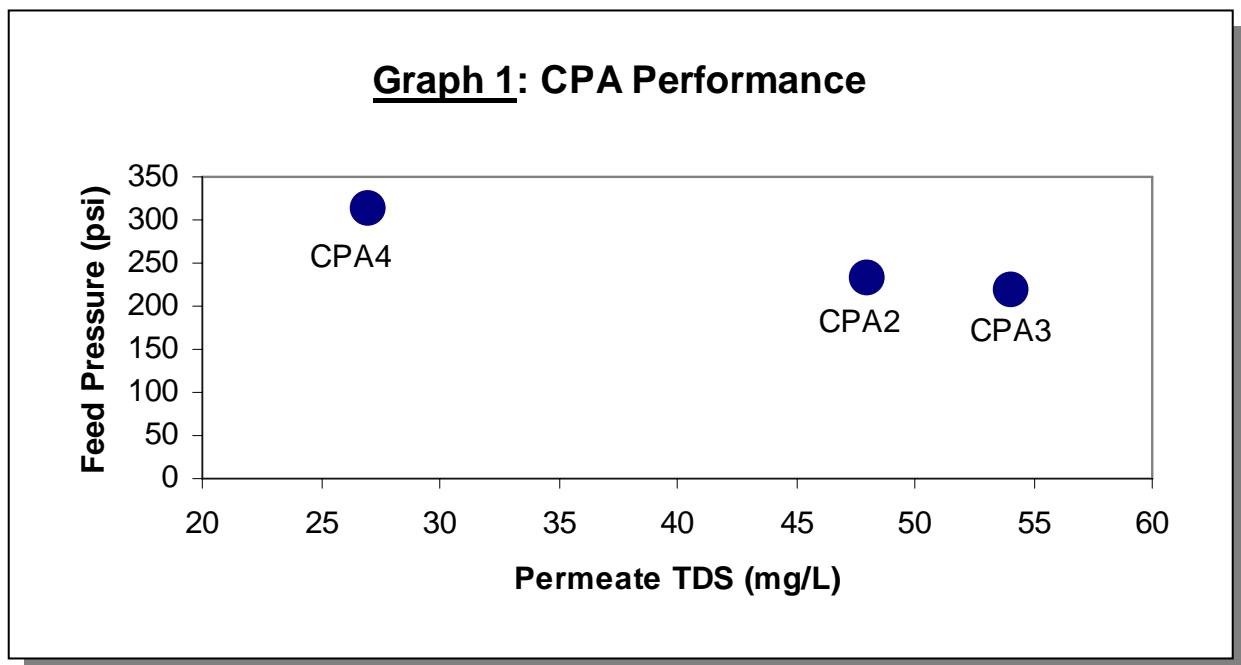
New Name	Area - ft <sup>2</sup> (m <sup>2</sup> )	Flow – GPD (m <sup>3</sup> /h)	% Minimum Rejection
<b>8 inch models</b>			
CPA2	365 (33.9)	10,000 (37.8)	99.5
CPA3	400 (37.2)	11,000 (41.6)	99.6
CPA4	400 (37.2)	6,000 (22.7)	99.7 (nominal)
<b>4 inch model</b>			
CPA2-4040	85 ( 7.9)	2,250	99.2

\*All elements tested at 225 psi, 25°C, 15% product recovery, pH 6.5-7.0, on water of 1500 ppm NaCl for 30 minutes.

# Applications

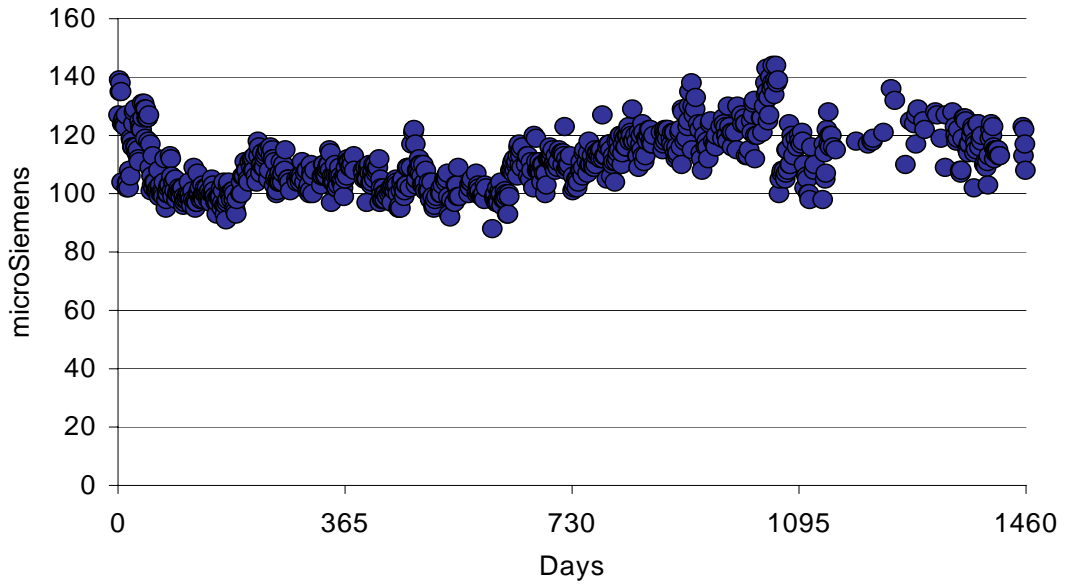
Typical applications for CPA elements include desalting of well waters for municipal drinking water supplies, reducing TDS prior to ion-exchange, producing boiler make-up water for power plants, and purifying water to ultrapure standards for semiconductor manufacturing facilities. CPA elements have also been used to treat blow-down from power plants.

CPA2 and CPA3 elements are the standard membranes for brackish water purification. Combining an average rejection of 99.5% with high flow, CPA2 is the product of choice for achieving low TDS product water from brackish sources. When higher rejections are required without sacrificing flow, CPA3 elements, with a *minimum* 99.6% rejection *per element*, are the choice. For highly critical, ultra-low permeate TDS applications such as power plant boiler water make-up, CPA4 elements are the only membrane type that can consistently achieve a minimum rejection of 99.7%. Graph 1 further describes projected CPA product performance on typical well water of 3000 ppm at 14 gfd (24 l/h) and 75% recovery.

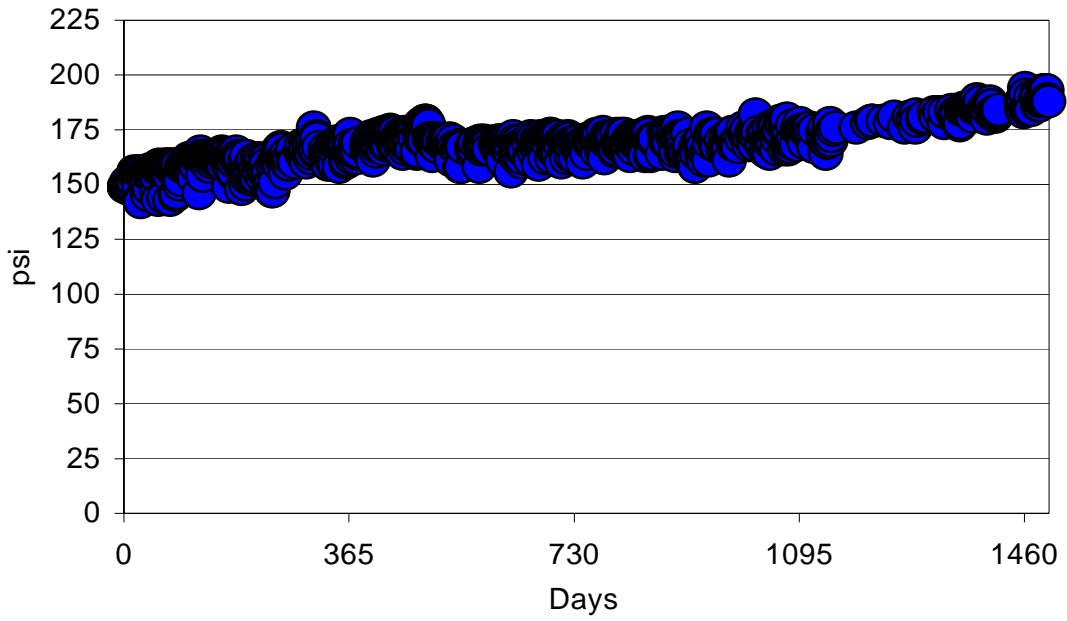


The durability of CPA membrane is well established. Typical performance of CPA elements is given by the following graphs. The Graph 2 demonstrates that over a four-year period, a 1MGD system operating at 83% recovery maintained consistent permeate quality. In Graph 3, the feed pressure, after experiencing an initial rise, remained stable over the duration of the life of the system.

**Graph 2: CPA Product Conductivity vs. Time (4 years)**



**Graph 3: CPA Feed pressure over Time (4 years)**



# Silica Rejection

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The following table lists system silica rejection for sites around the world. With CPA2 elements, the rejection for typical systems ranges from 98 to 99.7%. Nominal silica rejection for CPA elements at standard test conditions is 99.7%.

Table 1: Silica rejection at selected sites

Installation	Feed SiO <sub>2</sub> ppm	Permeate SiO <sub>2</sub> ppm	% Rejection (System)
A	27.7	0.52	98.1
B	41.1	0.26	99.4
C	10.2	0.16	98.4
D	40.0	0.30	99.2
E	64.0	0.53	99.2
F	44.0	0.45	99.0
G	3.6	0.06	98.3
H	2.6	0.010	99.6
I	2.9	0.008	99.7

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