Water Technologies & Solutions
fact sheet

Duracon NF2 series

sugar monosaccharide purification– HWS compatible

The Duracon family of proprietary thin-film nanofiltration membrane elements is characterized by an approximate molecular weight cut-off of 150-300 Dalton for uncharged organic molecules.

Divalent and multivalent ions are preferentially rejected by the membrane while monovalent ions rejection is dependent upon feed concentration and composition. Since monovalent ions pass through the membrane, they do not contribute to the osmotic pressure, thus enabling Duracon nanofiltration membrane systems to operate at feed pressures below those of RO systems. Duracon D-Series membrane has a minimum rejection of 96% on 2,000ppm $MgSO_4$ at 25°C and 110psi operating pressure.

The Duracon NF2 Elements are typically used in food related processes requiring stringent sanitary procedures. These elements are designed for daily CIP and periodic hot-water sanitation, while still maintaining element integrity. They are typically used for processing sugar solutions in food-related processes. Applications include mono-saccharides purification and sugar fractionation.

The Duracon NF2 Elements feature a Durasan* Cage patented outerwrap, a selection of feed spacers, and polysulfone parts.

The Duracon NF2 elements comply with:

- FDA Regulations relevant sections of 21CFR
- EU Framework 1935/2004/EC
- Halal & Kosher certification

Table 1: Element Specification

Membrane	Thin-film membrane (TFM*)

Model	Spacer mil (mm)	Active area ft^2 (m^2)	Part number
Duracon NF2 3840C50	50 (1.27)	55 (5.1)	1207025
Duracon NF2 8040C35	35 (0.89)	343 (31.9)	1227615
Duracon NF2 8040C50	50 (1.27)	275 (25.6)	1256119

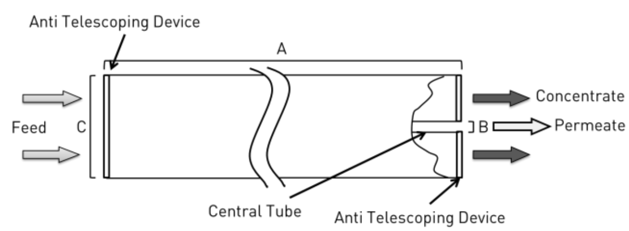

Figure 1 : Element Dimensions Diagram – 8040

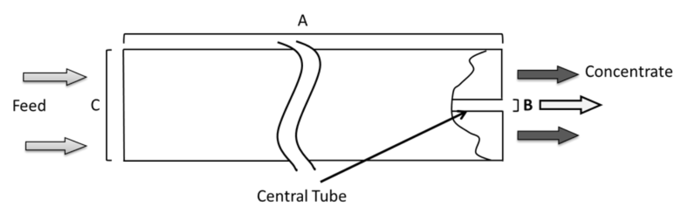

Figure 2 : Element Dimensions Diagram – 3840

Find a contact near you by visiting www.suezwatertechnologies.com and clicking on "Contact Us."

*Trademark of SUEZ; may be registered in one or more countries.

Table 2: Dimensions and Weight

Model (2)	Dimensions, inches (cm) A	B	C	Boxed Weight lbs (kg)
Duracon NF2 3840C	38.75 (98.4)	0.833 (2.12)	3.79 (9.6)	7 (3.2)
Duracon NF2 8040C	40.00 (101.6)	1.125 (2.86)	7.91 (20.1)	35 (15.9)

Table 3: Maximum Pressure Drops

Range	0°C-50°C psig (kPa)	51°C-65°C psig (kPa)
Over an element	15 (103)	7 (48)
Per housing	60 (414)	30 (207)

Table 4: Operating and CIP parameters

Typical Operating Pressure	140-800 psi (966-5,514 kPa)
Typical Operating Flux	5-20 GFD (8-34 LMH)
Clean Water Flux (CWF) (1)	18 GFD (30 LMH) @ 110psi
Maximum Operating Pressure (2)	1,200psi (8,273kPa)
Maximum Temperature	150°F (65°C)
pH Range	3.0-9.0
Chlorine Tolerance	500ppm-hours dechlorination recommended

(1) Clean water flux (CWF) is the rate of water permeability through the membrane after cleaning (CIP) at reproducible temperature and pressure. It is important to monitor CWF after each cleaning cycle to determine if the system is being cleaned effectively. CWF can vary ±25%.

(2) Operating pressure in bar multiplied by operating temperature in degree Celsius should not exceed 2000.

Table 5: CIP limits for NF elements

Temperature	pH minimum	pH maximum
50°C (122°F)	2.0	10.5
45°C (113°F)	2.0	11
35°C (95°F)	1.5	11.5
25°C (77°F)	1.0	11.5

hot water sanitization recommendations

For optimal performance, Duracon elements should always be cleaned using approved CIP procedures and flushed with fouling free water before the sanitization process. Feed pressure during sanitization should not exceed 40psi (275kPa) and the crossflow should not incur a pressure drop greater than 2psi (14kPa) per element. Heating rate to sanitizing temperature and cool down should not be faster than 5°C/minute. Maximum sanitization temperature is 90°C.

loss of permeate flow after repeated 90°C sanitization cycles

It is almost impossible to exactly predict the percentage of permeate flow rate lost from the high temperature sanitations, which among other factors depends on:

1) Rate of temperature increase and decrease.
2) Presence of other species like organics, ionic and metallic compounds that could locally decrease or increase the temperature at the surface of the membrane.
3) Feed flow rate and specifically the heat transfer rate to the membrane surface.
4) The thickness and geometry of the feed spacer used.

At optimum conditions measured in controlled environment with deionized water, around 30% of the original permeate flow rate was lost before the element performance had stabilized after repeated heat treatments (over 90% of this flow reduction occurred during the first heat treatment). With the loss of permeate flow rate, the salt rejection increases. The rate of cooling and heating was not more than 5°C per minute, and the differential pressure drop per element did not exceed 2 psi.

Pilot testing based on the criteria noted above will give the best operating parameters for any specific application.