NE4040-90



Normal grade NF element with high monovalent ion rejection

SPECIFICATIONS:

General Features

Permeate flow rate: 1,600 GPD (6.0 m³/day)

Monovalent ion rejection (NaCl)¹: 85.0 - 95.0%Divalent ion rejection (CaCl₂)²: 90.0 - 95.0%Effective membrane area: $85 \text{ ft}^2 (7.9 \text{ m}^2)$

- The stated product performance is based on data taken after 30 minutes of operation at the following monovalent test conditions:
 - 2,000 mg/L NaCl solution at 75 psig (0.5 MPa) applied pressure
 - 15% recovery
 - 77 °F (25 °C)
 - pH 6.5-7.0
- 2. The stated product performance is based on data taken after 30 minutes of operation at the following divalent test conditions:
 - 500 mg/L CaCl2 solution at 75 psig (0.5 MPa) applied pressure
 - 15% recovery
 - 77 °F (25 °C)
 - pH 6.5-7.0
- 3. MgSO₄ rejection is 97.0%. (Test conditions are equivalent with NaCl)
- 4. Permeate flow rate for each element may vary but will be no more than 15%.
- 5. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box.

Membrane type:

Thin-Film Composite

Membrane material:

Polyamide (PA)

Element configuration:

Spiral-Wound, FRPWrapping

Dimensions

Model Name	A	В	c	D	E
NE4040-90	40.0 inch	4.0 inch	0.75 inch	1.61 inch	1.61 inch
	(1,016 mm)	(102 mm)	(19.1 mm)	(41 mm)	(41 mm)



- 1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.
- 2. All NE4040 elements fit nominal 4.0 inch (102 mm) I.D. pressure vessels.

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NE4040-90



Normal grade NF element with high monovalent ion rejection

APPLICATION DATA:

Water Sources ⋅ Wastewater Pretreated by UF/MF (SDI < 3) 10–14 gfd ⋅ Seawater, Open Intake (SDI < 5) 7–10 gfd ⋅ Seawater, Beach Well (SDI < 3) 8–12 gfd ⋅ Surface Water (SDI < 5) 12–16 gfd ⋅ Surface Water (SDI < 3) 13–17 gfd ⋅ Well water (SDI < 3) 13–17 gfd ⋅ RO permeate (SDI < I) 21–30 gfd Saturation Limits - Langlier Saturation Index (LSI) - +1.5	Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)
Max. Feed Flow Rate		Max. Pressure Drop / 240" Vessel	60 psi (0.41 Mpa)
Min. Concentrate Flow Rate Max. Operating Temperature Max. Operating pH Range Operating pH Range CIP pH Range Max. Turbidity Max. SDI (15 min) Max. Chlorine Concentration Obesign Guidelines for Various Water Sources Wastewater Conventional (SDI < 5) Wastewater Pretreated by UF/MF (SDI < 3) Seawater, Open Intake (SDI < 5) Seawater, Open Intake (SDI < 3) Surface Water (SDI < 3) Surface Water (SDI < 3) Well water (SDI < 3) RO permeate (SDI < 1) Stiff and Davis Saturation Index (LSI) CaSO4 SrSO4 Max. Chlorine Concentration 4 gpm (0.91 m³/hr) 113 ∘ F (45 ∘ C) 2.0−11.0 1.0−13.0 8−12 gfd 10−14 gfd 5 Seawater, Open Intake (SDI < 3) For 10 gfd 8−12 gfd 10−14 gfd 7−10 gfd 8−12 gfd 10−14 gfd 10−14 gfd Seawater, Open Intake (SDI < 3) Surface Water (SDI < 3) Surface Water (SDI < 3) RO permeate (SDI < 1) Stiff and Davis Saturation Index (LSI) CaSO4 SrSO4 800% saturation		· Max. Operating Pressure	600 psi (4.14 MPa)
Max. Operating Temperature		Max. Feed Flow Rate	18 gpm (4.09 m ³ /hr)
- Operating pH Range		· Min. Concentrate Flow Rate	4 gpm (0.91 m ³ /hr)
CIP pH Range		· Max. Operating Temperature	II3 °F (45 °C)
. Max. Turbidity		· Operating pH Range	2.0-11.0
Max. SDI (15 min) 5.0 Max. Chlorine Concentration < 0.1 mg/L		· CIP pH Range	1.0-13.0
Max. Chlorine Concentration < 0.1 mg/L Design Guidelines for Various Water Sources Wastewater Conventional (SDI < 5) Wastewater Pretreated by UF/MF (SDI < 3) Seawater, Open Intake (SDI < 5) Seawater, Beach Well (SDI < 3) Surface Water (SDI < 3) Surface Water (SDI < 3) Well water (SDI < 3) Well water (SDI < 3) RO permeate (SDI < 1) Saturation Limits (Using Antiscalants) Langlier Saturation Index (LSI) Stiff and Davis Saturation Index (SDSI) CaSO4 SrSO4 800% saturation		,	I.0 NTU
Design Guidelines for Various Water Sources Wastewater Conventional (SDI < 5) Wastewater Pretreated by UF/MF (SDI < 3) Seawater, Open Intake (SDI < 5) Seawater, Open Intake (SDI < 5) Seawater, Beach Well (SDI < 3) Surface Water (SDI < 5) Surface Water (SDI < 5) Surface Water (SDI < 3) Well water (SDI < 3) Well water (SDI < 3) RO permeate (SDI < 1) Saturation Limits (Using Antiscalants) Langlier Saturation Index (LSI) Stiff and Davis Saturation Index (SDSI) CaSO4 SrSO4 800% saturation			5.0
Water Sources . Wastewater Pretreated by UF/MF (SDI < 3) 10−14 gfd . Seawater, Open Intake (SDI < 5) 7−10 gfd . Seawater, Beach Well (SDI < 3) 8−12 gfd . Surface Water (SDI < 5) 12−16 gfd . Surface Water (SDI < 3) 13−17 gfd . Well water (SDI < 3) 13−17 gfd . RO permeate (SDI < 1) 21−30 gfd Saturation Limits (Using Antiscalants) [†] Langlier Saturation Index (LSI)		· Max. Chlorine Concentration	< 0.1 mg/L
Water Sources · Wastewater Pretreated by UF/MF (SDI < 3)	Design Guidelines for Various	· Wastewater Conventional (SDI < 5)	8–12 gfd
Seawater, Beach Well (SDI < 3) Surface Water (SDI < 5) Surface Water (SDI < 3) Surface Water (SDI < 3) Well water (SDI < 3) RO permeate (SDI < I) Saturation Limits (Using Antiscalants) Langlier Saturation Index (LSI) CaSO ₄ SrSO ₄ Seawater, Beach Well (SDI < 3) I2-I6 gfd I3-I7 gfd I3-II gfd	Water Sources	The state of the s	The second second
Surface Water (SDI < 5) Surface Water (SDI < 3) Well water (SDI < 3) RO permeate (SDI < 1) Saturation Limits (Using Antiscalants) Langlier Saturation Index (LSI) Stiff and Davis Saturation Index (SDSI) CaSO4 SrSO4 SrSO4 Surface Water (SDI < 5) 12–16 gfd 13–17 gfd 21–30 gfd Call Saturation Index (LSI) Stiff and Davis Saturation Index (SDSI) SrSO4 Solve Saturation Surface Water (SDI < 5) Saturation Saturation SprSO4 Surface Water (SDI < 5) Saturation SprSO4 Surface Water (SDI < 5) Saturation SprSO4 Surface Water (SDI < 5) Surface Water (SDI < 3) Surface Water (SDI < 5) Surface Water (SDI < 3) Surface Water (SDI < 5) Surface Water (SDI < 1) Surfa		Seawater, Open Intake (SDI < 5)	7-10 gfd
Surface Water (SDI < 3) Well water (SDI < 3) RO permeate (SDI < I) 13–17 gfd 13–17 gfd 21–30 gfd Langlier Saturation Index (LSI) Stiff and Davis Saturation Index (SDSI) CaSO4 SrSO4 800% saturation		· Seawater, Beach Well (SDI < 3)	8-12 gfd
Well water (SDI < 3) RO permeate (SDI < I) Saturation Limits (Using Antiscalants) [†] Langlier Saturation Index (LSI) Stiff and Davis Saturation Index (SDSI) CaSO4 SrSO4 SrSO4 Solve Saturation 800% saturation		· Surface Water (SDI < 5)	12-16 gfd
RO permeate (SDI < I) 21–30 gfd Saturation Limits (Using Antiscalants) [†] Langlier Saturation Index (LSI) Stiff and Davis Saturation Index (SDSI) CaSO ₄ SrSO ₄ 800% saturation		· Surface Water (SDI < 3)	13-17 gfd
Saturation Limits (Using Antiscalants) [†] Langlier Saturation Index (LSI) Stiff and Davis Saturation Index (SDSI) CaSO ₄ SrSO ₄ 800% saturation		Well water (SDI < 3)	13-17 gfd
(Using Antiscalants) [†] Stiff and Davis Saturation Index (SDSI) CaSO ₄ SrSO ₄ 800% saturation		RO permeate (SDI < I)	21-30 gfd
(Using Antiscalants) ^T Stiff and Davis Saturation Index (SDSI) CaSO ₄ SrSO ₄ SrSO ₄ Solve Saturation 800% saturation	Saturation Limits	· Langlier Saturation Index (LSI)	<+1.5
CaSO4 230% saturation SrSO4 800% saturation	$(Using Antiscalants)^{T}$		<+0.5
		· · ·	230% saturation
· BaSO ₄ 6,000% saturation		· SrSO ₄	800% saturation
		· BaSO ₄	6,000% saturation

manufacturers. It is the user's responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.

[†]The above saturation limits are typically accepted by proprietary antiscalant

GENERAL HANDLING PROCEDURES

 Elements contained in the boxes must be kept dry at room temperature (7-32°C; 40-95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.

· SiO₂

- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- · Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.

100% saturation

 Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

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NE4040-70



Normal grade NF element with high monovalent ion rejection

SPECIFICATIONS:

General Features Permeate flow rate¹: 1,500 GPD (5.7 m³/day)

Monovalent ion rejection (NaCl)!: 40.0 - 70.0%

Divalent ion rejection (CaCl₂)²: 45.0 - 70.0%

Effective membrane area: 85 ft² (7.9 m²)

- The stated product performance is based on data taken after 30 minutes of operation at the following monovalent test conditions:
 - 2,000 mg/L NaCl solution at 75 psig (0.5 MPa) applied pressure
 - 15% recovery
 - 77 °F (25 °C)
 - pH 6.5-7.0
- 2. The stated product performance is based on data taken after 30 minutes of operation at the following divalent test conditions:
 - 500 mg/L CaCl2 solution at 75 psig (0.5 MPa) applied pressure
 - · 15% recovery
 - 77 °F (25 °C)
 - pH 6.5-7.0
- 3. MgSO₄ rejection is 97.0%. (Test conditions are equivalent with NaCl)
- 4. Permeate flow rate for each element may vary but will be no more than 15%.
- 5. All elements are vacuum sealed in a polyethylene bag containing 1.0% SBS (sodium bisulfite) solution and individually packaged in a cardboard box.

Membrane type:

Thin-Film Composite

Membrane material:

Polyamide (PA)

Element configuration:

D

Spiral-Wound, FRPWrapping

Dimensions

Model Name	A	-	~		J.
NE4040-70	40.0 inch	4.0 inch	0.75 inch	I.61 inch	1.61 inch
142-70-70	(1,016 mm)	(102 mm)	(19.1 mm)	(41 mm)	(41 mm)
U-cup sea					
(Brine Sea	l)				
(Н	-
				Ĭ	
	CS	DA:			
	CS	IVI			→ Permeate
eed					→ Concentrate

1. Each membrane element supplied with one brine seal, one interconnector (coupler) and four o-rings.

E-

2. All NE4040 elements fit nominal 4.0 inch (102 mm) I.D. pressure vessels.

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NE4040-70



Normal grade NF element with medium monovalent ion rejection

APPLICATION DATA:

Operating Limits	· Max. Pressure Drop / Element	15 psi (0.1 MPa)	
	· Max. Pressure Drop / 240" Vessel	60 psi (0.41 Mpa)	
	· Max. Operating Pressure	600 psi (4.14 MPa)	
	Max. Feed Flow Rate	18 gpm (4.09 m³/hr)	
	Min. Concentrate Flow Rate	4 gpm (0.91 m³/hr)	
	· Max. Operating Temperature	113 °F (45 °C)	
	· Operating pH Range	2.0-11.0	
	CIP pH Range	1.0-13.0	
	· Max.Turbidity	I.0 NTU	
	· Max. SDI (15 min)	5.0	
	· Max. Chlorine Concentration	< 0.1 mg/L	
Design Guidelines for Various	· Wastewater Conventional (SDI < 5)	8–12 gfd	
Water Sources	· Wastewater Pretreated by UF/MF (SDI < 3)	10-14 gfd	
	Seawater, Open Intake (SDI < 5)	7-10 gfd	
	· Seawater, Beach Well (SDI < 3)	8-12 gfd	
	· Surface Water (SDI < 5)	12-16 gfd	
	· Surface Water (SDI < 3)	13-17 gfd	
	· Well water (SDI < 3)	13–17 gfd	
	· RO permeate (SDI < I)	21–30 gfd	
Saturation Limits	· Langlier Saturation Index (LSI)	<+1.5	
$(Using Antiscalants)^T$	Stiff and Davis Saturation Index (SDSI)	<+0.5	
	· CaSO4	230% saturation	
	· SrSO ₄	800% saturation	
	· BaSO4	6,000% saturation	
	· SiO ₂ 100% saturation		
	[†] The above saturation limits are typically accepted by proprietary antiscalant manufacturers. It is the user's responsibility to ensure proper chemical(s) and concentration are dosed ahead of the membrane system to prevent scale		
	formation anywhere within the membrane system. Membrane elements fouled or damaged due to scale formation are not covered by the limited warranty.		

GENERAL HANDLING PROCEDURES

- Elements contained in the boxes must be kept dry at room temperature (7–32°C; 40–95°F) and should not be stored in direct sunlight. If the polyethylene bag is damaged, a new preservative solution (sodium bisulfite) must be added and air-tight sealed to prevent drying and biological growth.
- Permeate from the first hour of operation should be discarded to flush out the preservative solution.
- Elements should be immersed in a preservative solution during storage, shipping and system shutdowns to prevent biological growth and freezing. The standard storage solution contains 1% by weight sodium bisulfite or sodium metabisulfite (food grade). For short term storage (i.e. one week or less) 1% by weight sodium metabisulfite solution is adequate for preventing biological growth.
- Keep elements moist at all times after initial wetting.
- · Avoid excessive pressure and flow spikes.
- Only use chemicals compatible with the membrane elements and components. Use of such chemicals may void the element limited warranty.
- Permeate pressure must always be equal or less than the feed/concentrate pressure. Damage caused by permeate back pressure voids the element limited warranty.

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