

# DL Series

## FACT SHEET

### Industrial high flow nanofiltration elements

The D-Series 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 anions are preferentially rejected by the membrane while monovalent ion 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 D-Series nanofiltration membrane systems to operate at feed pressures below those of RO systems.

Among other applications, DL High Flow NF Elements are used for dye removal/concentration, sodium chloride diafiltration, and metals recovery.

**Table 1: Element Specification**

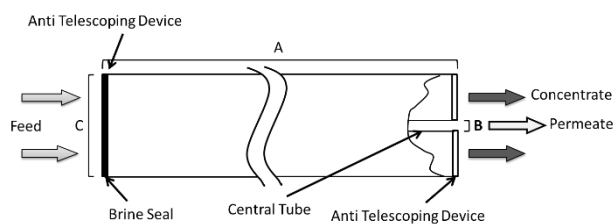
Membrane	D-Series, Thin-Film Membrane (TFM*)	
Model	Average permeate flow GPD (m <sup>3</sup> /day) (1) (2)	Average MgSO <sub>4</sub> rejection (1) (2)
DL2540C30	610 (2.3)	96 %
DL2540C50	430 (1.6)	96 %
DL2540F30	650 (2.5)	96 %
DL2540F50	450 (1.7)	96 %
DL4040C30	2,400 (9.0)	96 %
DL4040C50	1,800 (6.8)	96 %
DL4040F30	2,400 (9.1)	96 %
DL4040F50	1,800 (6.8)	96 %
DL8040C30	10,200 (38.6)	96 %

DL8040C50	8,200 (31.0)	96 %
DL8040F30	10,200 (38.6)	96 %
DL8040F50	8,200 (31.0)	96 %

1) Average salt rejection after 24 hours operation. Individual flow rate may vary ±25%.

(2) Testing conditions: 2,000ppm MgSO<sub>4</sub> solution at 110psi (760kPa) operating pressure, 77 °F (25°C), 15 % recovery.

Model	Spacer mil (mm)	Active area ft <sup>2</sup> (m <sup>2</sup> )	Outer wrap	Part number
DL2540C30	30 (0.76)	25 (2.3)	Cage	3028456
DL2540C50	50 (1.27)	18 (1.7)	Cage	1207015
DL2540F30	30 (0.76)	28 (2.6)	Fiberglass	1207018
DL2540F50	50 (1.27)	22 (2.0)	Fiberglass	1207019
DL4040C30	30 (0.76)	89 (8.2)	Cage	1207030
DL4040C50	50 (1.27)	67 (6.2)	Cage	1207028
DL4040F30	30 (0.76)	85 (7.9)	Fiberglass	3050068
DL4040F50	50 (1.27)	66 (6.1)	Fiberglass	3050067
DL8040C30	30 (0.76)	374 (34.7)	Cage	1207040
DL8040C50	50 (1.27)	300 (27.9)	Cage	1207041
DL8040F30	30 (0.76)	364 (33.8)	Fiberglass	1207048
DL8040F50	50 (1.27)	284 (26.4)	Fiberglass	1207049



Note: DL4040C\*\* elements do not feature brine seal.

Figure 1: Element Dimensions Diagram – Female

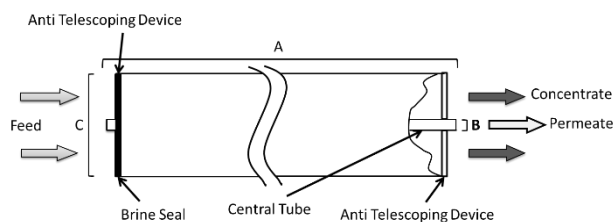


Figure 2: Element Dimensions Diagram – Male

Table 2: Dimensions and Weight

Model	Dimensions, inches (cm)			Boxed Weight lbs. (kg)
	A	B (1)	C	
DL2540F**	40.0 (101.6)	0.75 (1.90) OD	2.4 (6.1)	4 (1.8)
DL2540C**	40.0 (101.6)	0.75 (1.90) OD	2.4 (6.1)	4 (1.8)
DL4040C**	40.0 (101.6) (2)	0.625 (1.59)	3.9 (9.9)	9 (4.1)
DL4040F**	40.0 (101.6)	0.75 (1.90) OD	3.9 (9.9)	9 (4.1)
DL8040C**	40.0 (101.6)	1.125 (2.86)	7.9 (20.1)	29 (13.2)
DL8040F**	40.0 (101.6)	1.125 (2.86)	7.9 (20.1)	29 (13.2)

(1) Internal diameter unless specified OD (outside diameter).  
 (2) Includes the interconnector. Please refer to TB1206.

Table 3: Operating and CIP parameters

Typical Operating Flux	5 – 20 GFD (8 – 34 LMH)
Maximum Operating Pressure	600psi (4,137 kPa) if T < 95°F (35°C) 435psi (3,000 kPa) if T > 95°F (35°C)
Maximum Temperature	Continuous Operation: 122°F (50°C) Clean-In-Place (CIP): 122°F (50°C)
pH Range	Continuous Operation: 3-9 Clean-In-Place (CIP): 2-11 (1)
Maximum Pressure Drop	Over an element: 15psi (103 kPa) Per housing: 60psi (414 kPa)
Chlorine Tolerance	500 ppm hours, dechlorination recommended

(1) Please refer to Cleaning Guidelines Technical Bulletin TB1194.