

# Dairy DL Series

## dairy processing sanitary nanofiltration

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.

The DL membrane has a minimum rejection of 96% on 2,000ppm MgSO<sub>4</sub> at 25°C and 110psi operating pressure.

The Dairy Processing DL Elements are typically used in food related processes requiring stringent sanitary procedures. Applications include lactose desalting, deacidification and demineralization of whey or UF permeate.

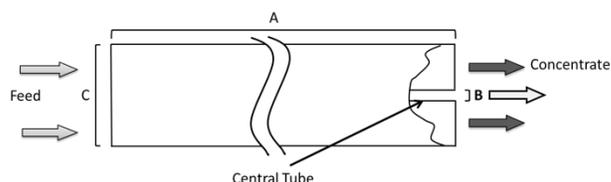
These elements feature a Durasan\* Cage patented outer wrap, a selection of feed spacers, and polysulfone parts.

The Dairy DL elements comply with:

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

**table 1: element specification**

Membrane	D-Series, Thin Film Membrane (TFM*)		
model	spacer mil (mm)	active area ft <sup>2</sup> (m <sup>2</sup> )	part number
Dairy DL3838C30	30 (0.76)	75 (7.0)	3062683
Dairy DL3840C30	30 (0.76)	77 (7.2)	1207023
Dairy DL8038C30	30 (0.76)	372 (34.6)	1244333



**figure 1: element dimensions diagram**

**table 2: dimensions and weight**

model	dimensions, inches (cm)			boxed weight lbs (kg)
	A	B	C	
DL3840C30	38.75 (98.4)	0.833 (2.12)	3.79 (9.6)	7 (3.2)
DL8038C30	38.00 (96.5)	1.125 (2.86)	7.91 (20.1)	29 (13.2)

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**table 3: operating parameters**

<b>Typical Operating Pressure</b>	70-400psi (483-2,757kPa)
<b>Typical Operating Flux</b>	5-20 GFD (8-34 LMH)
<b>Clean Water Flux (CWF) (1)</b>	18 GFD (30 LMH) @ 110psi
<b>Maximum Operating Pressure</b>	600psi (4,137kPa)
<b>Maximum Temperature</b>	122°F (50°C)
<b>pH Range</b>	3.0-9.0
<b>Maximum Pressure Drop</b>	Over an element: 15psi (103kPa) Per housing: 60psi (414kPa)
<b>Chlorine Tolerance</b>	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  $\pm 25\%$ .

**table 4: CIP limits for NF elements**

<b>temperature</b>	<b>pH minimum</b>	<b>pH maximum</b>
50°C (122°F)	3.0	10.0
45°C (113°F)	2.0	10.5
35°C (95°F)	1.5	11.5
25°C (77°F)	1.0	11.5