

DOW™ Food and Dairy Membranes

Reverse Osmosis and Desalting Nanofiltration Elements for Food and Processing Applications

Features

DOW™ reverse osmosis (RO) membrane elements contain sanitary, high-rejection FT30 reverse osmosis membrane that has been successfully used to process a wide range of food, beverage, and dairy streams. These elements are especially effective in dewatering and product concentration. DOW™ nanofiltration (NF) membrane elements are used by food and dairy processors for a variety of desalting, purification and other separations. All NF245 elements contain an improved nanofiltration membrane sheet designed to reject organics with a molecular weight above 300 amu while passing monovalent salts.

The DOW™ Food and Dairy RO-8038 and NF245-8038 are constructed with a polypropylene outer shell, designed to withstand rigorous processing applications and conditions. These elements incorporate the latest element fabrication technologies to minimize dead flow areas and element by-pass.

The DOW™ RO-390-FF product is the industry's premier membrane for evaporator condensate polishing. The RO-390-FF has more active area than competitive elements to maximize performance and reduce capital cost by requiring fewer elements for polishing applications.

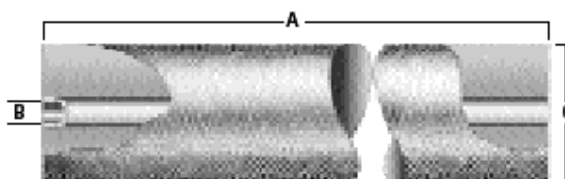
All materials of construction are compliant with U.S. Food and Drug Administration indirect food contact requirements.

Product Specifications

Product	Part number	Design active area – ft2 (m2)	Outer Casing
DOW™ Food and Dairy RO-8038	302219 / (302218)	370 (34.4)	Outer shell
DOW™ RO-390-FF	116314 / (100608)	390 (36.2)	Mesh wrap
DOW™ RO-3840 / 30-FF	196310 / (108664)	81 (7.5)	Mesh wrap
DOW™ RO-3838 / 30-FF	80588 / (80589)	79 (7.4)	Mesh wrap
DOW™ RO-3938 / 30-FF	(117259)	85 (7.8)	Mesh wrap
DOW™ Food and Dairy NF245-8038	(336673)	370 (34.4)	Outer shell
DOW™ NF245-390-FF	(324201)	390 (36.2)	Mesh wrap
DOW™ NF245-3840 / 30-FF	(319116)	81 (7.5)	Mesh wrap
DOW™ NF245-3838 / 30-FF	(316942)	79 (7.4)	Mesh wrap

Part numbers in brackets are wet elements.

Figure 1



Product type / Dimensions – inches (mm)	A	B	C
DOW™ Food and Dairy RO-8038 & NF245-8038 ¹	38.00 (965.0)	1.125 (28.58)	7.9 (200)
DOW™ RO-390 & NF245-390 ²	40.00 (1,016)	1.125 (28.58)	7.9 (200)
DOW™ RO-3840 & NF245-3840	38.75 (984.3)	0.83 (21.1)	3.8 (96)
DOW™ RO-3838 & NF245-3838 ³	38.00 (965.0)	0.83 (21.1)	3.8 (96)
DOW™ RO-3938 ⁴	38.00 (965.0)	0.83 (21.1)	3.9 (99)

1. DOW™ Food and Dairy RO-8038 & NF245-8038 are designed to fit Schedule 40, 8 inch stainless pipe (nominal 7.98 inch ID).

2. RO / NF245-390 are designed in a 8040 style with 1 inch exposed product water tube instead of a flush cut end on each side.

3. RO / NF245-3838 and RO / NF245-3840 elements are designed to fit 14 gauge stainless tubing (nominal 3.83 inch ID).

4. RO-3938/30-FF is designed to fit older APV housings (nominal 101 mm ID).

Operating Limits

- Maximum operating pressure 800 psi (54.8 bar)
- Maximum operating temperature^a 122°F (50°C)
- Free chlorine tolerance^c Non-detectable
- Hydrogen peroxide usage limit:
 - Continuous operation 20 ppm
 - Short-term cleaning (@ 77°F/25°C maximum) 1,000 ppm

^a Maximum temperature for continuous operation above pH 10 is 95°F (35°C).

^b Under certain conditions, the presence of free chlorine and other oxidizing agents will cause premature membrane failure. Since oxidation damage is not covered under warranty, Dow Water & Process Solutions recommends removing residual free chlorine using pretreatment, prior to membrane exposure. Please refer to technical bulletin 609-22010 for more information.

Design Guidelines

Product	Max. recirculation cross-flow – gpm (m3/h)	Max. element ΔP^\dagger – psi (bar)
DOW™ Food and Dairy RO-8038 & NF245-8038	80 (18.2)	13 (0.9)
DOW™ RO-390 & NF245-390	80 (18.2)	13 (0.9)
DOW™ RO-3840 & NF245-3840	30 (6.8)	15 (1.0)
DOW™ RO-3838 & NF245-3838	30 (6.8)	15 (1.0)
DOW™ RO-3938	30 (6.8)	15 (1.0)

[†] Maximum pressure drop across entire vessel is 60 psi (4.1 bar).

Important Information

New RO spiral elements normally are cleaned prior to initial use. The cleaning procedure should be based on the application for which the elements are to be used. If cleaning with formulated agents is not available, an alkaline wash with a wetting agent is recommended prior to initial use.

Operation Guidelines

Avoid any abrupt pressure or cross flow variations on the spiral elements during start-up, shutdown, cleaning or other sequences to prevent possible membrane damage. During start-up, a gradual change from a standstill to operating state is recommended as follows:

- Any concentrate or permeate obtained from the first hour of operation should be discarded.
- Feed pressure should be increased gradually over a 30-60 second time frame.
- Before initiating cross-flow at high permeate flux conditions (e.g., start-up with high-temperature water), the set operating pressure should be maintained for 5-10 minutes.
- Cross-flow velocity at set operating point should be achieved gradually over 15-20 seconds.
- Keep elements moist at all times after initial wetting.
- If operating specifications given in this Product Information bulletin are not strictly followed, any applicable limited performance warranty will be null and void.
- To prevent biological growth during system shutdowns, it is recommended that DOW™ Food and Processing elements be immersed in a preservative solution.
- The customer is fully responsible for the effects of incompatible chemicals and lubricants on elements.
- Maximum pressure drop across an entire pressure vessel (housing) is 60 psi (4.1 bar). Avoid permeate-side backpressure at all times.

General Information

DOW™ Food and Dairy Membranes

Notice: The use of this product in and of itself does not necessarily guarantee the removal of cysts and pathogens from water. Effective cyst and pathogen reduction is dependent on the complete system design and on the operation and maintenance of the system.

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