

# Microfiltration Membrane

## Sanitary element for dairy and food processing

Toray's Microfiltration (TMF-series) membrane separation is a low-pressure process with a molecular weight cut-off (MWCO) of between 200,000–1,000,000 Daltons.

TMF-series models are net-wrapped (no tail) spiral-wound elements incorporating a polyvinylidene fluoride (PVDF) asymmetric membrane. They are designed to remove residual fat from whey and whey protein concentrate and maximizing whey protein transmission.



### Product Specifications

Model	Feed spacer thickness in. (mm)	Active area ft <sup>2</sup> (m <sup>2</sup> )
<b>WHEY DEFATTING*</b>		
TMF 3838D1N2	0.046 (1.17)	60 (5.6)
TMF 6338D1N1	0.031 (0.79)	232 (21.6)
TMF 6338D1N2	0.046 (1.17)	188 (17.5)
TMF 6438D1N2	0.046 (1.17)	188 (17.5)
TMF 7838D1N1	0.031 (0.79)	389 (36.1)
TMF 7838D1N2	0.046 (1.17)	258 (24.0)
TMF 8038D1N1	0.031 (0.79)	392 (36.4)
TMF 8038D1N2	0.046 (1.17)	310 (28.8)
<b>CASEIN SEPARATION**</b>		
TMF 3838D2N2	0.046 (1.17)	60 (5.6)
TMF 6338D2N2	0.046 (1.17)	188 (17.5)
TMF 6438D2N2	0.046 (1.17)	188 (17.5)
TMF 8038D2N2	0.046 (1.17)	300 (27.9)

\* TMF 'D1' membranes have a MWCO of 500k–1,000K Daltons

\*\* TMF 'D2' membranes have a MWCO of 200k–400k Daltons

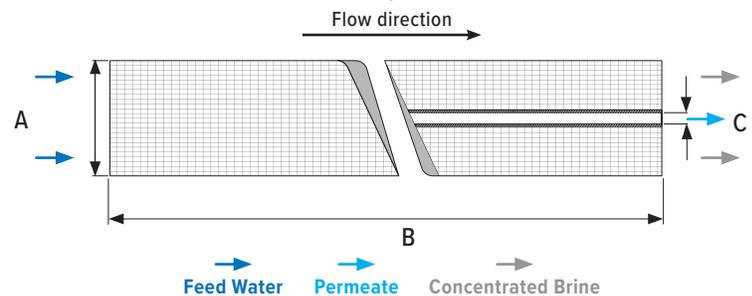
If you do not see a configuration or performance requirement that meets your needs, a team of product specialists is ready to develop custom engineered solutions. Please inquire within.

### Standard dimensions in. (mm)

Size	A Diameter	B Length	C Permeate tube ID
3838	3.8 (97)	38 (965)	0.83 (21.1)
6338	6.3 (160)	38 (965)	1.138 (28.9)
6438	6.4 (161)	38 (965)	1.138 (28.9)
7838	7.7 (196)	38 (965)	1.125 (28.6)
8038	7.9 (201)	38 (965)	1.125 (28.6)

### Spiral Elements in Sanitary Design (no ATD)

Components conform to FDA Regulation CFR Title 21 and USDA/3A Sanitary Standards



### Material Specifications

Feed spacer & element outer wrap	Polypropylene
Permeate carrier	Proprietary
Adhesives	Proprietary

## OPERATING LIMITS

Maximum operating pressure	120 psi (8.3 bar)
Maximum operating temperature	131°F (55°C)
Maximum cleaning temperature	122°F (50°C)
Acceptable operating pH range	2.5–10.0
Acceptable short-term cleaning pH range	1.7–11.5
Maximum pressure drop per element	20 psi (1.3 bar)
Maximum pressure drop per vessel	60 psi (4.1 bar)

Consult Toray for pressure limits when operating above ambient temperature

## OXIDANT TOLERANCE

Chlorine tolerance (short-term cleaning at pH 11)	180 ppm*
H <sub>2</sub> O <sub>2</sub> continuous	Tolerant
H <sub>2</sub> O <sub>2</sub> short-term cleaning <77°F (25°C)	Tolerant

\*Chlorine tolerance, continuous injection is 2 ppm;  
chlorine tolerance, sanitizing is 50 ppm

## Applications

### TMF-series 'D1' membranes

- Whey defatting
- Whey protein isolate

### TMF-series 'D2' membranes

- Casein concentrate
- Brine clarification

## Regulatory Information

Toray's membrane elements are certified under:

- ISO 9001:2015 QMS to ensure consistency in product and service quality; and
- ISO 14001:2015 EMS to enhance the environmental performance of our products and services.

## NOTICE

1. Elements are preserved in sodium meta-bisulfite. Appropriate personal protective equipment should be worn when handling.
2. Toray accepts no responsibility for results obtained by the application of this information or the safety or suitability of Toray's products, either alone or in combination with other products. Users are advised to make their own tests to determine the safety and suitability of each product combination for their own purposes.
3. All data may change without prior notice, due to technical modifications or production changes.
4. Consult Toray for element sizes not shown.

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