10K Ultrafiltration Membrane

Sanitary element for dairy and food processing



Toray's 10K Ultrafiltration (TUF-series) membranes have a molecular weight cut-off (MWCO) of 10,000 Daltons. TUF-series models are net-wrapped (no tail), spiral-wound elements using a hydrophilic polyethersulfone (PES) asymmetric membrane specifically developed to retain milk and whey proteins, and maximize productivity. 'HR' models incorporate high protein retention membranes with ideal flux for high concentration end of whey and whey protein isolate plants.

Product Specifications

Model	Feed spacer thickness in. (mm)	Active area ft^2 (m^2)
TUF 3838N1 / TUF 3838HRN1	0.031 (0.79)	73 (6.8)
TUF 3838N2 / TUF 3838HRN2	0.046 (1.17)	57 (5.3)
TUF 3838N3	0.065 (1.65)	43 (4.0)
TUF 4333N1 / TUF 4333HRN1	0.031 (0.79)	84 (7.8)
TUF 4333N2	0.046 (1.17)	76 (7.0)
TUF 4336N1	0.031 (0.79)	91 (8.5)
TUF 4336N2 / TUF 4336HRN2	0.046 (1.17)	64 (5.9)
TUF 6338N1 / TUF 6338HRN1	0.031 (0.79)	233 (21.6)
TUF 6438N1 / TUF 6438HRN1	0.031 (0.79)	233 (21.6)
TUF 6338HRN1T*	0.031 (0.79)	233 (21.6)
TUF 6338N2 / TUF 6338HRN2	0.046 (1.17)	176 (16.4)
TUF 6438N2 / TUF 6438HRN2	0.046 (1.17)	176 (16.4)
TUF 6338N2T* / TUF 6338HRN2T*	0.046 (1.17)	176 (16.4)
TUF 6338N3 / TUF 6338HRN3	0.065 (1.65)	137 (12.7)
TUF 6438N3 / TUF 6438HRN3	0.065 (1.65)	137 (12.7)
TUF 6338N3T* / TUF 6338HRN3T*	0.065 (1.65)	137 (12.7)
TUF 6338N4T*	0.080 (2.03)	117 (10.9)
TUF 7838N1	0.031 (0.79)	343 (31.9)
TUF 8038N1 / TUF 8038HRN1	0.031 (0.79)	360 (33.4)
TUF 8038N2 / TUF 8038HRN2	0.046 (1.17)	280 (26.0)

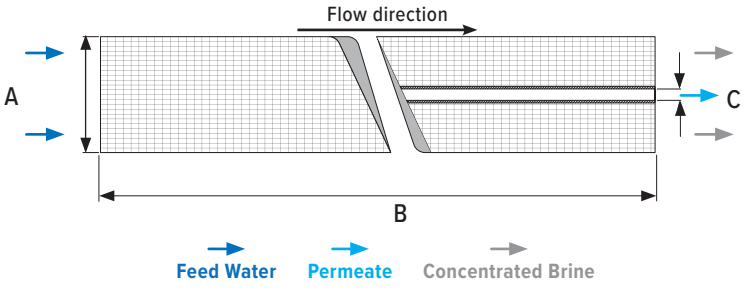
***T** indicates a tail that can be trimmed

Standard dimensions in. (mm)

Size	A Diameter	B Length	C Permeate tube ID
3838	3.8 (97)	38 (965)	0.83 (21.1)
4333	4.3 (109)	33 (838)	0.83 (21.1)
4336	4.3 (109)	35.5 (902)	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

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.

10K Ultrafiltration Membrane
Product datasheet

TORAY
Innovation by Chemistry

OPERATING LIMITS

Maximum operating pressure	140 psi (9.7 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	15 psi (1.0 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_2O_2 continuous	Tolerant
H_2O_2 short-term cleaning <77°F (25°C)	Tolerant

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

Applications

Toray's TUF-series 10K membranes offer high flux and protein retention ideal for whey processing at all concentrations and milk protein concentration (MPC) applications. Toray's TUF-series 10K HR (High-Rejection) membranes yield high protein retention for high concentration end of whey and whey protein isolate (WPI) plants.

- Lactose free milk
- Milk protein isolate
- White cheeses
- Soft cheeses
- Whey protein concentrate (WPC 35-85)
- Whey protein isolate (WPI-90)
- Whey permeate concentrate

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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