Product Datasheet

TORAY
Innovation by Chemistry

TMG(D) Series

Low-Pressure Brackish Water Reverse Osmosis (RO) Membrane Element with Enhanced Chemical Tolerance

Toray's reverse osmosis membrane technology applies decades of R&D and precision automated manufacturing under ISO 9001 for consistency in product quality. State-of-the-art cross-linked fully aromatic polyamide composite membranes produce high-quality permeate and robust membrane chemistry for improved performance and longer membrane life.

Product Specifications	Unit	TMG10D	TMG20D-400	TMG20D-440
Size		4040	8040	8040
Membrane Area	ft^2 (m^2)	87 (8)	400 (37)	440 (41)
Nominal Salt Rejection	%	99.7	99.7	99.7
Minimum Salt Rejection	%	99.5	99.5	99.5
Product Flow Rate	gpd (m^3/d)	2,650 (10.0)	12,100 (45.8)	13,300 (50.3)
Minimum Product Flow Rate	gpd (m^3/d)	2,120 (8.0)	10,300 (39.0)	11,200 (42.4)
Feed spacer thickness	mil	34	34	28

Test Conditions: Feed water pressure 150 psi (1.03 MPa); Feed water temperature 77 °F (25°C); Feed water concentration 2,000 mg/L as NaCl; Recovery rate 15%; Feed water pH 7

Applications

Municipal drinking water, Industrial process water, Water reuse

Products manufactured at our U.S. facility (TMUS) are certified to NSF/ANSI 61 for drinking water applications.

Dimensions in. (mm)		
Size	4040	8040
A	4.0 (101)	7.9 (201)
B	40 (1,016)	40 (1,016)
C	0.75 (19)	1.125 (29)
D	1.05 (26)	—

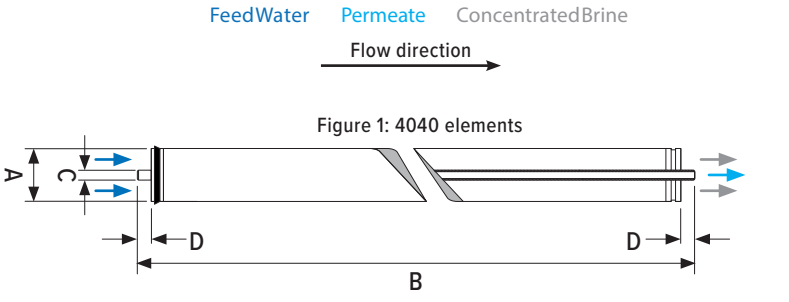

Figure 1: 4040 elements

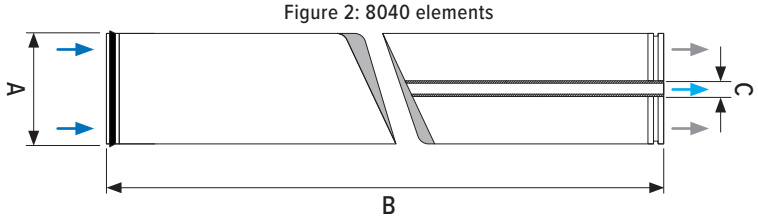

Figure 2: 8040 elements

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Operating Limits		Unit	Value
Maximum operating pressure[6,7]		psi (MPa)	600 (4.1)
Maximum feed water temperature		°F (°C)	113 (45)
Maximum feed water SDI_{15}			5
Feed water chlorine concentration		ppm	< 0.1
Feed water pH range	Continuous operation		2–11
	Chemical cleaning		1–13
Maximum pressure drop per element		psi (MPa)	15 (0.10)
Maximum pressure drop per vessel		psi (MPa)	50 (0.34)

Operating Information

1. Please consult the latest Toray technical bulletin, design guidelines, computer design program, or call an application specialist for the recommended design range. Not strictly following the operating limits stated in this bulletin will void and nullify the Limited Warranty.
2. All RO elements are wet tested treated with a 1 percent by weight sodium bisulfite storage solution. Afterward, the RO elements are vacuum packed in oxygen barrier bags or treated with a tested feed water solution, and then vacuum sealed in oxygen barrier bags with deoxidant inside. Toray recommends flushing Toray RO elements for 30 to 60 minutes once every two days with sufficient quality flushing water, such as pre-treated feed water, to prevent biological growth during system shutdown. Please refer to the Toray RO Handling Manual for suggested flushing water quality.
3. The presence of free chlorine and other oxidizing agents under certain conditions, such as heavy metals that act as oxidation catalysts in the feed water, will cause unexpected oxidation of the membrane. Toray strongly recommends removing these oxidizing agents contained in feed water before operating the RO system.
4. Permeate from the first hour of operation shall be discarded.
5. The customer is fully responsible for the effects of chemicals that are incompatible with the elements. Their use will void the element Limited Warranty.
6. Recommended process / operation pressure is < 2.0 MPa (for details, and in special cases, please consult the projection design guideline or contact your membrane supplier).
   a) Low-pressure elements will perform best with low salinity brackish water
   b) Maintain the above pressure range at low temperatures.
7. Maximum operating pressure will vary depending on feed temperature. Please ask for detailed information from Toray if needed.

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.

All data may change without prior notice, due to technical modifications or production changes. Please be sure to inquire about the latest product specifications.

Headquarters
Japan +81 3 3245 4540

Asia Pacific
China (TBMC) +86 10 8048 5216
Singapore (TAS) +65 6226 0525
Korea (TAK) +82 2 3279 1000

Americas (TMUS)
California +1 (858) 218 2360

Europe & Sub-Saharan Africa (TMEU)
Switzerland +41 61 415 8710

Middle East (TMME)
Saudi Arabia +966 13 568 0091
U.A.E. +971 4 392 8811

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For more info, please visit
water.toray

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