Ultra low pressure BWRO, enhanced chemical tolerance

**TMG (D)**

<table>
<thead>
<tr>
<th>Type</th>
<th>Diameter</th>
<th>Membrane Area ft² (m²)</th>
<th>Salt Rejection %</th>
<th>Product Flow Rate gpd (m³/d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TMG10D</td>
<td>4&quot;</td>
<td>87(8)</td>
<td>99.7</td>
<td>2,850(10.8)</td>
</tr>
<tr>
<td>TMG20D-400</td>
<td>8&quot;</td>
<td>400(37)</td>
<td>99.7</td>
<td>12,100(45.8)</td>
</tr>
<tr>
<td>TMG20D-440</td>
<td>8&quot;</td>
<td>440(41)</td>
<td>99.7</td>
<td>13,300(50.3)</td>
</tr>
</tbody>
</table>

* Above two types of TMG20D are with 29mm centerpipe as described in below “Dimensions”. Please note that while TMG20 series with 29 mm centerpipe are distinguished by “C style”, TMG20D series are only with 29 mm centerpipe and not distinguished by “C style”.

1. Membrane Type
   - Cross Linked Fully Aromatic Polyamide Composite

2. Test Conditions
   - Feed Water Pressure: 150 psi (1.03 MPa)
   - Feed Water Temperature: 77 °F (25 °C)
   - Feed Water Concentration: 2000 mg/l NaCl
   - Recovery Rate: 15%
   - Feed Water pH: 7

3. Minimum Salt Rejection
   - 99.5%

4. Minimum Product Flow Rate
   - 2,400 gpd (9.1 m³/d) (TMG10D)
   - 10,300 gpd (39.0 m³/d) (TMG20D-400)
   - 11,200 gpd (42.4 m³/d) (TMG20D-440)

Dimensions

All dimensions shown in Inches (millimeter).

**Flow direction**

- **F** > Feed Water
- **B** > Concentrated Brine

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Operating Limits

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Operating Pressure</td>
<td>600 psi (4.1 MPa)</td>
</tr>
<tr>
<td>Maximum Feed Water Temperature</td>
<td>113°F (45°C)</td>
</tr>
<tr>
<td>Maximum Feed Water SDI</td>
<td>5</td>
</tr>
<tr>
<td>Feed Water Chlorine Concentration*</td>
<td>&lt; 0.1 ppm</td>
</tr>
<tr>
<td>Feed Water pH Range, Continuous Operation</td>
<td>2-11</td>
</tr>
<tr>
<td>Feed Water pH Range, Chemical Cleaning</td>
<td>1-13</td>
</tr>
<tr>
<td>Maximum Pressure Drop per Element</td>
<td>15 psi (0.10 MPa)</td>
</tr>
<tr>
<td>Maximum Pressure Drop per Vessel</td>
<td>50 psi (0.34 MPa)</td>
</tr>
</tbody>
</table>

Operating Information

1. For the recommended design range, please consult the latest Toray technical bulletin, design guidelines, computer design program, and/or call an application specialist. If the operating limits given in this Product Information Bulletin are not strictly followed, the Limited Warranty will be null and void.

2. All elements are wet tested, treated with a 1% by weight percent sodium bisulfite storage solution, and then vacuum packed in oxygen barrier bags, or treated with tested feed water solution, and then vacuum packed in oxygen barrier bags with deoxidant inside. To prevent biological growth during short term storage, shipment, or system shutdown, it is recommended that Toray elements be immersed in a protective solution containing 500 - 1,000 ppm of sodium bisulfite (food grade) dissolved in permeate.

3. The presence of free chlorine and other oxidizing agents under certain conditions, such as heavy metals which act as oxidation catalyst in the feed water will cause unexpected oxidation of the membrane. Since oxidation damage is not covered under warranty, it is strongly recommended to remove these oxidizing agents contained in feed water before operating RO system. Please refer to Toray RO Element Three-Year Prorated Limited Warranty.

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
   a) Ultra low pressure elements will perform best with low salinity brackish water
   b) Above pressure range should be maintained also at low temperature
   For more details, and in special cases, please consult the projection design guideline or contact your membrane supplier.

Notice

1. 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.

2. All data may change without prior notice, due to technical modifications or production changes.