**Unique Ceramic Membrane**
The SpinTek Td ceramic membrane offers a new tool for the separation of micro-sized solids from liquid, gas and air influent. The unique Td membrane starts as a 185 micron thick stainless steel substrate and then a thin (15 micron) nanopowder coating of ceramic is bonded to the substrate. The ceramic coating has a smooth surface that resists fouling which occurs with conventional “depth” type ceramic membranes. The Td membrane is available in pore sizes as small as 0.07 microns and as large as 0.8 microns. The base ceramic of the Td membrane is titanium dioxide (TiO₂) manufactured from nano-sized ceramic powders. This can be blended with either zirconia or with a composite of alumina and silica dioxide depending on the intended service.

**Membrane Sizes**
The SpinTek Td membrane is available in square sheets 285 mm (11.2”) x 285 mm (11.2”). Larger sheets are available by precision welding standard Td sheets together. Standard circular and rectangular configurations are available and custom configurations can be laser cut to meet most needs. The Td membrane can also be rolled to a minimum dimension of 10 mm (3/8”) without damaging the membrane surface.

**System Configurations**
The Td membrane can be used in the SpinTek ST-II and Speedy rotary microfiltration applications. Our engineers can also custom design and fabricate specific membrane modules for most applications.

**Key Benefits**
- 0.07 to 0.8 micron pore sizes can be specified
- 100% membrane stability in highly alkaline and solvent environments
- Operationally stable to 300°C in air and up to 800°C in an inert or reducing atmosphere
- Smooth membrane surface resists fouling
- Tight mean pore diameter for precise filtration
- Excellent performance in oil/water separation applications
- Titanium substrate available
- Resistant to bacterial attack
- Can be sterilized with live steam
The Coulter Porometer II analysis demonstrates the tight pore distribution of the SpinTek Tₜd0.15 micron membrane with a maximum pore of 0.182 mm and a minimum of 0.123 mm with 34 x10⁹ pores/cm² between maximum/minimum.

**SPINTEK Tₜd MEMBRANE FLOW RATES**

<table>
<thead>
<tr>
<th>Pore Size</th>
<th>Water Flow</th>
<th>Gas Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>l/h.m²</td>
<td>gpd/ft²</td>
</tr>
<tr>
<td>0.07</td>
<td>1,000</td>
<td>590</td>
</tr>
<tr>
<td>0.10</td>
<td>2,200</td>
<td>1,300</td>
</tr>
<tr>
<td>0.15</td>
<td>2,500</td>
<td>1,475</td>
</tr>
<tr>
<td>0.20</td>
<td>3,800</td>
<td>2,240</td>
</tr>
<tr>
<td>0.40</td>
<td>5,500</td>
<td>3,250</td>
</tr>
<tr>
<td>0.80</td>
<td>7,000</td>
<td>4,125</td>
</tr>
</tbody>
</table>

Water flow rate is distilled water at 2.0 kg/cm² (28.4 psig) TMP. Gas flow rate is Argon at 0.5 kg/cm² (7.1 psig) TMP.

**CERAMIC MEMBRANE SPECIFICATIONS**

The SS-316L/3CSB means a stainless steel substrate* with a 3CSB ceramic membrane coating. The 3CSB membrane is a composite of TiO₂, Al₂O₃ and SiO₂ (Titanium Oxide, Aluminum Oxide and Silicon Oxide).

*The substrate can be 316L SS, titanium or nickel.

**Standard SpinTek Stainless Steel Membranes:**
- SS-R-05 (0.5 micron on a Ryton plate)
- SS-R-01 (0.1 micron on a Ryton plate)

**SS/Ceramic membranes for hot caustic “Tₜd” Membrane:**
- Pore size: 0.05 to 0.5 microns
- Temp: 100°C max
- Flux Rate: same as SS/3CSB

The new “R-Mem” membrane is a TiO₂/Zirconium composite with a pore size of .005. A smaller "mean" pore size on the 3CSB is to be determined.