Markel Eclipse® Hollow Fiber Membranes

Markel Eclipse Hollow Fiber Membranes® are a family of porous and coated PTFE membranes and contactors that can be used in a wide variety of filtration, separation, and contacting applications. Markel Eclipse Hollow Fiber Membranes® can be supplied in hollow fiber 0.7 mm ≤ 3mm ID, and tubular > 3mm ID form. Pore size and pore size distribution can be adjusted to meet the flow needs of Microfiltration (MF) applications in addition to many separation and contacting applications.

Description

Eclipse® Hollow Fibers are manufactured by utilizing Markel’s leading edge extruded, expanded PTFE technology. This technology enables Markel to offer the broadest range of porous PTFE extruded profiles in the industry. Eclipse Hollow Fiber Solutions are available in a wide range or pore sizes, pore size distributions, diameters and wall thicknesses.

Capability Ranges

- Pores Size Range from 0.5µm up to 20µm
- Porosities up to 70%
- Inner Diameter Range from 0.7mm up to 14mm
- Wall Thickness from 5% to 50% of O.D.

Features

- Highest End Use Temperature of any Polymer
- Outstanding Chemical Resistance
- Exceptionally Hydrophobic
- Can be Rendered Hydrophilic
- Diameters from 700µm to 14 mm

Benefits

- Can be used in high temperature applications normally reserved for ceramics
- Ideal for chemically aggressive applications
- Ideal for separating aqueous solutions
- Can be used to filter aqueous solutions
- More surface area means higher throughput, more efficiency
- Designs simplified and time-to-market reduced
Hollow Fiber Material Comparison

<table>
<thead>
<tr>
<th></th>
<th>Use Temperature</th>
<th>Chemical Resistance</th>
<th>Durability (Useful Life)</th>
<th>Life Cost/Membrane Surface Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eclipse *Membranes PTFE</td>
<td>High</td>
<td>High</td>
<td>Highest</td>
<td>Moderate</td>
</tr>
<tr>
<td>PP</td>
<td>Low</td>
<td>Low</td>
<td>Moderate</td>
<td>Low</td>
</tr>
<tr>
<td>PS/PES</td>
<td>Moderate</td>
<td>Low</td>
<td>Low</td>
<td>Moderate</td>
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<tr>
<td>PVDF</td>
<td>Moderate</td>
<td>Moderate</td>
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<td>Moderate</td>
</tr>
<tr>
<td>Ceramic</td>
<td>Highest*</td>
<td>high</td>
<td>Low</td>
<td>High</td>
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*Potentially limited by potting compound and gasketing

End Use Applications
Markel Eclipse® Membranes can be used to develop modules for filtration, separation, or degassing for a number of diverse applications including but not limited to:

- Ultra Pure Water Filtration for the Semi-Conductor Market
- Filtration and Degassing for Beverage Markets
- Chemical and Pharmaceutical Filtration, Separation, and Degassing Applications
- Wastewater Filtration
- Wastewater recovery via Vacuum Membrane Distillation or Direct Contact Membrane Distillation
- Wastewater concentration

Additional Information
Markel partners with our customers to engineer a robust filtration/separations module that will work with their system for optimum performance. The type of potting material and housing material will depend upon the customer’s application and needs.