Pellethane® 5863-90A TPU

**Type:** Aromatic Polyether-based Thermoplastic Polyurethane (TPU)

**Features:** High moisture vapor transmission Good physical properties and elasticity

**Process:** Extrusion

<table>
<thead>
<tr>
<th>Properties</th>
<th>Test Method</th>
<th>Values</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Durometer Hardness, Shore</td>
<td>ASTM D2240</td>
<td>90</td>
<td>A</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>ASTM D792</td>
<td>1.22</td>
<td></td>
</tr>
<tr>
<td>Tensile Modulus 100% elongation</td>
<td>ASTM D412</td>
<td>900 (6.2) 2000 (13.8)</td>
<td>psi (MPa)  psi (MPa)</td>
</tr>
<tr>
<td>300% elongation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ultimate Tensile Strength</td>
<td>ASTM D412</td>
<td>5000 (34.5)</td>
<td>psi (MPa)</td>
</tr>
<tr>
<td>Ultimate Elongation</td>
<td>ASTM D412</td>
<td>550</td>
<td>%</td>
</tr>
<tr>
<td>Tear Strength</td>
<td>ASTM D624 (die C) ASTM D470</td>
<td>450 (8.1) 120 (2.1)</td>
<td>lb/in (kg/mm) lb/in (kg/mm)</td>
</tr>
<tr>
<td>Tg (by DSC)</td>
<td>Lubrizol</td>
<td>291 (144)</td>
<td>°F (°C)</td>
</tr>
<tr>
<td>Tm (by DSC)</td>
<td>Lubrizol</td>
<td>-11 (-24)</td>
<td>°F (°C)</td>
</tr>
</tbody>
</table>

**Application Properties**

<table>
<thead>
<tr>
<th>Properties</th>
<th>Test Method</th>
<th>Values</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tensile Set (200% elongation)</td>
<td>ASTM D412</td>
<td>18</td>
<td>%</td>
</tr>
<tr>
<td>Kofler Melt Point</td>
<td>Lubrizol</td>
<td>311 (155)</td>
<td>°F (°C)</td>
</tr>
<tr>
<td>Volume Swell in Water</td>
<td>ASTM D471</td>
<td>40</td>
<td>%</td>
</tr>
<tr>
<td>MVT: upright cup (23°C, 50%RH)</td>
<td>ASTM E96B</td>
<td>500</td>
<td>g/m²*24h</td>
</tr>
<tr>
<td>MVT: Mocon (38°C, 90%RH)</td>
<td>ASTM D6701</td>
<td>3000</td>
<td>g/m²*24h</td>
</tr>
</tbody>
</table>

Prior to testing samples were conditioned at 23°C for 48 hours.

Based on extruded sheet (30 mils)

These test results are based on small samples and do not necessarily represent average results from larger test samples.

This information should NOT be used for establishing engineering or manufacturing guidelines and specifications.

**Handling Conditions:**

Properties of all thermoplastic polyurethane products in the molten state are adversely affected by moisture. For the best results, always dry the material at least 2-4 hours at 82°C (180°F) in a machine mounted dehumidifying dryer (a desiccant dryer delivering air at 1 liter/sec/kg at -40°C dew point (1 cfm/lb at -40°F dew point). A dehumidifying dryer hopper or one shot loader is also recommended. Depending on the applied processing technique, the maximum moisture level should be 0.02%. Never to exceed 500°F (270°C) melt.
**Processing Conditions:**
Pellethane® 5863-90A can be processed on any conventional extruder or molder.

**Recommended Starting Extrusion Temperature Profile:**

<table>
<thead>
<tr>
<th>Zone</th>
<th>°F/°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zone 1</td>
<td>350/177</td>
</tr>
<tr>
<td>Zone 2</td>
<td>360/182</td>
</tr>
<tr>
<td>Zone 3</td>
<td>370/188</td>
</tr>
<tr>
<td>Zone 4</td>
<td>380/193</td>
</tr>
<tr>
<td>Adapter 5</td>
<td>390/199</td>
</tr>
<tr>
<td>Die</td>
<td>390/199</td>
</tr>
<tr>
<td>Die 2</td>
<td>390/199</td>
</tr>
</tbody>
</table>

Screen Pack Recommendation: 20/40/80/20

For further information refer to Lubrizol Advanced Materials processing guides.