OVERVIEW

Bio TPU™ by Lubrizol is a revolutionary line of bio-based* TPU (thermoplastic polyurethane) that’s made with renewable-sourced material (content ranging from approximately 30%–70%*). Bio TPU by Lubrizol provides the same performance and benefits as traditional petroleum-based TPU and can range in hardness from 82 Shore A to 55 Shore D.

Paired with a commitment to the responsible use of natural resources and innovations in technologies derived from renewable sources, Lubrizol serves the most technically demanding market segments. Designers from the sports, footwear, electronics and automotive industries, among others, are embracing bio-based polymers and Lubrizol’s forward thinking.

PRODUCTS

Pearlthane® ECO

Pearlthane® ECO is a bio-based line of polymers made with renewable material content from 29% of total volume. These resins can be processed through injection molding and extrusion and offer a low density as compared to their petroleum-based counterparts.

Pearlbond® ECO

Pearlbond® ECO is Lubrizol’s bio-based TPU with high renewable material content and high thermoplasticity. Pearlbond can be added to reactive hot-melt (HMPUR) formulations to improve crystallization speed and is also used for hot-melt adhesives in heat-sealable fabrics and in toe puffs and counters.

BENEFITS

• Superior abrasion resistance
• Very good chemical resistance
• Cold temperature flexibility
• UV and hydrolysis resistance
• Transparency
• Outstanding mechanical properties
• Processed via injection molding or extrusion

*Bio-based content as determined according to ASTM-D6866.
AVAILABLE PRODUCTS:

TPU for HMPUR formulations and hot-melt adhesives:

<table>
<thead>
<tr>
<th>Product</th>
<th>Percentage of bio-based content*</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearlbond® ECO 590</td>
<td>67%</td>
<td>Extremely high crystalization rate and very high thermoplasticity. Additives for HMPUR. Applied by extrusion and sintering.</td>
</tr>
</tbody>
</table>

TPU for injection molding and extrusion:

<table>
<thead>
<tr>
<th>Product</th>
<th>Percentage of bio-based content*</th>
<th>Hardness</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearthane® ECO D12T80E</td>
<td>43%</td>
<td>82 Shore A</td>
<td>Food-contact grade.</td>
</tr>
<tr>
<td>Pearthane® ECO D12T90E</td>
<td>37%</td>
<td>91 Shore A</td>
<td>Food-contact grade.</td>
</tr>
<tr>
<td>Pearthane® ECO 12T95</td>
<td>32%</td>
<td>95 Shore A</td>
<td>UV-stabilized.</td>
</tr>
<tr>
<td>Pearthane® ECO D12T55D</td>
<td>29%</td>
<td>55 Shore D</td>
<td></td>
</tr>
</tbody>
</table>

APPLICATIONS

Industrial
- Hoses
- Timing belts
- Automotive interior parts
- Textile coatings for shoe stiffeners (toe puffs and counters)
- Formulations of reactive polyurethane hot melts (HMPUR)
- Various molded parts
- Housing/Overmolded grips

Sports & Recreation
- Footwear
- Goggles
- Watchbands
- Sports equipment

Electronics
- Smartphones
- Headphones
- Consumer goods and appliances

*Bio-based content as determined according to ASTM-D6866.