



## 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

### ESTANE® ECO TPU

This TPU is a bio-based line of polymers made with renewable material content from 29% of total mass (previously known as Pearlthane™ ECO TPU). These resins can be processed through injection molding and extrusion and offer a low density as compared to their petroleum-based counterparts.

### Pearlbond™ ECO TPU

Pearlbond™ ECO TPU 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, extrusion and additive manufacturing

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



## AVAILABLE PRODUCTS:

TPU for HMPUR formulations and hot-melt adhesives:

Product	Percentage of bio-based content*	Comment
Pearlbond™ ECO 590	67%	Extremely high crystallization rate and very high thermoplasticity. Additives for HMPUR. Applied by extrusion and sintering.

TPU for injection molding and extrusion:

Product	Percentage of bio-based content*	Hardness	Comment
ESTANE® ECO 12T80E	43%	82 Shore A	Food-contact grade
ESTANE® ECO 12T85	46%	85 Shore A	UV-stabilized and good hydrolysis resistance
ESTANE® ECO 12T90E	37%	91 Shore A	Food-contact grade
ESTANE® ECO 12T95	32%	95 Shore A	UV-stabilized
ESTANE® ECO 12T55D	29%	55 Shore D	Easy-to-extrude and good hydrolysis resistance

Our latest development is ESTANE® 3D TPU F95A-030 BR ECO for additive manufacturing. It has a broad printing window and is used in fused filament fabrication.

## 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

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

### Sports & Recreation

- Footwear
- Goggles
- Watchbands
- Sports equipment

### Electronics

- Smartphones
- Headphones
- Consumer goods and appliances



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ENGINEERED  
POLYMERS

**ADVANCING MATERIALS.  
ELEVATING PERFORMANCE.**

