SOLUTION DATA SHEET

Soft, biobased TPU for durable and lightweight overmolded, extruded or molded applications

Markets	Consumer goods, electronics, sports and recreation, mobile phone cases and car interiors
Polymer	ESTANE ECO thermoplastic polyurethane (TPU)
Key Benefits	• Low density, fast molding • Can be used for overmolding and extrusion • Soft hardness and soft touch

The importance of renewable-sourced polymers that are high-performing and offer durable solutions is no longer emerging in various applications but consolidating and growing. Lubrizol Engineered Polymers has

a Bio TPU™ portfolio with a wide array of solutions in different hardness that have bio-based content certified according to ASTM-D6866.

There are two TPU grades in our Bio TPU™ portfolio which stand out for their good adhesion to other materials: ESTANE ECO 12T80E and ESTANE ECO 12T90E. These two grades can be molded, overmolded, extruded and, as they are transparent, can even be used in the most stringent extrusion processes like blown film. Their versatility and long-lasting features are broad.

These resins can also be applied as an adhesive layer in the extrusion process. What makes them unique is that their good adhesion to other materials is not compromised by their polyester backbone.

As an example, ESTANE ECO TPU has been tested and results show higher peel strength values on Polyamide 6 compared to conventional TPU grades, see below:

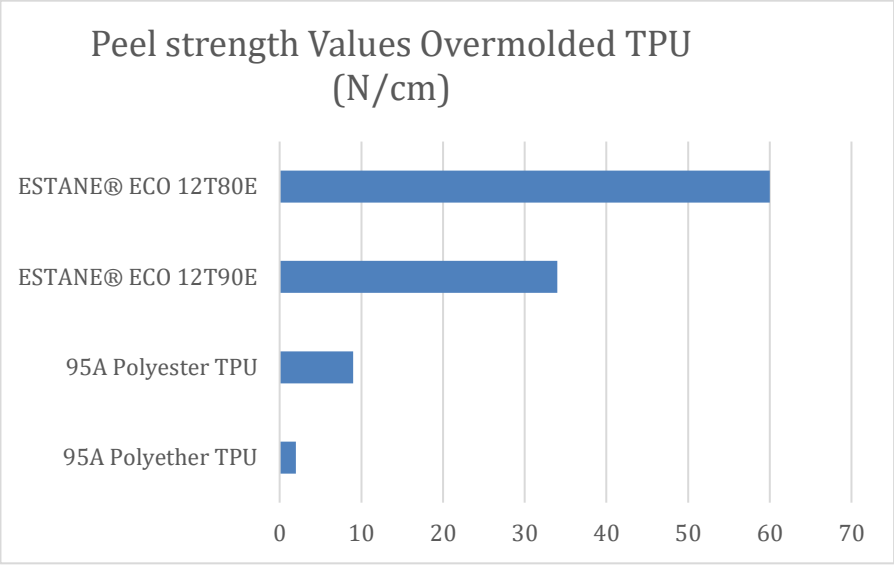

Figure 1: Peel strength comparison of ESTANE ECO 12T90E and 12T80E & conventional TPU on overmolded Polyamide 6

ESTANE ECO 12T80E has a low-density value. The minimum density increases productivity. More plastic volume is produced with the same material weight and therefore results in a higher number of molded parts. This feature is shown in the graph that follows.

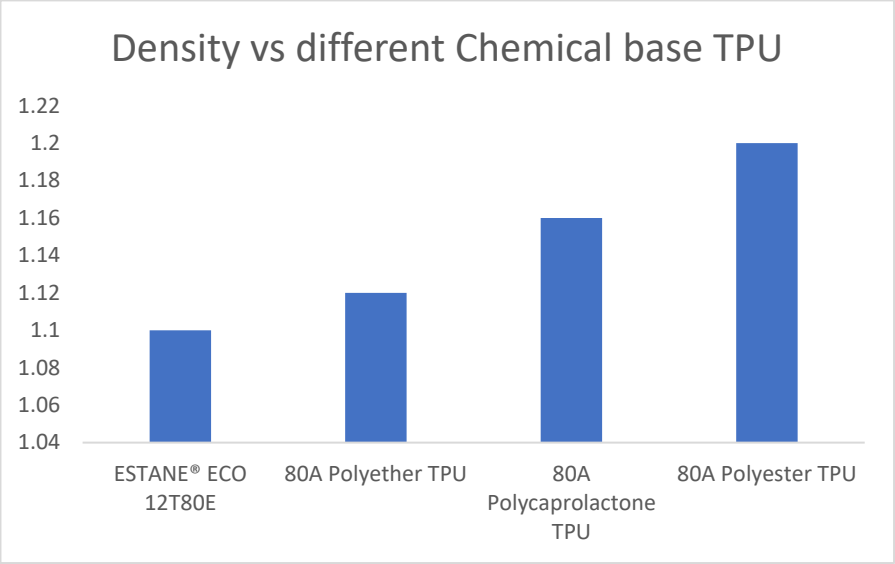

Figure 2: Density of ESTANE ECO 12T90E and 12T80E in comparison with other standard TPU.

Product	Hardness (shore A)	Percentage of bio-based content
ESTANE® ECO 12T80E	82	43
ESTANE® ECO 12T90E	91	37

80 Shore A TPU	Polyether based	Polyester based	Bio TPU™
Food Approvals	3	3	4
Overmolding/Adhesion	1	3	4
Hydrolysis Resistance	4	2	2
Versatility Extrusion/Molding	3	3	4
Weight Reduction	3	2	4
Bio Content	1	1	4

1- Low
2- Regular
3- Medium
4- Good

Table 1 & 2: Overview of the key features of the food-contact, bio-based TPU grades

Lubrizol is committed to preserving the environment and is always searching for new eco-sensitive technologies that empower our customers' innovation with the lowest impact on our planet.

Lubrizol Engineered Polymers Bio TPU™ portfolio made from renewable sources was invented in 2007 by Merquinsa (acquired by Lubrizol after). Bio TPU sold under ESTANE ECO (previously known as Pearlthane™ ECO) brand is used in automotive interior molded parts, footwear and consumer goods. There are biobased Lubrizol TPU solutions available for additive manufacturing, adhesive applications and enhanced color-stable properties.

For more information, please visit our web site: www.lubrizol.com/Engineered-Polymers

http://go.lubrizol.com/EP