

SOLUTION DATA SHEET

# Silky Touch TPU and Weather Resistance with ESTANE® SILK 91T70



<b>Markets</b>	Wearables, electronics, interior automotive parts, consumer goods and extruded parts in general
<b>Polymer</b>	ESTANE SILK thermoplastic polyurethane (TPU)
<b>Key Benefits</b>	<ul style="list-style-type: none"> <li>• Soft touch, pleasant haptics</li> <li>• High mechanical and abrasion resistance</li> <li>• Non-yellowing, excellent weathering stability</li> <li>• Good adhesion to polar substrates</li> <li>• Good moldability and extrudability</li> </ul>

Lubrizol has launched a new material solution that provides a smooth, soft surface for highly aesthetic end-uses. The most recent development has color-stable, UV-resistant properties and stands out for its

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soft touch, silky feeling combined with mechanical performance and faster processability, even in complex extrusion processes.

While maintaining the long-lasting durability and resilience recognized in TPUs, this new development adds comfort and design flexibility. By applying this new grade from Lubrizol Engineered Polymers, the final product is silky smooth and color stable, it is just the silky finish that consumers are demanding as in the example of mobile phone cases which can become more comfortable to hold.

The new development has a shore hardness of approximately 70 Shore A, and a fast injection molding cycle. It provides fast processing with 25% injection molding cycle reduction vs other aliphatic TPU alternatives. It is also a product suitable for an extrusion process and can be overmolded onto a variety of substrates (like PC or PC/ABS) providing outstanding adhesion. The new material can also be colored and reprocessed/recycled due to its thermoplastic behavior. It has high hydrolysis resistance and high mechanical strength; other key features are added below:

Properties ESTANE® SILK TPU		Standard
Shore A	<b>71</b>	ISO 868/ASTM D-2240
Max. Tensile Strength (Mpa)	<b>19</b>	ISO 527-2/ASTM D-412
Max. Elongation (%)	<b>794</b>	ISO 527-2/ASTM D-412
Tear Strength (N/mm)	<b>62</b>	ISO 34-1B/ASTM D-624 Die C
Abrasion mm <sup>3</sup>	<b>22</b>	ISO 4649
Density (g/cm <sup>3</sup> )	<b>1.05</b>	ISO 2781

**Table 1:** Overview of key features of ESTANE SILK TPU

ESTANE SILK 91T70 TPU is a color-stable and UV resistant grade with an aliphatic backbone. That is why it also performs well with applications that are light-colored and need to be outdoors. The following graph shows the excellent results of this material when it comes to UV resistance, in comparison to other high-performing TPUs.

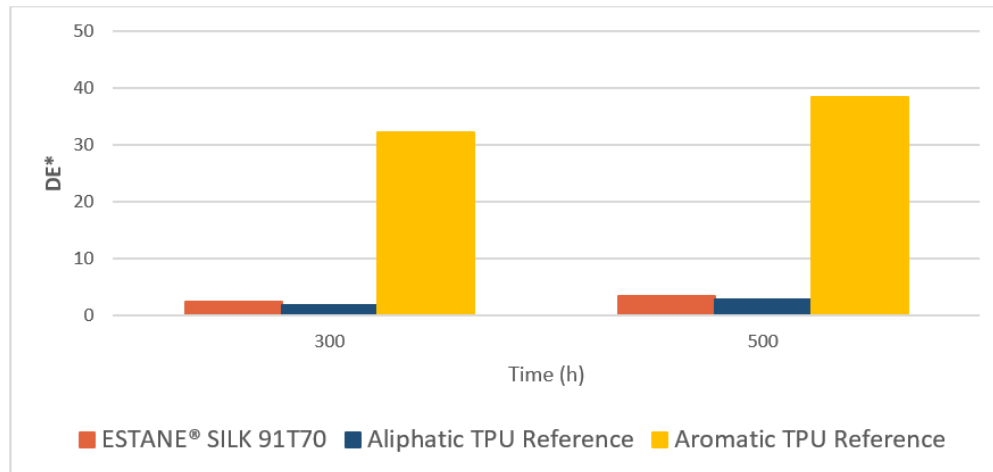
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QUV Weathering Test  
QUV ASTM G154



8h UV at 60°C, 0,89w/m2\*nm, 4h condensation at 50°C

Figure 1: UV resistance performance of ESTANE® SILK 91T70

New ESTANE SILK 91T70 is a soft touch, plasticizer-free solution which bridges the performance between silicone rubbers and TPE alternatives (like COPE, COPA). When compared to silicone rubbers, the new grade offers higher tear strength and abrasion resistance combined with flexible processing (injection molding and extrusion) and recyclability\*, while also maintaining the excellent adhesion to polar substrates of TPU.

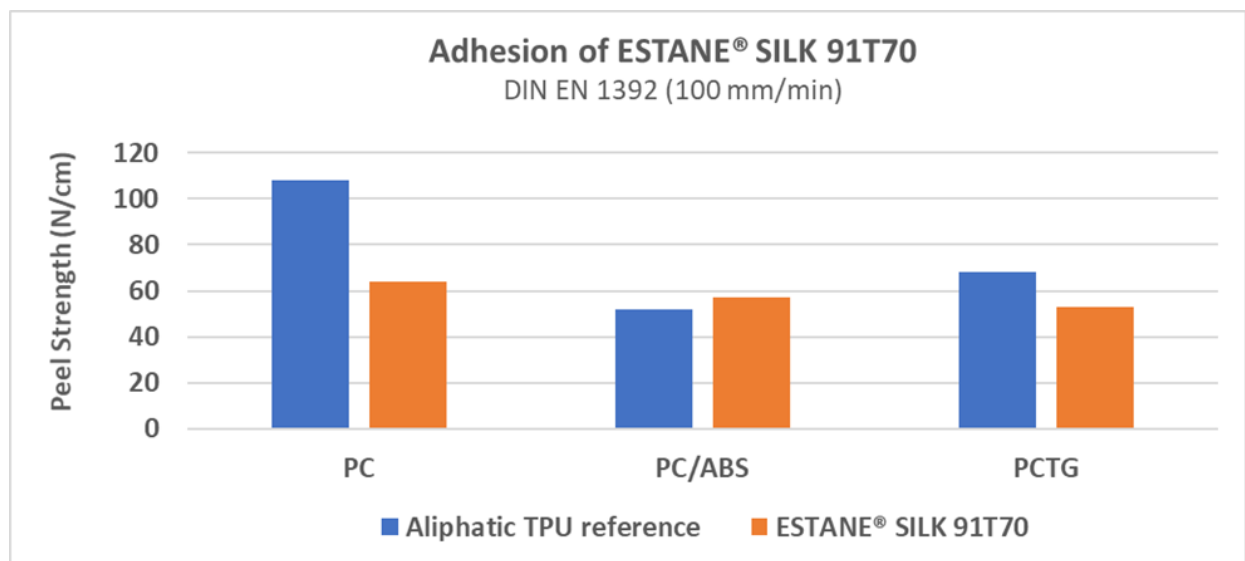


Figure 2: Adhesion performance of ESTANE® SILK 91T70

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ESTANE SILK 91T70 shows minimal change in mechanical strength and abrasion resistance, between virgin processed material and 100% recycled material. There is no yellowing, and other color factors remain unchanged, even after 5 recycling cycles.

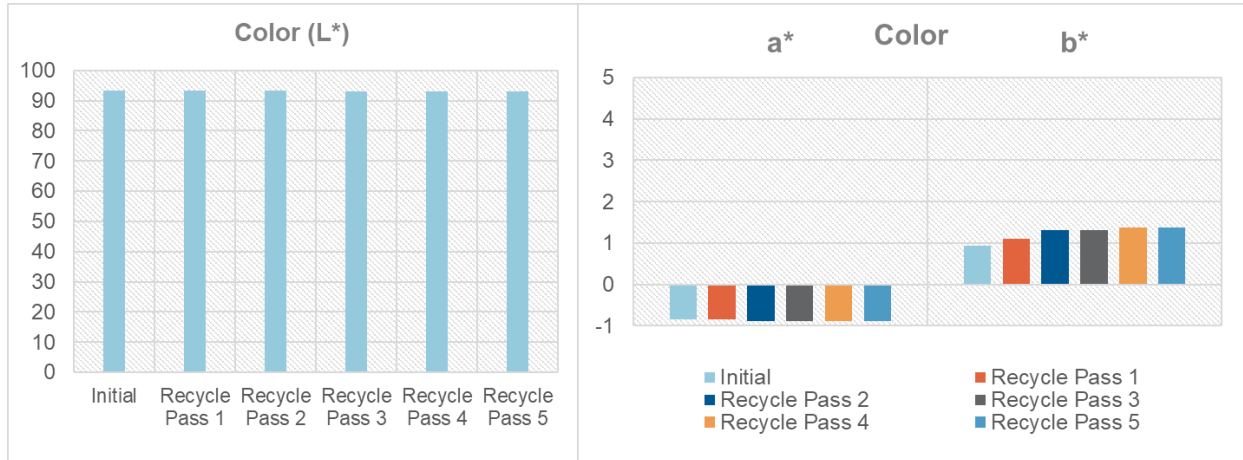


Figure 3: Tests on recycled material

Lubrizol is committed to adding more customer-oriented material solutions to its broad TPU portfolio, TPU is a unique type of plastic bridging the gap between rubbers and plastics and the key to its versatility is that its hardness can be highly customized. More solutions can be developed to expand this newly found silky touch performance which can be applied both in extrusion and molding processes.

For more information on Lubrizol TPU, please visit our web site: [www.lubrizol.com/Engineered-Polymers](http://www.lubrizol.com/Engineered-Polymers)



\*Recyclability is based on access to a readily available standard recycling program that supports such materials. Products may not be available in all areas.

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