

SOLUTION DATA SHEET

Fast Setting Pearlbond™ ECO 590 HMS TPU for High Adhesion HMAs



Markets	Hot melt film, textile lamination, seam tape, footwear, furniture, edge banding, electronics, and transportation.
Polymer	Pearlbond™ ECO thermoplastic polyurethane (TPU)
Key Benefits	<ul style="list-style-type: none"> • Fast setting • Good adhesion properties • High temperature and hydrolysis resistance • Improved processability and wide wettability • Non-tack finish

The advanced development of a fast-setting solution within Lubrizol Engineered Polymers R&D laboratory has allowed for the expansion of our bio-based Pearlbond ECO portfolio. This portfolio is applied in the

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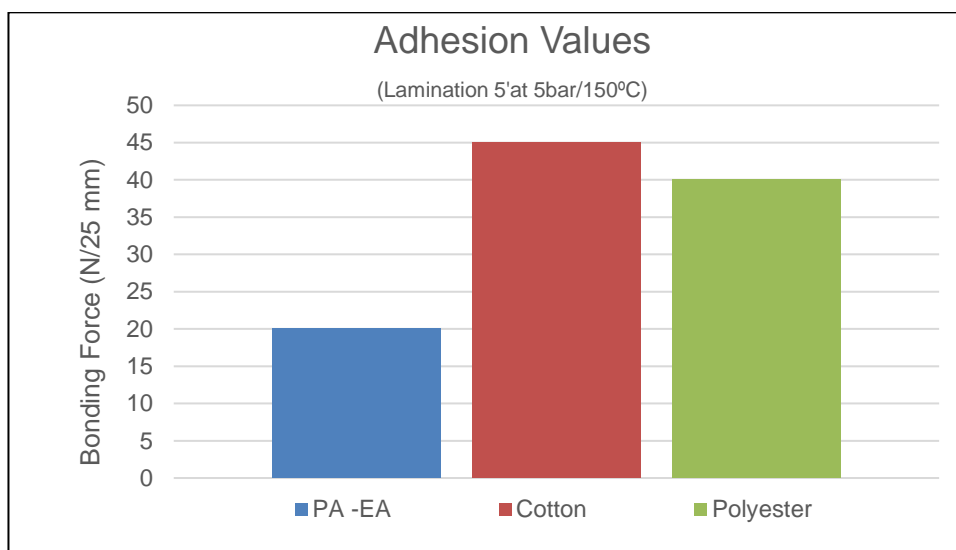
adhesives industry. Our existing grade Pearlbond ECO 590 TPU is used in reactive hot melts (or HMPUR) and valued for its high performance as well as its renewable origin.

Pearlbond ECO 590 HMS TPU is the new grade available for hot melts that can be applied in a variety of end applications ranging from seam tapes to edge banding. The key performance features of the new material have been tested to meet the demands of processors and formulators.



This innovative TPU shows good processability versus other materials making it a cost-effective solution, and results in a non-tack finish once applied. It also performs well when it comes to hydrolysis resistance and has a high temperature resistance; both properties contribute to its durability by preventing degradation and maintaining the polymer's integrity over time.

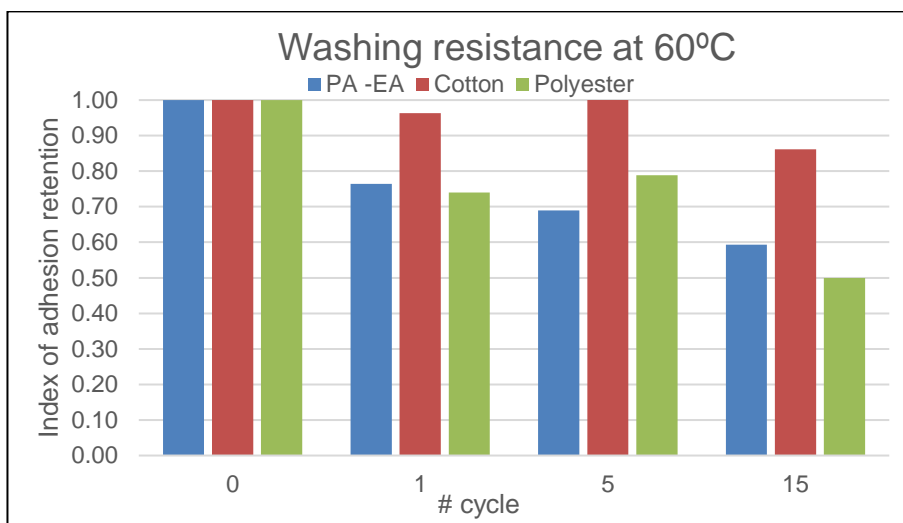
The good adhesion to fabrics of **Pearlbond™ ECO 590 HMS TPU** to cotton, acrylic, nylon, or polyester, in textile applications, has been observed, an example below:



Graph 1: Adhesion behaviour of Pearlbond ECO 590 HMS with different fabrics

This new grade also has been tested for washing resistance, and the good results can be seen in the graph on the following page.

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Graph 2: Washing resistance of Pearlbond ECO 590 HMS TPU with different fabrics

The key technical properties available are listed here:

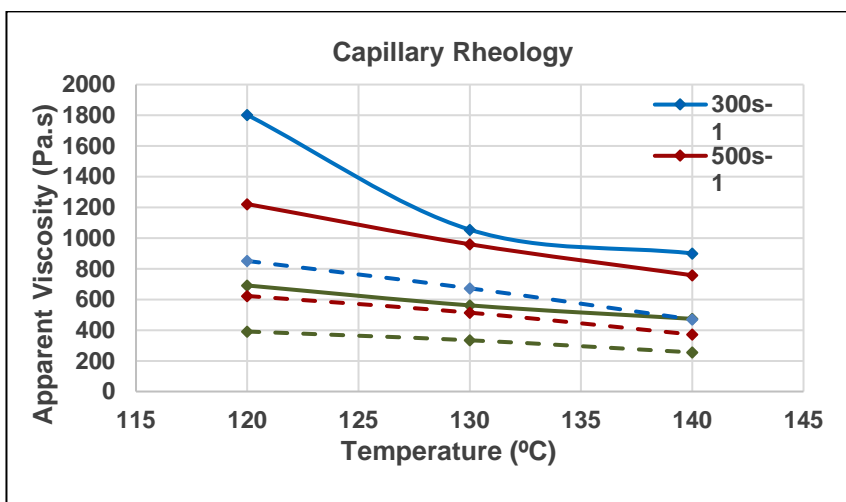
Key Properties	Method	Pearlbond™ ECO 590 HMS TPU
MI (170°C; 2,16Kg) (dg/min)	ISO 1133	10 - 30
Hardness (Shore A)	ISO 868	94-96
Softening temperature (°C) - Kofler bank	LZMM-RD01-70A	115-125
Tensile Strength (MPa)	ASTM D412	Ca. 15
Elongation at break (%)	ASTM D412	Ca. 650
Film activation temp. (°C) - TMA	ASTM E2347 0,05N 10°C/min.	60-65/120-125
Recrystallization time (min)	LZMM-RD01-12B	18
Bio-based content (%)	ASTM D6866	Ca. 61% *

*Theoretical value. Bio polyol is made from 61% plant-based renewable material.

Table 1: General properties of Pearlbond ECO 590 HMS TPU

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Thanks to its improved rheology, the new Pearlbond ECO 590 HMS TPU shows excellent processability in flat cast extrusion and blown extrusion.



Graph 3: Rheology of Pearlbond ECO 590 HMS TPU

Solid line → Viscosity in the lower MI range.
 Dotted line → Viscosity in the upper MI range.

Additionally, thank you to its high thermoplasticity and fast recrystallization it can easily be used in powder scattering, roll coating and rotogravure.

Lubrizol Engineered Polymers has a bio-based portfolio available also for reactive hot melts, additive manufacturing, and extruded, molded and overmolded parts.

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

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