

SOLUTION DATA SHEET

Fast and High-Heat Pearlbond™ Solutions for Hot Melt Adhesives



<p>Markets</p>	<p>Textiles, Apparel (seam tapes, heat-transfer labels), backpacks and bags, Footwear, Webs, Nets, Furniture, Packaging, Conveyor Belting, Heavy Duty Hydraulic Hoses, Automotive Interior Trim and many other</p>
<p>Polymer</p>	<p>Pearlbond thermoplastic polyurethane (TPU)</p>
<p>Key Customer Benefits</p>	<ul style="list-style-type: none"> • Very short cycle time due to fast crystallization rate • Bio-based raw material* • Low VOC/FOG values. • Superior adhesion to tight woven fabrics & high bonding strength to rigid substrates • Excellent wetting properties • Very good chemical and wash resistance

**Bio-based content is theoretical and is being determined according to ASTM-D6866. Bio polyol is made from 19-45% plant-based renewable material, reducing the petroleum-based raw material content of the conventional product.*

The information contained herein is believed to be reliable, but no representations, guarantees or warranties of any kind are made as to its accuracy, suitability for particular applications or the results to be obtained. The information is based on laboratory work with small-scale equipment and does not necessarily indicate end product performance. Because of the variations in methods, conditions and equipment used commercially in processing these materials, no warranties or guarantees are made as to the suitability of the products for the applications disclosed. Full-scale testing and end product performance are the responsibility of the user. Lubrizol Advanced Materials, Inc. shall not be liable for and the customer assumes all risk and liability of any use or handling of any material beyond Lubrizol Advanced Materials, Inc.'s direct control. The SELLER MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Nothing contained herein is to be considered as permission, recommendation, nor as an inducement to practice any patented invention without permission of the patent owner.

Lubrizol is significantly expanding the range of formulation options available to customers when considering solvent-free hot melt adhesives (HMAs). Pearlbond 700 series can be used for HMAs in a wide area of end uses. These novel TPUs can be easily combined with other resins such as TPUs, co-polyamides and co-polyesters thanks to their similar and compatible melt behavior (with no residual tack), and their very fast cycle time.

The addition of one of the resins from the Pearlbond™ 700 series can bring the following value to customers:

- increase good initial adhesion and cohesion,
- improve impact resistance and elasticity, and
- increase flexibility especially at low temperatures

These fast and high-heat polymers introduce a bio-based component and make the difference in terms of good adhesion to cotton, polyamide, polyester fibers and rigid substrates such as PVC, ABC and metal.

When considering automotive interior trim, one additional key performance feature with Pearlbond 700 series is the inherent **Low VOC/FOG values**. The main properties and the chemical resistance of the novel Pearlbond™ polymers is highlighted here below:

Property	Standard	Pearlbond™ 700 EXP	Pearlbond™ 700 HMS EXP	Pearlbond™ 702 EXP
MFI at 170°C /2.16 Kg (g/10 min)	RD-01- 01A	30-50	-	30-50
Hardness (Shore A)	ASTM D676 - ISO 868	97	97	93
Softening range (°C)	LZ- MQSA 70A	100 – 110 °C	130-140	90 – 100 °C
Melting range (°C)	LZ-MQSA 70A	115 – 125 °C	175-185	105 – 115 °C
Vicat Point (°C)	DIN 53460 ISO 306	100-105	95-100	70-75
Crystallization rate (min)	LZ-MQSA 12A	Ultra-fast (<2)	Ultra-fast (2-10)	Extremely fast (10-20)
Thermoplasticity	LZ-MQSA 68A	Ultra-high	Medium	Extremely high
Glass transition (°C)	ASTM E 1356-98	-23	14	-34
VOC (ppm)	VDA 278	277	542	122
FOC (ppm)	VDA 278	84	164	73

Table 1: Main properties of Pearlbond 700 series

Good wash and chemical resistance (dry cleaning, high-temperature wash resistance, and good hydrolytic resistance) and improved vibration absorption vs. competitive materials make it a breakthrough technology for hot melt adhesives.

The information contained herein is believed to be reliable, but no representations, guarantees or warranties of any kind are made as to its accuracy, suitability for particular applications or the results to be obtained. The information is based on laboratory work with small-scale equipment and does not necessarily indicate end product performance. Because of the variations in methods, conditions and equipment used commercially in processing these materials, no warranties or guarantees are made as to the suitability of the products for the applications disclosed. Full-scale testing and end product performance are the responsibility of the user. Lubrizol Advanced Materials, Inc. shall not be liable for and the customer assumes all risk and liability of any use or handling of any material beyond Lubrizol Advanced Materials, Inc.'s direct control. The SELLER MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Nothing contained herein is to be considered as permission, recommendation, nor as an inducement to practice any patented invention without permission of the patent owner.

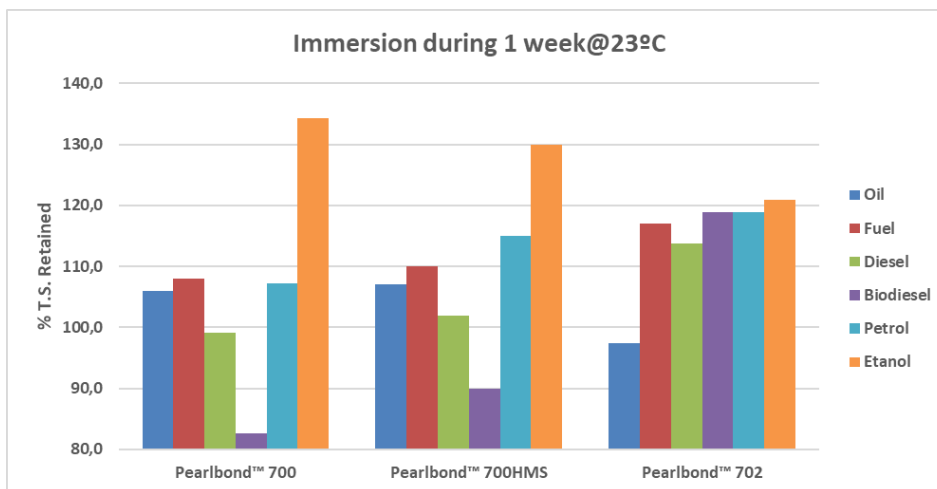


Figure 1: Chemical Resistance of Pearlbond™ 700 Series

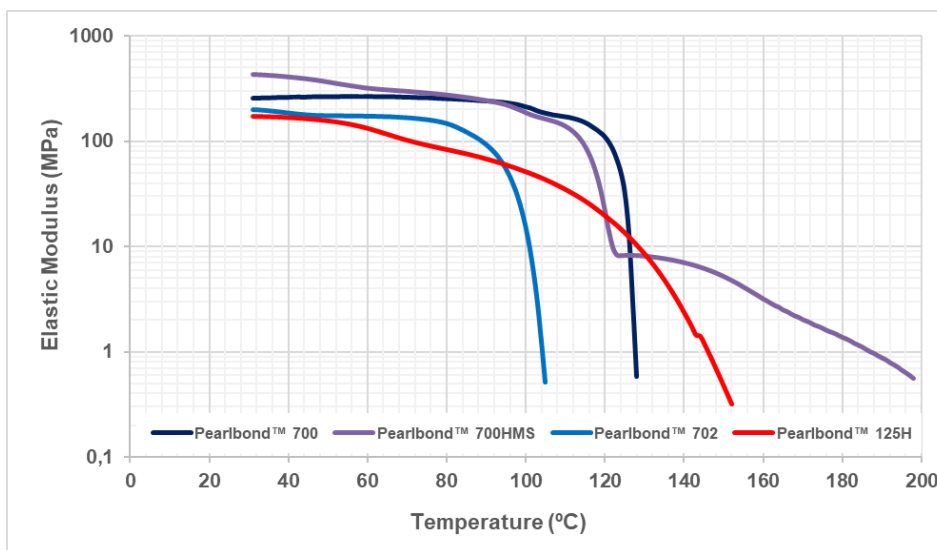


Figure 2: Melt Behavior of Pearlbond™ 700 Series

Thanks to Lubrizol’s industry-leading formulation technology, these new grades set new standards in the HMA industry. For more information, please visit: www.lubrizol.com/Engineered-Polymers

The information contained herein is believed to be reliable, but no representations, guarantees or warranties of any kind are made as to its accuracy, suitability for particular applications or the results to be obtained. The information is based on laboratory work with small-scale equipment and does not necessarily indicate end product performance. Because of the variations in methods, conditions and equipment used commercially in processing these materials, no warranties or guarantees are made as to the suitability of the products for the applications disclosed. Full-scale testing and end product performance are the responsibility of the user. Lubrizol Advanced Materials, Inc. shall not be liable for and the customer assumes all risk and liability of any use or handling of any material beyond Lubrizol Advanced Materials, Inc.’s direct control. The SELLER MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Nothing contained herein is to be considered as permission, recommendation, nor as an inducement to practice any patented invention without permission of the patent owner.