

OUTLAST® LATENT HEAT SYSTEMS™ (LHS) – THERMOPLASTIC POLYOLEFIN ELASTOMERS



INFORMATION SHEET | September 2016 | Rev: 4

Outlast® Latent Heat System (LHS) are thermal management materials that provide energy absorption, heat storage and heat dissipation characteristics for passive thermal control. These materials are designed for thermal protection of electronic devices, along with temperature stabilization of thermo-sensitive processors, batteries and touch surfaces.

Outlast® LHS Thermoplastic Polyolefin Elastomers can be molded into 3-dimensional objects with conventional Injection molding equipment. Other thermoplastic processing (e.g. extrusion) is also possible.

Outlast® LHS Thermoplastic Polyolefin Elastomers can be supplied in various hardness, LHS loadings, toughness and economics.

Outlast® Latent Heat Systems (LHS) – Thermoplastic Polyolefin Elastomers



TYPICAL PROPERTIES EN SERIES:

EN80-XX GRADE	SI/METRIC	ENGLISH	TEST
Tensile Strength	3.98 MPa	570 psi	ISO 527 / ASTM D638, 2 in./min. testing speed.
Yield Elongation	4.4%	4.4 %	ISO 527 / ASTM D638, 2 in./min. testing speed.
Break Strength	4.25 MPa	616 ksi	ISO 527 / ASTM D638, 2 in./min. testing speed.
Break Elongation	6%	6 %	ISO 527 / ASTM D638, 2 in./min. testing speed.
Flex Modulus	176MPa	26 psi	ISO 178 / ASTM D790
Shore A	~95	~95	
Shore D	~40	~40	
MFR	~18		190°C / 2.16 kg, ISO 1133 / ASTM 1238
Specific Gravity	~0.87		
RoHS Compliance:	Compliant		

EN60-XX GRADE	SI/METRIC	ENGLISH	TEST
Tensile Strength	4.83 MPa	700 psi	ISO 527 / ASTM D638, 2 in./min. testing speed.
Yield Elongation	25 %	25 %	ISO 527 / ASTM D638, 2 in./min. testing speed.
Break Strength	3.45 MPa	500 ksi	ISO 527 / ASTM D638, 2 in./min. testing speed.
Break Elongation	55 %	55 %	ISO 527 / ASTM D638, 2 in./min. testing speed.
Flex Modulus	139 MPa	20 ksi	ISO 178 / ASTM D790
Flex Strength	4.27 GPa	620 psi	ISO 178 / ASTM D790
Izod impact	~5.8 KJ/m ²		ISO 180
Shore A		~91	
Shore D		~5	
Vicat Softening	~35°C	~95°F	ISO 306 / ASTM D525
MFR	~38		190°C / 21.6 kg, ISO 1133 / ASTM 1238
Specific Gravity	~0.89		
RoHS Compliance:	Compliant		

TYPICAL THERMAL AND ELECTRICAL PROPERTIES OF LHS MATERIALS (-XX)

Phase Transition Temp (89 grade):.....36-37 °C
Heat of Fusion (enthalpy): 120 J/g (ENH6o); 170 J/g (ENH8o)
Thermal Conductivity:0.4 W/mK
Specific Heat Capacity (Solid): 1930 J/KG/K
Specific Heat Capacity (Liquid): 2333 J/KG/K
Volume Resistivity:4.99x10¹² Ω-cm
Dielectric Constant: 2.37

Phase Transition Temp (90 grade): 42-43 °C
Heat of Fusion (enthalpy): 130 J/g (ENH6o); 180 J/g (ENH8o)
Thermal Conductivity:0.4 W/mK
Specific Heat Capacity (Solid): 1930 J/KG/K
Specific Heat Capacity (Liquid): 2384 J/KG/K
Volume Resistivity:4.99x10¹² Ω-cm
Dielectric Constant: 2.37

Phase Transition Temp (95 grade):..... 72-73 °C
Heat of Fusion (enthalpy): 130 J/g (ENH6o); 180 J/g (ENH8o)
Thermal Conductivity:0.4 W/mK
Specific Heat Capacity (Solid): 1877 J/KG/K
Specific Heat Capacity (Liquid): 2399 J/KG/K
Volume Resistivity:4.99x10¹² Ω-cm
Dielectric Constant: 2.37

PRODUCT DETAILS

SUPPLIER: Outlast Technologies LLC

PRODUCT: Latent Heat System thermal management polyolefin

END-USE: Thermal management in electronic packaging and processor/heat sink interface

AVAILABLE: Available in bag, drum, and Gaylord packaging.

PROCESSING: Outlast® LHS Thermoplastic Elastomers can be molded into 3-dimensional objects with Conventional, injection molding equipment, or other thermoplastic processing such as twin screw Extrusion.

It is recommended that the materials not be processed over 160°C (320°F) due to degradation and loss of latent heat storage capacity.

STORAGE: Store in a cool, dry place. Best if used within 12 months.

HANDLING PRECAUTIONS: Even though this product is considered safe and nontoxic, product safety information for safe use is not included, please refer to MSDS or inquire with qualified technical person at Outlast Technologies LLC.

LIMITATIONS: This product is not intended for pharmaceutical or in-vitro medical use.



Note: Outlast® thermal management materials are developmental products that are furnished for R&D purposes only. The information contained herein is merely preliminary data due to continued development. Further information, including data changes, may occur as testing, process optimization, and formulation changes occur and development proceeds. The user/purchaser agrees that: use is undertaken at the users sole risk, that the material is furnished "asis, with all faults", without any warranty or guarantee: and that Outlast Technologies LLC, Outlast Europe, or Outlast Asia shall not be liable for any damages, of whatever nature, arising out of the user's / purchaser's receipt and/or use of this material. Commercialization and continued supply are not assured.

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