

# OUTLAST® LATENT HEAT SYSTEMS™ (LHS) HEAT SPREADER WITH AND WITHOUT ADHESIVE



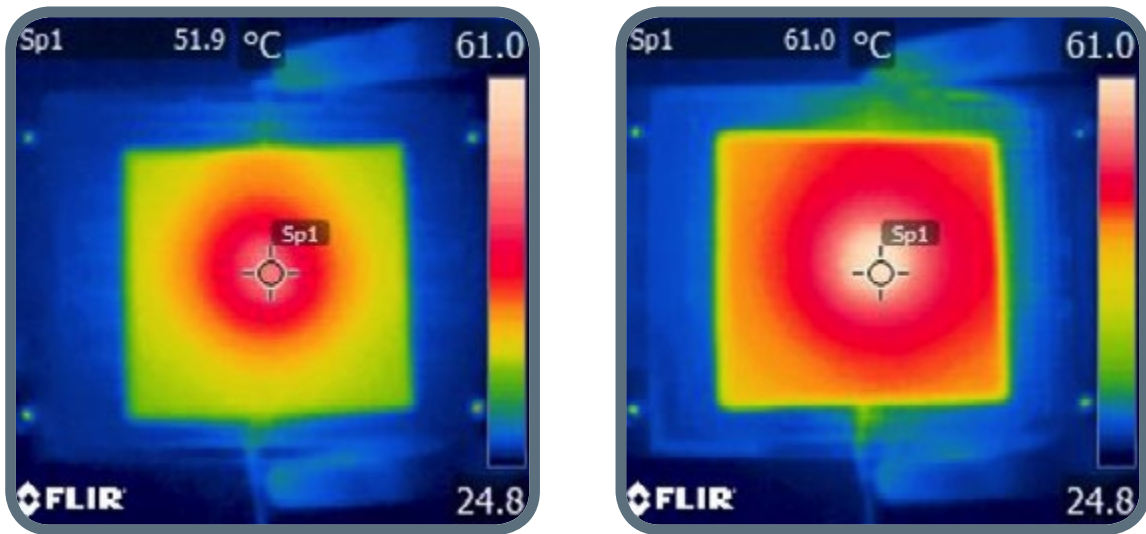
INFORMATION SHEET | September 2016 | Rev: 2

Outlast® LHS heat spreaders provide a low-cost effective means for passive thermal management. Outlast heat spreader materials provide more effective heat spread due to the unique energy absorption, heat storage and heat dissipation characteristics. These materials are designed for thermal protection of electronic devices, along with temperature stabilization of thermo-sensitive processors and surfaces.



## Outlast® LHS Finished Materials- Typical Properties

LHS PRODUCT	LHS-89CU	LHS-90CU	LHS-89/90CU
Color:	white	white	white
Total Thickness (mm):	1.05	1.05	1.05
Total Thickness (mm) w/ adhesive:	1.06-1.09	1.06-1.09	1.06-1.09
Total Wt. (g/cm <sup>2</sup> ):	0.1426	0.1426	0.1426
Thermal Conducting material:	99.9% Cu	99.9% Cu	99.9% Cu
Thermal Conducting Thickness (μ):	50.8	50.8	50.8
Thermal Conducting Thickness (μ) w/ adhesive:	36	36	36
Phase Transition Temperature:	28-37 °C	42-45 °C	28-45 °C
Latent Heat (LHS film):	115-130 kJ/kg	115-130 kJ/kg	115-130 kJ/kg
Shore A Hardness(LHS film):	55-80	55-80	55-80
LHS Film Wt. (g/cm <sup>2</sup> ):	0.098 +/- 0.005	0.098 +/- 0.005	0.098 +/- 0.005
LHS Film Thickness (mm):	1.0 +/- 0.1	1.0 +/- 0.1	1.0 +/- 0.1
Operating Temperature Range:	-10-125 °C	-10-125 °C	-10-125 °C
RoHS Compliance:	Compliant	Compliant	Compliant



IR images of Outlast® LHS-89 Heat Spreader (left) and acrylic (right) films at 0.04g/cm<sup>2</sup> with a 2.4W heat load after 3 minutes.

## PRODUCT DETAILS



**SUPPLIER:** Outlast Technologies LLC

**PRODUCT:** LHS Coated Heat Spreaders & Latent Heat System Coated Heat Spreader with Adhesive

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

**AVAILABLE:** Heat spreaders are supplied without adhesive for use with preferred past, gel or pad. Heat Spreaders with adhesive are supplied with choice of acrylic type PSA:

Conductive acrylic type 53μ thick

Non-Conductive acrylic type 38μ thick

**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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