Laird™ CoolFlex™ series - electrically insulating heat spreader

For heat spreading/heat pipe application

Description

Laird™ CoolFlex™ is a flexible, all-polymeric heat spreader film. CoolFlex™ possesses exceptional in-plane thermal conductivity that is approximately 100 times greater than its through-plane thermal conductivity. This high ratio enables uniform heat distribution across a substrate, while maintaining thermal insulation of the substrate. The organic nature of CoolFlex™ provides inherent electrical insulation, eliminating the need for a cover lay to protect sensitive electronics from the electrically conductive flakes associated with traditional graphite-based heat spreaders. Additionally, CoolFlex™ provides high mechanical integrity with a low dielectric constant and loss tangent. The flexibility of the material also enables unique 3D applications.

Availability

- CoolFlex™ 100 is a unilateral heat spreader
- CoolFlex™ 200 is a bilateral heat spreader
- CoolFlex™ 300 offers additional thicknesses for custom, thicker designs
- Material is available in both standard sheets and rolls
- Available with and without PSA
- Other thicknesses, and customer specified shapes available upon request

Features and benefits

- High in-plane thermal conductivity
- Low through-plane thermal conductivity
- Electrically insulating
- Low dielectric constant
- Low loss tangent
- High mechanical integrity
- Flexible
- RoHS compliant

Applications

- Heat spreader/Heat pipe
- Antenna cover
- Displays
- Power electronics
- Wireless charging
- Package wrap

Product properties comparison		CoolFlex™ 100 – Unilateral heat spreader	CoolFlex™ 200 – Bilateral heat spreader
Typical properties	**Test method**	**Typical value**	**Typical value**
Thickness, mm ±0.02	Internal	.07	.16
Width, mm ±5.0	Internal	220	190
Density, g/cm3 ±0.05	Internal	.75	.90
Thermal conductivity in-plane (machine direction), W/mK	Thermo-wave analyzer	35.40	28.33
Thermal conductivity in-plane (transverse direction), W/mK	Thermo-wave analyzer	5.80	30.89
Thermal conductivity through-plane, W/mK	Thermo-wave analyzer	.40	.25
Tensile strength, machine direction (base material), MPa	ASTM D882	657	657
Elongation to break, machine direction (base material), %	ASTM D882	3.15	3.15
Peel strength, N/in (A1 adhesive)	internal	6.17	7.96
Dielectric constant @ 1 MHz	ASTM D150	2.10	2.27
Loss tangent	ASTM D150	.0035	.011
Dielectric breakdown voltage, KV	ASTM D149-20	6.37	7.83
Volume Resistivity	ASTM D257 2014(2021)e1	1.22 $x10^{12}$	1.34$x10^{12}$
Operating temperature, °C	N/A	-40 to 125	-40 to 125
CTE, um/(m°C)	ASTM E831-25	-23.8	-7.5
Fire Retardancy	UL	Non-Flame Rated	UL94 V-0

Note: Tensile strength and Elongation to break in the transverse direction cannot be measured due to splitting of material. Data within these tables are typical values for the listed product. Performance can vary depending on construction and processing. Data for design engineer guidance only. Observed performance varies in application. Engineers are reminded to test the material in application.

Limitations

This product is neither tested nor represented as suitable for medical or pharmaceutical uses.

Health and environmental information

. Health and environmental information To support customers in their product safety needs, Qnity has an extensive product stewardship organization and a team of Product Safety and Regulatory Compliance (PS&RC) specialists available in each area. For further information, please see our website, www.qnityelectronics.com, or consult your local Qnity representative.

For more information on other Laird products, please visit www.laird.com. Additional information on other Qnity products is available at www.qnityelectronics.com.

The information set forth herein is furnished free of charge, is based on technical data that Qnity believes to be reliable, and represents typical values that fall within the normal range of properties. This information reflects our knowledge of the subject at the date of publication and may be subject to revision. This information relates only to the specific material designated and may not be valid for such material used in combination with other materials or in other processes. It is intended for use by persons having technical skill, at their own discretion and risk. This information should not be used to establish specification limits nor used alone as the basis of design. Handling precaution information is given with the understanding that those using it will satisfy themselves that their particular conditions of use present no health or safety hazards and comply with applicable law. Since conditions of product use and disposal are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information. As with any product, evaluation under end-use conditions prior to specification is essential. Nothing herein is to be taken as a license to operate or a recommendation to infringe on patents.

CAUTION: Do not use Qnity materials in medical applications involving implantation in the human body or contact with internal body fluids or tissues unless the material has been approved by Qnity for such use in accordance with the Qnity Medical Applications Policy. Please ask your Qnity representative for a copy of the current Qnity Medical Applications Policy and further guidance.

Qnity's sole warranty is that our products will meet our standard sales specifications in effect at the time of shipment. Your exclusive remedy for breach of such warranty is limited to refund of purchase price or replacement of any product shown to be other than as warranted. TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, QNITY SPECIFICALLY DISCLAIMS ANY OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, OR NON-INFRINGEMENT. QNITY DISCLAIMS LIABILITY FOR ANY SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES.

Qnity™

© 2026 Qnity Electronics, Inc. All rights reserved. Qnity™, the Qnity Node Logo and all trademarks and service marks designated with ™, SM or ® are owned by affiliates of Qnity Electronics, Inc. unless otherwise noted.

Rev (08/26)