

# Thermal Interface

SOLUTIONS

www.lairdtech.com

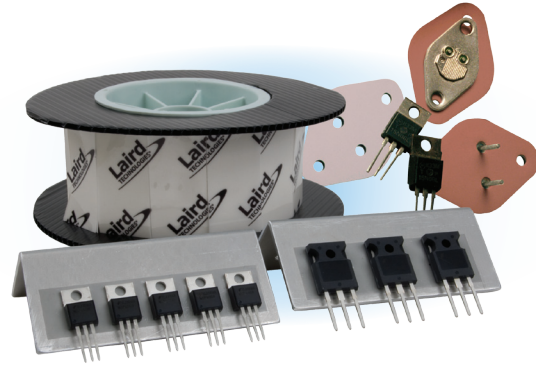


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# Thermal Interface MATERIALS

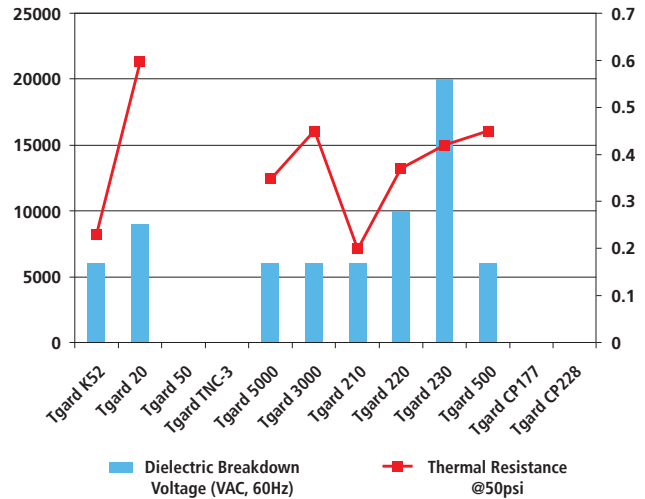
## Tgard™ Electrical Insulators

Tgard™ thermally conductive electrical insulators are used where electrical isolation is a critical design consideration, with reliability, cut-through resistance, and thermal conductivity. The Tgard product line has a wide variety of materials for the unique performance, handling, and assembly considerations required in electronics devices.



### Applications

- Industrial – power supplies and standard TO- packages that require isolation
- Telecom – board-to-chassis system electrical isolation

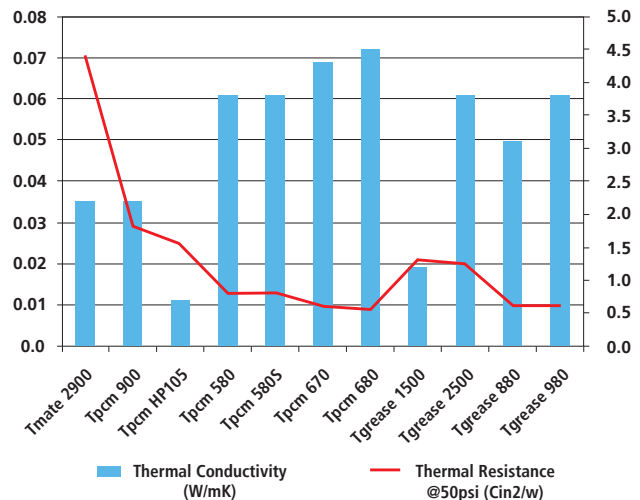


## Tpcm™ and Tgrease™ High-Performance Products

High-performance products are used in applications where mechanical tolerances and general design has been optimized for thermal performance.

The Tpcm™ phase change product line is used in applications where reliability, repeatability, and handling must be controlled to optimize the performance as part of the total thermal solution. The Tpcm product line is available in a screen printable formulation that offers the reliability and performance of a phase change material with the low-cost handling of thermal grease.

Tgrease™ is used in applications where a minimum bond line, constant pressure, and ease of screen printing is desired for optimal performance. Laird Technologies' high-performance Tgrease products are designed to maximize reliability by eliminating pump out in most applications.

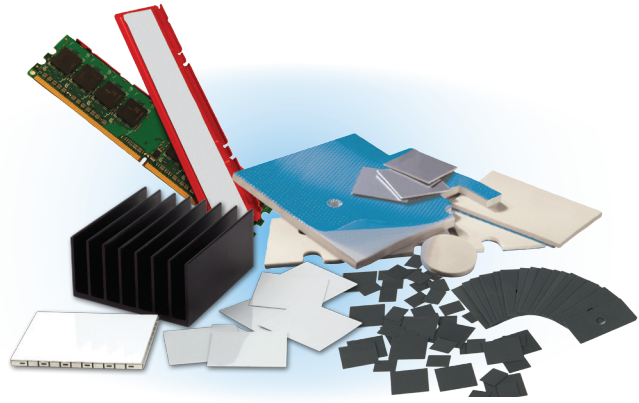


### Applications

- IT – servers, desktops, notebooks, and memory modules
- Industrial – power supplies, lighting, LED lighting, and industrial electronics
- Telecom – routers and wireless infrastructure
- Consumer – gaming systems and portable devices

# Tflex™ Gap Fillers

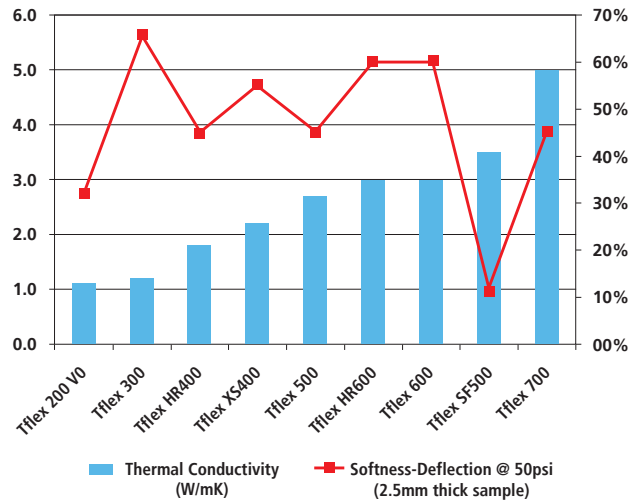
Tflex™ gap fillers are used to bridge the interface between hot components and a chassis or heat sink assembly. The combination of good thermal conductivity and softness reduces mechanical stress, but maintains thermal performance.



## Applications

- Telecom – wireless infrastructure, routers, and VOIP phones
- IT – notebooks, servers, memory modules, hard disk drives, solid state drives, scanners, and printers
- Consumer – gaming systems, LCD PDP televisions, and displays
- Industrial – LED lighting, power supplies, lighting ballasts, controllers, scanners, and power converters
- Aerospace and military – power supplies, microwave radio, and controllers

SPECIFICATIONS	
Thickness range	0.2 to 8.9mm (0.008" to 0.350"), availability varies by product line
UL flammability	94 V0, UL file number E180840



# Tlam™ and Tpreg™ Thermal Printed Circuit Board

Tlam™ thermally conductive circuit boards are designed with Laird Technologies' unique dielectric materials 1KA, HTD and LLD. Tlam technology improves thermal performance while retaining good dielectric isolation.

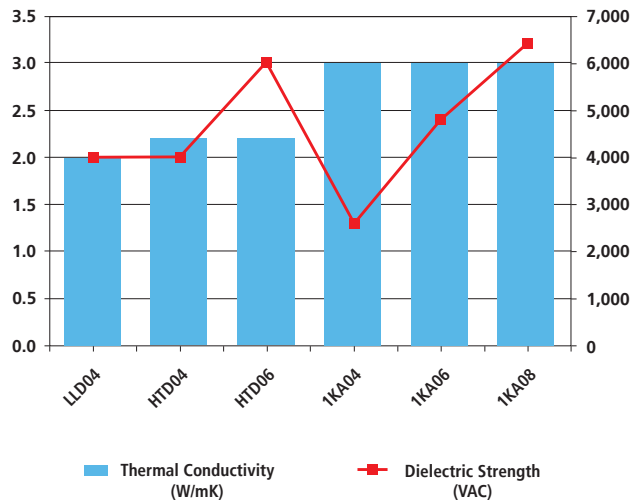
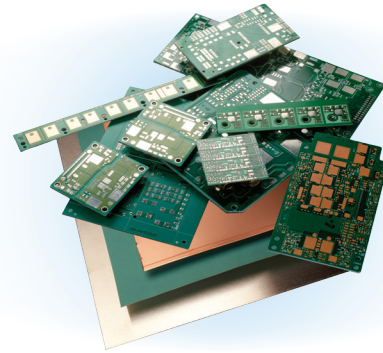
The 1KA material offers high thermal conductivity for applications where a thick dielectric is required. The 1KA material is available as a freestanding Tpreg™ to facilitate multilayer and FR4 hybrid circuit boards.

The HTD material is used where high withstand voltage (>5000 V DC) and continuous use temperature of 150°C are required.

The LLD material is specifically designed for LED applications where cost and performance need to be balanced for high volume applications.

## Applications

- LED lighting – architectural lighting and street/highway/parking/signal lighting
- Telecom – DC/DC convertors and base stations
- Automotive – motor control systems, power steering modules, ABS braking systems, headlights, brake lights, and day time running lights
- Consumer – LCD LED backlighting units
- Industrial – solar voltaic, industrial voltage regulators, and power supplies

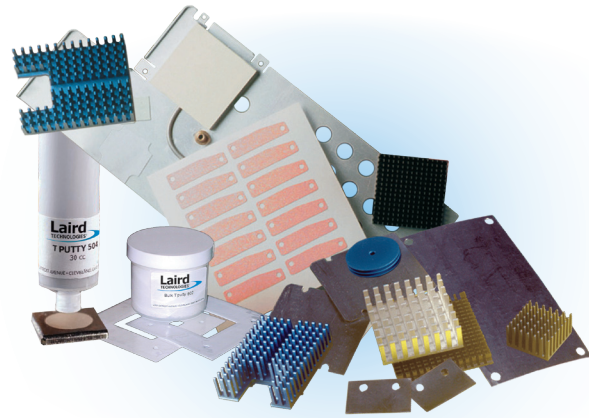


# Tputty™, Tpli™, and Tgon™ Gap Fillers

Tputty™ gap fillers are used to bridge the interface between hot components and a chassis or heat sink assembly when elimination of mechanical stress or bulk dispensing are critical design considerations.

Tpli™ gap fillers are used where high thermal conductivity and low pressures are required.

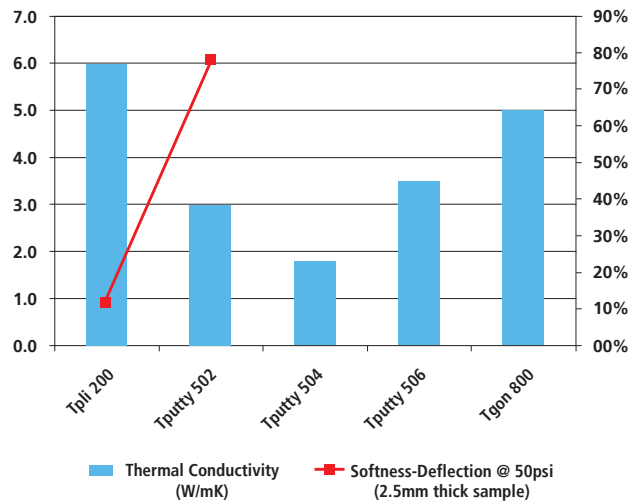
Tgon™ 800 is a high-performance, cost-effective TIM that can be used where electrical isolation is not required. Tgon 800's unique grain oriented graphite plate structure provides high 240 W/mK thermal conductivity along the XY plane, and 5 W/mK through the Z axis.



## Applications

- Telecom – wireless infrastructure, routers, and VOIP phones
- IT – notebooks, servers, memory modules, hard disk drives, solid state drives, scanners, and printers
- Consumer – gaming systems, LCD PDP televisions, and displays
- Industrial – LED lighting, power supplies, lighting ballasts, controllers, scanners, and power converters
- Aerospace and military – power supplies, microwave radio, and controllers
- Tgon 800 is especially good for applications that require high conductivity and low cost without softness

SPECIFICATIONS	
Thickness range	0.5 to 5.1mm (0.020 to 0.200-inch), bulk, availability varies by product line
UL flammability	94 V0, UL file number E180840





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## About Laird Technologies

Laird Technologies designs and manufactures customized, performance-critical products for wireless and other advanced electronics applications.

The company is a global market leader in the design and supply of electromagnetic interference (EMI) shielding, thermal management products, mechanical actuation systems, signal integrity components, and wireless antenna solutions, as well as radio frequency (RF) modules and systems.

Laird Technologies partners with its customers to customize product solutions for applications in many industries including:

- Telecommunications
- Mobile Communications
- Network Equipment
- Automotive
- Industrial & Instrumentation
- Aerospace
- Defense
- Medical
- Consumer Electronics
- Food & Beverage

Laird Technologies offers its customers unique product solutions, dedication to research and development, as well as a seamless network of manufacturing and customer support facilities across the globe.

## Thermal Interface Materials

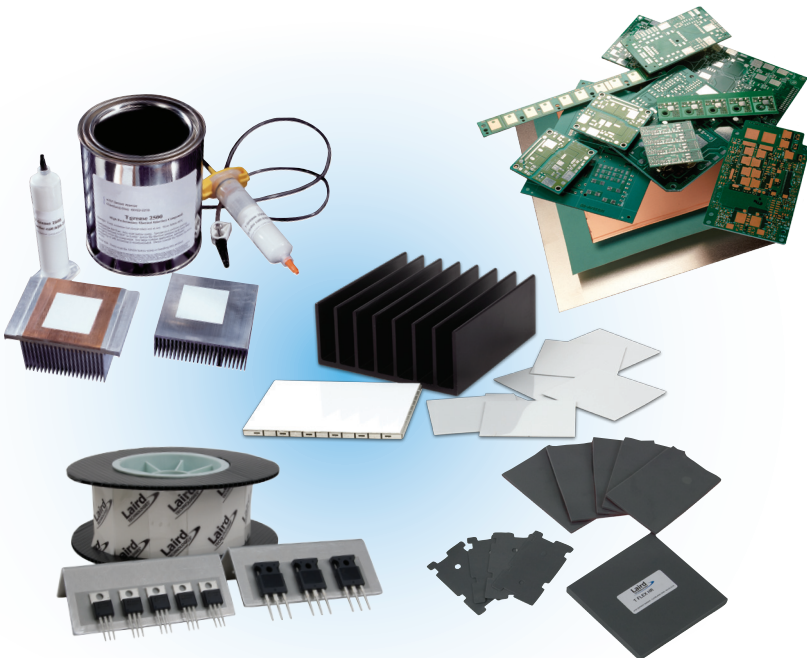
As an industry leader in high-performance, cost-effective Thermal Interface Materials (TIMs) and technologies, Laird Technologies designs and manufactures thermal products; including gap fillers and putties, phase change materials, thermal grease and thermally-conductive insulator materials that meet the demands of any application.

## Meeting Ever Increasing Thermal Demands

Today's electronics are smaller and more powerful than ever before, leading to ever increasing thermal challenges for the systems designer. While fans, heat sinks, and even liquid cooling and thermoelectric devices can be used to provide enough cooling power, the problem remains transferring the heat from the hot components into the cooling hardware. TIMs are designed to fill in air gaps and microscopic irregularities, resulting in dramatically lower thermal resistance and thus better cooling. Laird Technologies is the world leader in material development for TIMs, and offers the broadest line of products to meet every design challenge.

With gap filler pads as thick as 9 mm, as well as electrically insulating and electrically conductive pads, Laird Technologies can solve any TIM design challenge. In addition, Laird Technologies provides phase change TIMs that soften and fill tiny gaps at operating temperature, as well as thermally conductive greases that conform to any irregularity.

Laird Technologies' TIMs offer operating temperatures up to 200°C, thermal conductivities over 5 W/m-K in the Z axis, and tremendous flexibility in form factor and packaging, including die-cut parts on tape and other solutions to support any manufacturing scenario.



global solutions: local support.™

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