



IT ALL STARTS WITH AN IDEA...

The idea to make devices faster, sleeker, more compact and powerful, yet the challenge is to do so without over-heating.

Laird Technologies' thermally conductive gap fillers are compliant, future-generation cooling materials. We offer the softest, highest thermally conductive gap fillers available (in thicknesses from 0.2mm to 5.08mm).

These gap filler products afford designers and engineers the most flexibility in dimensional tolerances. Extreme compliancy reduces stress on components, while higher thermal conductivity provides the required thermal performance for next-generation designs.

Thermal performance and softness is what Laird Technologies does best. Call us today to discuss your application and order free samples.

Laird Technologies' gap fillers - experience the cooler side of soft.

FEATURES AND BENEFITS

- Compliancy rates up to 50% deflection at 50 psi
- Thermal conductivity range from 1.1 – 6.0 W/mK
- Thicknesses from 0.2mm to 5.08mm

APPLICATIONS

- Notebook computers
- Handheld microprocessor devices
- Telecommunication hardware
- Semiconductor test equipment
- Servers and desktop computers
- Memory modules
- Mass storage devices
- Power conversion equipment
- Flat panel displays
- Audio & video components
- GPS navigation equipment
- Automotive engine control
- LED lighting
- Household appliances
- Lighting ballasts

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Innovative Technology
for a Connected World

| | TFLEX™ 200V0 | TFLEX™ 300 | TFLEX™ 500 | TFLEX™ HR600 PRELIMINARY | TFLEX™ 600 | TFLEX™ 700 PRELIMINARY | TPUTTY™ 502 | TPUTTY™ 504 | TPLI™ 200 | TEST METHOD |
|--|-------------------------------------|-------------------------------------|------------------------------------|------------------------------------|-------------------------------------|------------------------------------|--|---|-------------------------------------|-----------------------|
| Construction & Composition | Ceramic filled silicone sheet | Ceramic filled silicone sheet | Ceramic filled silicone sheet | Ceramic filled silicone sheet | Boron nitride filled silicone sheet | Ceramic filled silicone sheet | Reinforced boron nitride filled silicone sheet | Ceramic filled dispensable silicone gel | Boron nitride filled silicone sheet | |
| Color | Light Gray | Light Green | Blue | Grey | Blue-Violet | Dark Grey | White | Light Gray | Multiple Colors | Visual |
| Thickness Range | 0.008" (0.20mm)- 0.200" (5.08mm) | 0.020" (0.50mm)- 0.200" (5.08mm) | 0.020" (0.5mm)- 0.200" (5.08mm) | 0.020" (0.5mm)- 0.200" (5.08mm) | 0.020" (0.5mm)- 0.200" (5.08mm) | 0.020" (0.5mm)- 0.200" (5.08mm) | 0.020" (0.5mm)- 0.200" (5.08mm) | N/A | 0.010" (0.25mm)- 0.200" (5.08mm) | |
| Thickness Tolerance | +/- 10% | +/- 10% | +/- 10% | +/- 10% | +/- 10% | +/- 10% | +/- 10% | N/A | +/- 10% | |
| Density | 1.73 g/cc | 1.75 g/cc | 3.00 g/cc | 2.52 g/cc | 1.34 g/cc | 1.78 g/cc | 1.38 g/cc | 2.78 g/cc | 1.44 g/cc | Helium Pycnometer |
| Hardness | 45 Shore 00 | 20 Shore 00 | 40 Shore 00 | 35 Shore 00 | 25 Shore 00 | 50 Shore 00 | 5 Shore 00 | N/A | 70 Shore 00 | ASTM D2240 |
| Tensile Strength | 48 psi | 15 psi | 66 psi | Pending | 15 psi | Pending | N/A | N/A | 35 psi | ASTM D412 |
| % Elongation | 63 | 50 | 57 | Pending | 75 | Pending | N/A | N/A | 5 | ASTM D412 |
| Outgassing TML (Post Cured) | 0.34% | 0.56% | 0.29% (not post cured) | 0.19% | 0.13% | Pending | 0.11% | 0.34% | 0.07% | ASTM E595 |
| Outgassing CVCM (Post Cured) | 0.10% | 0.10% | 0.04% (not post cured) | 0.07% | 0.05% | Pending | 0.06% | 0.09% | 0.02% | ASTM E595 |
| UL Flammability Rating | 94 V0 | 94 V0 | 94 V0 | 94 V0 | 94 V0 | 94 V0 | 94 V0 | 94 V0 | 94 HB | E180840 |
| Temperature Range | -45°C to 160°C | -40°C to 160°C | -45°C to 200°C | -45°C to 200°C | -45°C to 200°C | -45°C to 200°C | -45°C to 200°C | -45°C to 200°C | -45°C to 200°C | |
| Thermal Conductivity | 1.1 W/mK | 1.2 W/mK | 2.7 W/mK | 3.0 W/mK | 3.0 W/mK | 5.0 W/mK | 3.0 W/mK | 1.8 W/mK | 6.0 W/mK | Hot disk |
| Thermal Resistance @ 40 mils, 20 psi @ 1mm, 138KPa | 1.57 °C-in2/W 10.13 °C-cm2/W | 1.15 °C-in2/W 7.42 °C-cm2/W | 0.50 °C-in2/W 3.23 °C-cm2/W | 0.35 °C-in2/W 2.26 °C-in2/W | 0.62 °C-in2/W 4.00 °C-cm2/W | 0.21 °C-in2/W 1.22 °C-in2/W | 0.49 °C-in2/W 3.16 °C-cm2/W | N/A N/A | 0.37 °C-in2/W 2.45 °C-cm2/W | ASTM D5470 (modified) |
| Percent Deflection @ 10 psi | 5% | 21% | 10% | 10% | 20% | 15% | 25% | N/A | 4% | ASTM D575 (modified) |
| Percent Deflection @ 50 psi | 25% | 48% | 30% | 42% | 40% | 32% | 50% | N/A | 6% | ASTM D575 (modified) |
| Percent Deflection @ 100 psi | 40% | 61% | 45% | 58% | 60% | 50% | 75% | N/A | 10% | ASTM D575 (modified) |
| Thermal Expansion | 229 ppm/°C | 754 ppm/°C | 37.4 ppm/°C | 217 ppm/°C | 430 ppm/°C | 340 ppm/°C | 92 ppm/°C | N/A | 51 ppm/°C | IPC-TM-650 2.4.24 |
| Breakdown Voltage | >250 VAC/mil | >250 VAC/mil | >200 VAC/mil | Pending | >200 VAC/mil | >200 VAC/mil | >200 VAC/mil | >500 VAC/mil | >150 VAC/mil | ASTM D149 |
| Volume Resistivity | 4 x 10 ¹³ ohm-cm | 6 x 10 ¹² ohm-cm | 1x 10 ¹³ ohm-cm | 9 x 10 ¹³ ohm-cm | 2 x 10 ¹³ ohm-cm | 1x 10 ¹³ ohm-cm | 5 x 10 ¹³ ohm-cm | >10 ¹⁴ ohm-cm | 5 x 10 ¹³ ohm-cm | ASTM D257 |
| Dielectric Constant @ 1MHz | 5.5 | 5.5 | 13.6 | 17.6 | 3.3 | 5 | 3.2 | N/A | 3.2 | ASTM D150 |

Data for design engineer guidance only. Observed performance varies in application. Engineers are reminded to test the material in application.

THR-DS-GAPFILLER 0710

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