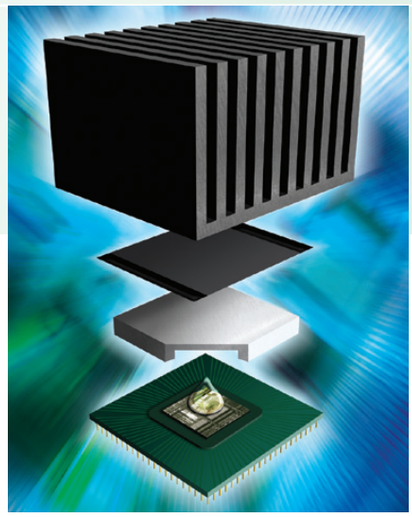
Loctite® Phase Change Thermal Interface Materials

Loctite® Phase Change Thermal Interface Materials (PCTIM) offer exceptionally low thermal impedance between any heat dissipating component and the surface to which the component is mounted.



Phase change technology features a unique wax-based system that is solid at room temperature, but becomes liquid once the excess heat of the device pushes the material past its melt point. This versatility provides the engineer with a material that is manufacturing-friendly, while also delivering the superior performance necessary to meet thermal design requirements. Unlike thermal grease, the phase change compound will not migrate or "pump out" of the interface, which ensures many years of excellent thermal performance even in the harshest environments.

Key features of PCTIMs

- 100% surface wetting eliminates interfacial thermal resistance.
- 15% volumetric expansion at phase-change expels any remaining air gaps.
- Controlled coating thickness leads to consistent and uniform thermal performance.
- "Drop-in-place" feature in the use of these pads speeds assembly and reduces manufacturing costs.

Typical applications include microprocessors, telecom and RF components, power semiconductors and intelligent power modules, IGBTs, converters, etc.

Loctite® Powerstrate® Xtreme PCTIM is formulated for incredible ease of use without compromising thermal performance and adheres to heat sinks or components without heating. Extremely low thermal impedance even at low mounting pressures. Can accommodate gaps and uneven surfaces up to 0.2 mm (0.008"). Heat sinks can be removed even after power cycling without heat or tools. Can be reassembled at least 25 times with no loss of thermal performance.

PCTIM is custom-made for each application. For technical assistance, call your regional sales office – see page 37.

Loctite® Thermal Management Phase Change Materials

Loctite® Phase Change Thermal Interface Material (PCTIM)

Product	Description/Application	Thermal Impedance (°C-in.²/W) @ 80 PSI	Thermal Impedance (°C-cm²/W) @ 550 kPa	Thermal Conductivity (W/mK)	Phase Change Temperature (°C)	Substrate Thickness (in./mm)	Total Thickness (in./mm)	Substrate Material
Powerstrate® Xtreme™ NEW	Unsupported film **with very low thermal impedance** even at low pressure. Fills gaps up to **0.2 mm (0.008")** or collapses to form a thin interface. Direct attach to heat sink without heating. Suitable for semiconductor and power electronics applications.	0.003	0.022	3.3	45	N/A	0.008 0.2	None
Powerstrate® 51R™	Low thermal impedance, **reworkable** grade. Most suited to applications on **lidded processors** where the heat sink may have to be removed for rework.	0.008	0.052	3	51	0.002 0.051	0.0029 to 0.0033 0.074 to 0.083	AL 1145-0
Powerstrate® 51, 60™	Low thermal impedance, robust grade. Suited to a wide range of applications on **bare die** processors and other electronics devices.	0.008	0.052	3	51 or 60	0.002 0.051	0.0025 to 0.0063 0.064 to 0.16	AL 1145-0
Thermstrate® 2000™	Good thermal performance most suited to applications on **power IGBTs**, semiconductors, **DC-DC converters** and other isolated packages.	0.022	0.143	3	60	0.002 & 0.005 0.051 & 0.128	0.003 to 0.0075 0.076 to 0.191	AL 1145-0
Silverstrate®	Excellent thermal performance, particularly at higher pressures. Typically used on **RF devices and SCRs** where electrical conductivity is required. (Silver-filled)	0.003	0.022	3.14	51	0.002 0.051	0.004 to 0.005 0.102 to 0.127	AL 1145-0
Thermstrate® TC™	Phase change compound in **applicator bar**. Ideal for prototyping, rework and small scale production.	0.021	0.137	0.47	60	N/A	N/A	None

Loctite® Phase Change Thermal Interface Material (PCTIM) - Electrically Isolating Products

Product	Description/Application	Thermal Impedance (°C-in.²/W) @ 80 PSI	Thermal Impedance (°C-cm²/W) @ 550 kPa	Thermal Conductivity (W/mK)	Phase Change Temperature (°C)	Thickness Substrate (in./mm)	Total Thickness (in./mm)	Substrate Material	Dielectric Rating VAC/mil substrate	UL Yellow Card	UL Flammability
Isostrate® 2000™	**Electrically isolating** phase change material for use with a wide range of non-isolated components.	0.12	0.78	0.45	60	0.001 to 0.005 .0025 to 0.076	0.002 to 0.006 0.051 to 0.153	Polyimide	>5000	E1049 33	94V-0
Isostrate® J-Series™	Electrically isolating phase change material. Ideal for **non-isolated devices in high volume applications** where high thermal performance is not required.	0.48	3.12	0.155	60	0.002 0.051	0.003 0.076	Polyethylene	>5000	See data sheet	See data sheet
MCM-strate®	**Adhesive backed** version of Isostrate. Allows pad to be postioned to facilitate assembly.	0.25	1.325	0.4	60	0.001 to 0.003 0.025 to 0.076	0.0025 to 0.0045 0.064 to 0.114	Polyimide	>5000	E1049 35	94V-0
EMI-strate®	Unique combination of **thermal** and **EMI management.** Excellent choice for radiated EMI control.	0.4	2.6	0.69	60	See data sheet	See data sheet	Polyimide	N/A	N/A	N/A