

Phase-Change Thermal Interface Materials

Today's thermal engineer needs to achieve the most efficient thermal transfer possible when designing electronics assemblies. The interface itself can represent 25–40 % of the thermal transfer problem, yet a high efficiency Phase-Change thermal interface material can be only a fraction of the cost of the over-all-solution.

Phase-Change Thermal Interface Material (PCTIM) changes state from a solid to a liquid at a pre-determined temperature, and also expands in volume. The combined effect of this removes all air trapped in the interface area, maximising the thermal transfer.

Being market-driven, Loctite® is constantly seeking advanced technologies that offer effective, cost-saving solutions to the electronics industry. After recently acquiring a US-based Phase-Change Thermal Interface technology company, Loctite® now offers a very comprehensive range of thermal interface products.



The Loctite® Phase-Change Thermal Interface Materials product range:

- 100 % surface wetting ensures maximum thermal transfer
- Consistent volume of interface material is applied to every assembly
- No runout of the thermal compound (even in a vertical orientation)
- Silicone-free material – no migration issues
- Fully re-workable, non-adhesive. Clamping pressure is required
- Easy to apply in pad form – no mess during assembly

Powerstrate™

Powerstrate™ pads outperform all other thermal interface materials, including thermal greases. These high efficiency, black-coloured pads are fully re-workable (cleanup only requires a cloth and maybe a very light solvent), and are completely silicone-free. Available also in a handy applicator bar package.

Thermstrate®

The original PCTIM, Thermstrate®, is a white coloured PCTIM pad and is also fully re-workable (simply wipes off with a dry cloth). Suitable for all but the highest specification thermal designs, Thermstrate® is also available in a handy applicator bar package.

Isostrate®

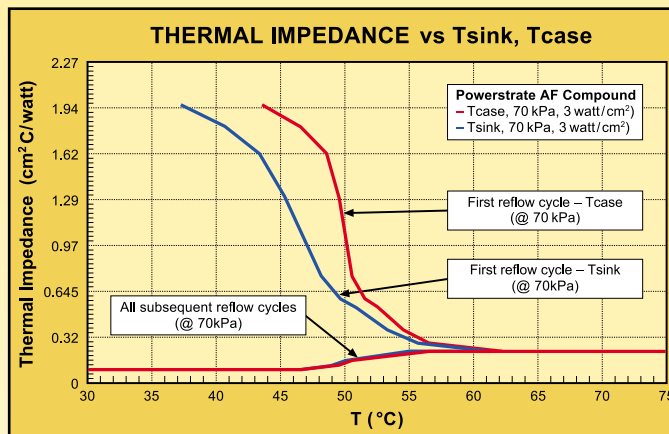
Where a dielectric interface is required, Isostrate® still offers superb thermal transfer while ensuring electrical isolation. Using the same (white) compound as Thermstrate®, Isostrate® offers all the convenience features of Thermstrate®.

MCMstrate®

Where ease of assembly is a prerequisite, MCMstrate® is an adhesive-backed, thermal interface pad designed for pre-application prior to assembly. MCMstrate® is ideal for applications where relatively low clamping pressures are required (eg Multi Chip Modules).

EMIstrate®

EMIstrate® combines the high isolation, but highly thermally conductive features of Isostrate®, with an integral shielding layer. This copper layer can be grounded separately via a convenient grounding attachment pad.



TECHNICAL SUMMARY

Product Details	Description	Compound coating	Electrically Conductive or Isolating*	Thermal Impedance (°C·cm²/W@552 kPa)	Thermal Conductivity W/mK
Powerstrate™ 51/60	Die-cut preform pad	Both sides	Conductive	0.052 – 0.065	3
Thermstrate® 2000	Die-cut preform pad	Both sides	Conductive	0.142 – 0.246	3
Isostrate® 2000	Die-cut preform pad	Both sides	Isolating	0.776 – 1.876	0.45
MCMstrate®	Die-cut preform pad Compound side A Adhesive side B	Side A only	Conductive	Refer Technical Data Sheet	Refer Technical Data Sheet
EMIstrate®	2x Die-cut Isostrate® pads with EMI shield layer interposed	All sides	Isolating	2.588	0.689
Product Details	Phase Change Temperature °C	Dielectric rating (VAC/μm)***	Shielding @100 KHz	Compound Colour	Substrate type
Powerstrate™ 51/60	51 or 60**	N/A	N/A	Black	Aluminium 1145-0
Thermstrate® 2000	60	N/A	N/A	White	Aluminium 1145-0
Isostrate® 2000	60	196.8	N/A	White	Dupont Kapton MT
MCMstrate®	60	196.8	60dB	White	Dupont Kapton MT
EMIstrate®	60	196.8	N/A	White	Dupont Kapton MT plus Copper

* Compounds are electrically non-conductive; substrate conductivity determines overall product electrical conductivity ** Customer specified option ***While the interface compound itself is not electrically isolating, isolation is achieved through the use of Kapton® MT. (Electrical isolation data is taken from the data sheet for Kapton® MT from DuPont) For detailed product performance information and application guidelines, please refer to Technical Data Sheets or contact Loctite®.

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