

Adhesion of Thermaphase

We make Phase Change materials with many different adhesive characteristics. Some of these are properties of the materials themselves. Others are characteristics produced by surface coating applied to the materials. The chart below shows these various properties.

Adhesive characteristics of Thermaphase materials				
Material type	Adhesive at RT before Reflow	Adhesive above Reflow Temp	Adhesive after reflow and cooled below reflow temp	Repositionable at RT before reflow
1) FSF-52 2) Thermaphase on Kapton 52C 3) Thermafoil 52C	NO	Thixotropic/with reduced adhesion	YES (25psi up to 50C)	NO
1) FSF-71 2) Thermaphase on Kapton 71C 3)Thermafoil 71C	YES	Thixotropic/with reduced adhesion	YES (25psi up to 68C)	NO
1) FSF-98 2) Thermaphase on Kapton 98C	NO	Thixotropic/with reduced adhesion	YES (25psi up to 80C)	NO
1) FSF-52 "CoolFill"	YES	Thixotropic/with reduced adhesion	NO	NO
1) FSF-52+PSA 2) Thermaphase on Kapton 52C +PSA	YES	Thixotropic/with reduced adhesion	YES (25psi up to 50C)	NO
1) FSF-98+PSA 2) Thermaphase on Kapton 98C + PSA	YES	Thixotropic/with reduced adhesion	YES (25psi up to 80C)	NO
1) FSF-52+PSTA 2) Thermaphase on Kapton 52 + PSTA 3) Thermafoil 52 +PSTA	YES	Thixotropic/with reduced adhesion	YES (25psi up to 50C)	YES
1) FSF-98+PSTA 2) Thermaphase on Kapton 98 + PSTA 3) Thermafoil 98 +PSTA	YES	Thixotropic/with reduced adhesion	YES (25psi up to 80C)	YES

PSTA is a Pressure Sensitive Thermal Adhesive that can be applied to the surface of Thermaphase. It is a non-curing, sticky substance. Generally it is protected with a release liner. The big advantage to PSTA is that you can reposition the part by sliding it laterally on the heat sink. This is a big advantage when you must line up holes in the heatsink with holes in the interface material. PSTA does not affect the thermal performance of the interface.

Fiberized PSA is a pressure sensitive adhesive that can be applied to the surface of Thermaphase. It is applied in a "spider web" patten that covers only a small percentage of the surface, so that it does not compromise the thermal resistance of the interface.

Reversible Adhesive Bond

Before initial reflow, Thermaphase is easy to handle. When the material is placed between electronic component and heat sink and is reflowed either by the heat of the electronic component. or by externally applied heat. it flows under light

pressure wetting all surfaces.

All of our materials are "thermoplastic". That is, they can be reflowed and cooled again to the solid state an unlimited number of times.

These unique adhesive features of Thermaphase provide the designer with opportunities unavailable in other thermal products.

It makes it possible for example to reflow Thermaphase having a higher phase temperature than component operating temperature via externally applied heat. When the Thermaphase resolidifies again, the component is adhered to the heat sink or circuit board and remains in the solid state during component operation because the phase change temperature of the Thermaphase is higher than normal component operating temperature range. Replacing a component is a simple process by applying external heat to remelt the Thermaphase and reduce the adhesive bond to a low level. This process does not damage either the component, the heat sink or circuit board, or the Thermaphase. The Thermaphase compound can be made to change phase an infinite number of times.

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