

technical datasheet

Ormet[®] PCB-710

Pb-Free Printed Circuit Board Via Filling Paste

PRODUCT DESCRIPTION

Ormet PCB-710 is a Pb-free paste formulated for filling microvias within printed circuit boards. **Ormet PCB-710** filling paste is designed for stacked vias to form vertical interconnects allowing PCB designers to maximize circuit density and minimize the number of lamination cycles required to manufacture high layer count PCB's. It is specifically designed for use in applications that require stable electrical continuity over a large operating temperature range. **Ormet PCB-710** is a moderately low viscosity formulation capable of filling blind microvias with aspect ratios of less than 1:1 with stencil printing. **Ormet Transient Liquid Phase Sintering (TLPS)** pastes use patented technology that allow PCB's to be manufactured at common lamination temperatures in a parallel, rather than a sequential process flow, resulting in complex assemblies in high yield. After sintering, the **Ormet PCB-710** can withstand temperatures above 400°C without re-melting, allowing for subsequent component assembly with outstanding reliability.

FEATURES AND ADVANTAGES

Ormet PCB-710

- Desired filling diameters: <200um with <1:1 aspect ratio
- Ability to extend high aspect ratio, plated through holes while maintaining standard drill techniques
- Enables blind and buried vias while reducing lamination cycles
- Via-in-pad design interconnects in multi-layer substrates
- Stable electrical resistance over time and temperature

TYPICAL PROPERTIES, PRE-SINTERED

PROPERTY	UNIT OF MEASURE	TYPICAL VALUE
Paste Color "As Received"	Visual	Copper
Filler Type		Copper and Tin Alloy
Nominal Particle Size	Micron	<25
Viscosity at 5 RPM, kcps	Brookfield CP-51	33
Thixotropic Index	Slope 1:10 rpm	3.5
Work Life at 25°C	Hours	4
Storage Life, < -10°C	Months	12

TYPICAL PROPERTIES, POST-SINTERED

PROPERTY	UNIT OF MEASURE	TYPICAL VALUE
Metal Loading	weight percent	93
Volume Resistivity	μΩ*cm	48
Coefficient Thermal Expansion	ppm/C	22

DEPOSITION GUIDELINES

Ormet PCB-710 can be applied by several techniques but most typically using a printing process with a polyester-based stencil, fabricated with a laser-drilling process, to match via locations within the PCB.

Ormet PCB-710 is typically applied into blind vias that have been laser ablated into a polymer coversheet and prepreg/adhesive tack-laminated onto a circuit layer. A 60-80 durometer polymer blade is used to force the paste into the blind hole, followed by a metal squeegee blade for a level finish. To ensure a full fill a second coat may be applied with the metal squeegee after a heated settling stage. After filling is complete, the polymer cover is removed to prepare the panel for lamination.

SINTERING METHOD

This paste provides the electrical interconnection during lamination while the prepreg or adhesive layer crosslinks to form the mechanical properties of the substrate or printed circuit board. A two-stage process is recommended to avoid solvent entrapment in the assembly. (See Table 1 for details). Please consult with your EMD Performance Materials Account Representative for additional processing guidelines for selected prepreg/adhesives.

Table 1

THERMAL OPERATION	PREFERRED PROFILE	ALTERNATE PROFILE
Solvent Removal (Drying)	30 min @ 95°C	20 min @ 115°C 60 min @ 75°C
Sintering	Follow prepreg manufacturer's recommended lamination cycle	

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POST-SINTERING PROCESS

Ormet PCB-710 is designed for no-clean applications and will leave benign, electrically inert residues on surfaces. Ormet recommends testing adhesion compatibility with molding compounds and coating materials to determine if a post sintering cleaning process is required.

PACKAGING AND SHIPPING

Ormet PCB-710 is available in multiple jar and cartridge sizes. The **Ormet PCB-710** is shipped in low-temperature containers and should be placed in cold storage (-10°C or below) immediately upon receipt. Shipping temperature indicators are available upon request.

STORAGE AND HANDLING

For best results, **Ormet PCB-710** should be stored at or below -10°C and containers should be kept tightly closed to avoid moisture contamination. **Ormet PCB-710** must be warmed to and held at ambient temperature for a minimum time of 45 minutes prior to use. Ormet does not recommend the use of mixers or centrifuges to accelerate the warm-up time. Cumulative life at room temperature should not exceed 72 hours.

HEALTH AND SAFETY INFORMATION

Product safety information is available in safety datasheets. Before handling, read safety datasheets and labels on product. Ormet has a comprehensive team of product safety and regulatory compliance specialists available in each area. For further information please see our website, www.ormetcircuits.com, or consult with your local EMD Performance Materials Account Representative.

GENERAL INFORMATION

The information within the technical datasheet is based upon internal testing conducted by Merck KGaA, Darmstadt, Germany. The application and use of the product is dependent on the customer and is beyond the control of Ormet.

Ormet recommends that customers completely characterize this product for use within their applications. Ormet's sole warranty is the product will meet the sales specification in effect at the time of shipment. Specification writers should contact Ormet for sales specification prior specifying material.

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