

PRODUCT DESCRIPTION

Ormet 802 is a lead-free conductive paste used to fill via holes during the fabrication of a Printed Circuit Board commonly used in the semiconductor and consumer electronics industries. The innovative metal matrix uses Ormet Circuits' patented Thermal Liquid Phase Sintering (TLPS) technologies enhancing the thermal via structure and its integrity. A filled via with a closely matching CTE offers reliable interconnects in the PCB structure. TLPS compounds enable lead-free metallic filling at temperatures as low as 175°C. After reaction, they are capable of withstanding thermal excursions above lead free SMT profiles. The materials can be brushed or sanded to present a smooth and planar surface to receive the next assembly stage in the PCB fabrication.

TYPICAL PROPERTIES

<u>Property</u>	<u>Test Method</u>	<u>Value</u>
Color 'As-received'	Visual	Copper color
Color 'Post-reaction'	Visual	Grey color
Filler Type	Copper Filler and Tin Alloy Filler	
Particle Size	Hegman Gauge	< 50 micron
Viscosity	Brookfield TE Spindle @ 5 rpm	600 kcps
Shear Thinning	Ratio of viscosity 1rpm / 10rpm	2
Specific Gravity		4.9 grams/cc
Electrical Resistivity	Volume Resistivity 4-point probe	50µm ohms*cm
Thermal Conductivity	Laser Flash Diffusivity	58 W/mK
CTE	TMA expansion mode	22 ppm/°C
Weight Loss on Cure	TGA	4%
Work Life	Application testing after RT storage	24 hours @ 25°C
In Use Life	Pressure Via fill applications testing	8 hours
Estimated Storage Life		12 months < -10°C

TYPICAL APPLICATIONS

Ormet 802 is used in via fill applications where conventional plated through hole (PTH) are filled and plated over offering a flat surface. **Ormet 802** offers innovative means to existing industry applications. Some applications that may be candidates for **Ormet 802** include:

- Filling high-aspect ratio holes (down to 50µm in diameter by 400µm deep)
- Enhancing through thermal copper via structures for heat dissipation.
- Enabling the placement of blind and buried micro via structures in multilayer substrates.
- Void Free Filling with limited shrink.
- Filling via-in-pad through holes for PCB applications.

MATERIAL DEPOSITION GUIDELINES

Ormet 802 can be applied through a range of techniques. Most frequently **Ormet 802** is applied by using a power squeegee head printing process. The material can also be applied by dispensing or conventional stencil or screening printing. It is recommended that a metal blade squeegee be used during printing to fill the via flush with the top of the hole. A second filling step can provide additional volume of paste to ensure a good button top for planar operations. Please refer to Ormet's Applications Guide for additional detail.

SINTERING PROCESS GUIDELINES

	<u>Recommended Profile</u>	<u>Alternate Profiles</u>
Solvent Removal (Drying)	15 minutes @ 95°C	30 minutes @ 115°C 60 minutes @ 75°C
Sintering (Lamination Press)	30 minutes @ 205°C	60 minutes @ 190°C

STORAGE AND HANDLING

Ormet 802 is supplied in a range of syringes, cartridges and jars. Storage is <-10°C. **Ormet 802** must be stabilized to room temperature for 30 minutes before use.

GENERAL INFORMATION

The Material Safety Data Sheet (MSDS) contains safe handling information for this product. Please read carefully before handling or using this product.

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This product is covered by United States and foreign patents, both issued and pending, for the material compositions, applications and techniques for use. Refer to www.ormetcircuits.com for detailed patent information.

PROCESS FLOW CHART

