ORMET CIRCUITS, INC.

Technical Data Sheet

ORMET 270

August 2014

PRODUCT DESCRIPTION

Ormet 270 is a lead-free conductive paste used to create conductive traces and pads on electronic substrates. The innovative metal matrix incorporates Omet Circuits' patented Transient Liquid Phase Sintering (TLPS) technology to make robust circuit interconnects. Ormet Circuits' TLPS compounds enable lead-free fused metal circuit features at temperatures as low as 200°C. The metallurgy of **Ormet 270** was specifically designed to maintain low and stable electrical resistance in lead-free component assembly cycles. **Ormet 270** may be applied by screen or stencil printing and is plating-ready and directly solderable after processing. **Ormet 270** was designed for use in conjunction with b-staged dielectric layers in order to provide a strong adhesive bond to the substrate.

TYPICAL PROPERTIES

Property	Test	Method	Value
Color	'As-received'	Visual	Copper color
Color	'Post-reaction'	Visual	Grey color
Filler Type			Copper Filler and Tin Alloy Filler
Nominal Particle Size		Hegman Gauge	<40 micron
Viscosity	Brookfied rotational	25°C, 5 rpm, TE spindle	300 kcps
Specific Gravity			5.5 grams/cc
Electrical Resistivity	Volume Resistivity	4-point probe	50 μΩ*cm
Thermal Conductivity		Laser Flash Diffusivity	25 W/mK
CTE	TMA	expansion mode	22 ppm/°C
Lap Shear	Copper to Copper	0.125 in2 overlap	1300 psi2[1]
Weight Loss on Cure	TGA		4%
Work Life	Application testing	after RT storage	24 hours @ 25°C
Estimated Screen Life	Applications testing		8 hours
Estimated Storage Life			12 months < -10°C

[1] SnPb solder paste tested as a control provided a value of 2200psi.

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TYPICAL APPLICATIONS

Ormet 270 was designed to create additive traces and pads on specialty electronic substrate applications. Typical applications include high-thermal-dissipation substrates, substrates incompatible with plating, and redistribution circuits and pads on interposers.

MATERIAL DEPOSITION GUIDELINES

Ormet 270 can be applied by several techniques. **Ormet 270** is often applied using a stainless steel mesh screen or stencil printing process. For robust adhesion to non-metallic substrates, the **Ormet 270** should be applied to, and co-processed with, a b-staged adhesive layer. Often this adhesive layer also serves as a dielectric.

SINTERING PROCESS GUIDELINES

	Recommended Profile	Alternate Profiles
Solvent Removal (Drying)	30 minutes @ 95°C	30 minutes @115°C 60 minutes @ 75°C
Sintering	20 min @ 200°C Inert (N_2) or Air excluded (lamination press with gasketing cover)	10 minutes @ 230°C Inert (N_2) lead-free reflow

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STORAGE AND HANDLING

Ormet 270 is supplied in 250 gram jars. The storage temperature is -10°C MAX. **Ormet 270** must be stabilized to room temperature for 30 minutes before opening the containers for 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.
The information provided in this Technical Data Sheet is believed to be correct and reliable; however, Ormet Circuits, Inc. does not assume responsibility for the user's implementation.

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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. See the Ormet website for detailed patent information.

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