

PRODUCT DESCRIPTION

Ormet 406 is a conductive, Pb-free component attach paste used in fine-pitch component assembly applications. **Ormet 406** uses Ormet's patented Transient Liquid Phase Sintering (TLPS) technology to form metallic joints using standard Pb-free SMT reflow conditions. Unlike typical Pb-free solder joints, **Ormet 406** joints can withstand temperatures of up to 400°C without re-melting. **Ormet 406** can be dispensed or printed directly on metal surfaces without soldermask, and requires no flux cleaning after reflow.

TYPICAL PROPERTIES

Property	Test Method	Typical Value
Paste Color	Visual	Copper
Filler	Type	Copper and Tin Alloy
Nominal Particle Size	Hegman Gauge	< 40 microns, spherical
Metal loading	Wt% Post Reflow	97%
Viscosity 5RPM	Brookfield TE Spindle	300 kcps
Thixotropic Index	Viscosity Ratio 1/10 rpm	6.5
Specific Gravity	Graduated cylinder	6 grams/cc
Electrical Resistivity	Volume Resistivity (4 point probe)	35 $\mu\Omega$ *cm
Thermal Conductivity	Laser Flash Diffusivity	45 W/mK
Weight Loss on Reflow	TGA	<5.0%
Work Life, 25C	Stencil Open Time	24 hours
Storage Life	-10°C or colder	12 months

TYPICAL APPLICATIONS

Ormet 406 is intended for applications in which assembled parts will undergo additional high temperature assembly operations, or will be used in harsh, high-temperature environments. 406 will form metallurgical bonds to solderable surfaces to create metallic joints that provide excellent thermal and electrical conductivity. The metal matrix within the 406 joint exhibits no significant remelt below 400°C and is not reworkable; however, Ormet joints are solderable if processed in an inert environment.

MATERIAL APPLICATION GUIDELINES

Most frequently, **Ormet 406** is applied by dispensing, stenciling or screen-printing. The following printing parameters can be used as a starting point.

Print Parameter	Value
Pressure	10 kgf
Speed	10 mm/sec
Squeegee Angle	20 degrees
Printer Temp	20-25 °C

Dispense Parameter	Value
Pressure	5-8 psi (constant)
Valve type	Auger
Tip type	Tapered ceramic (28GA <200 micron features)
Syringe	10/20cc EFD, orange piston

REFLOW PROCESS GUIDELINES

Profile Type	Recommended Profile
Reflow Profile	Standard Pb-free SMT reflow (150°C soak, 255°C peak) N2 < 1000ppm

STORAGE AND HANDLING

Ormet 406 is supplied in a range of jars, cartridges and syringes. 406 must be stored at -10C or colder. **Ormet 406** must be thawed at room temperature for 45 minutes before opening the jars or syringes for use. No rolling or pre-mixing is required after thawing.

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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