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Innovative Chemistry For High-Tech Applications

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EP-1100

SILVER FILLED ELECTRICALLY CONDUCTIVE SINGLE COMPONENT EPOXY ADHESIVE

EP-1100 is a unique, one part electrically conductive epoxy adhesive used for surface mount component attachment, termination and other applications in hybrid circuits, membrane switches and other electromechanical assemblies. The rheology of EP-1100 makes it an ideal material for screen or stencil printing. EP-1100 exhibits excellent adhesion to most metal and plastic substrates and has excellent temperature resistance and toughness. EP-1100 is available in pre-weighed and sealed plastic pouches, open containers or plastic syringes. For dot dispense processes, EP-600 two component or EP-1000 single component adhesives are recommended.

EP-1100 is compatible with all of our silver conductive inks, UV curable encapsulants, dielectrics and conformal coatings. Contact us for suitability of use with other materials.

TYPICAL PROPERTIES

VALUES

Appearance	Thixotropic Silver Colored Paste
Viscosity (Room Temperature)	75,000 to 100,000 cps
Shelf Life (Ambient Temperature)	30 Days In Unopened Container
Hegman Gage	<100 μ
Volume Resistivity (ref. ASTM D-257)	<5.0 x 10 ⁻⁴ Ω -cm
Coefficient Of Thermal Expansion	
<i>Below Tg</i>	6.0 x 10 ⁻⁵ in/in/ $^{\circ}$ C
<i>Above Tg</i>	1.5 x 10 ⁻⁴ in/in/ $^{\circ}$ C
Thermal Conductivity	11 BTU in/ft ² hr $^{\circ}$ F
Glass Transition Temperature (TMA)	110 $^{\circ}$ C (Fully Cured)
Operating Temperature Range	-55 $^{\circ}$ C To +175 $^{\circ}$ C Continuous Intermittent at higher temperatures when fully cured.

Curing Schedule	(Time At Temperature)	90% Cure	Complete Cure
120 $^{\circ}$ C		5 minutes	15 minutes
140 $^{\circ}$ C		3 minutes	5 to 7 minutes

At 90% cure, the assembly can generally be handled carefully without the danger of damaging the adhesive bond. EP-1100 will not continue to cure at room temperature once heat is removed. Cure times above are intended as guidelines, and are dependent on the actual glue line being held at the given temperature.

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APPLICATION GUIDELINES

For screening, a monofilament polyester (157 to 200 mesh) or a stainless steel (165 to 270 mesh) screen is recommended, with emulsion thickness between .001" and .003". A polyurethane squeegee with a Shore 'A' durometer between 60 and 70 is recommended.

In general, a more open screen with thicker emulsions, or a thicker stencil will give a larger pad of adhesive for bonding devices. However, thinner emulsions and stencils provide thinner pads that are less susceptible to wicking and shorting out during high temperature curing – especially with smaller surface mounted devices.

Stencil printing can be accomplished using a wide range of stencil thicknesses (typically from .002" to .008"). A steel squeegee is recommended, with the squeegee placement at a slight angle from vertical. Stroke speed will be dependent upon size of stencil and placement of apertures, and it is recommended that printing be performed in both directions in order to transfer material automatically to both squeegees. Stencil printing should be done with a small offset (typically .040") in order to achieve clean patterns.

Because EP-1100 has a shelf life of 30 days at room temperature, the rheological properties allow for accurate and repeatable pad geometries over long production runs. While the viscosity of the mixed material will change gradually over the 30-day storage window, most application equipment can easily compensate for the rheological changes to accurately maintain pad configuration. . EP-1100 can be thinned using small amounts of DPMA solvent.

As EP-1100 is used in a stencil printing or screen printing process, the energy from the constant movement of the flood bar and squeegee will cause the material to thicken more quickly. Production runs of between 12 and 24 hours are possible with stable material rheology, dependant on ambient temperature, humidity and process parameters.

PACKAGING

EP-1100 is available in pre-weighed open containers, plastic pouches and EFD type syringes. There is no minimum purchase quantity with the open container packaging option. Contact Conductive Compounds, Inc. for more information about plastic pouch or EFD type syringe packaging configurations.

The above guidelines are intended to provide a starting point for evaluation. Conductive Compounds, Inc. recognizes that each customer's manufacturing process is unique, and we can customize the rheology and curing properties of EP-1100 to conform more closely to your process parameters. Call us to discuss your application in more detail.

NOTE: Although the above properties are accurate to the best of our knowledge, Conductive Compounds, Inc. makes no guarantees for customer specifications established in applications where this product is used. Customer assumes responsibility for determining fitness of use in their particular application.