POLYSOLDER SE3001

Silver Filled Epoxy

DESCRIPTION

POLYSOLDER SE3001 is an electrically conductive adhesive that can be screen printed, stenciled or pneumatically dispensed as a thixotropic paste. The material is cured by thermal processing in IR, convection, conduction or vapor phase equipment. A combination of short cure time, low temperature cure and excellent thermal stability results in superior mechanical properties and stable contact resistance during stress tests and device operation.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

TYPICAL PROPERTIES

Material Properties	Method	Value	Remarks
A. Uncured			
Chemical type		Thermosetting	
Color	Visual	Grey	
Viscosity at 25 °C at 1 RPM	ASTM D2196-99	~180 Kcps	Brookfield Spindle 51
Viscosity at 25 °C at 10 RPM	ASTM D2196-99	~30 Kcps	Brookfield Spindle 51
Thixotropic index (0.5 RPM/5.0 RPM)	ASTM D2196-99	~ 6	Brookfield Spindle 51
Pot Life @ 23 °C (time to doubling of viscosity)	ISO 10364:1993	16 hours (in syringe)	Brookfield Spindle 51
Storage Temperature		-40 (°C/°F)	
Shelf Life @ -40 (°C/°F)		6 months	

Material Properties	Method	Value	Remarks
B. Cured			
Glass Transition (Tg)	ASTM D3418-99	90 °C	
CTE (Below Tg)	TMA	54 ppm	
Modulus at 25 °C	DMA	4160 MPa	
Modulus at 260 °C	DMA	480 MPa	
Thermal Conductivity	Laser Flash	4 to 5 W/M°K	
Bond Joint Resistance	nVoltmeter	0.0003 Ohms	
Volume Resistivity	4-Point probe	0.0001 ohm-cm	
Junction Resistivity	nVoltmeter	< 5 mohm	
Die shear strength	2 x 2 Si die, Au substrate	> 2300 PSI	

MATERIAL APPLICATION

When material remains attached to the needle and substrate and is dragged as the needle moves away, this is called tailing. The POLYSOLDER SE3001 has been reformulated from our traditional silver-filled epoxy to reduce this effect. Proper maintenance and consistency of 'gap height', 'shoot size', and 'up height' is also important to ensure no tailing. Minimum Dot Sizes: The minimum reproducible dot is 1.5 times the inner diameter of the dispensing needle (i.e. A 6mil inner diameter (ID) will reproduce a consistent 9mil dot, which is approximately 225 microns). The smallest standard needle is 28 gauge with a 7mil ID (although smaller needles can be made to order).

The material can be screen printed/stencil printed. Printer settings need to be optimized by end user. The material will have consistent print deposits over time.

Equipment settings need to be optimized for desired material deposition response based on model and configuration.

CURE

POLYSOLDER SE3001 cures in ~30 minutes at 130 °C. Alternatively, the material can be snap cured in 3 min at 165 °C. It is recommended that the cure schedule includes at ramp at 5 to 10 °C and a controlled cooling cycle to minimize thermal stresses. Depending on thermal mass of application cure times may vary and should be optimized by the end user.

CLEAN-UP

Uncured material may be cleaned from dispenser components and surfaces with a variety of solvents, including IPA, acetone, MEK, methylene chloride, etc. Always wash and dry thoroughly prior to re-use of the dispenser components. The cleaning technique should be active cleaning of the components – flush, wash or wipe, followed by a drying step to ensure a clean, dry surface. Do not soak since this can solubilize the hardener within the uncured resin and curing (very difficult to remove). Contact your equipment supplier to ensure the solvent is compatible with their components. Clean and maintain dispense valves as recommended by the equipment manufacturer.

PACKAGING SIZES

POLYSOLDER SE3001 is available in 3, 5, 10 or 30 cc syringes. Larger quantities are also available in 125g and 250g jars. Please contact Customer Services for sizes other than those mentioned above.

SHIPPING & STORAGE

Material is normally shipped in insulated boxes using dry ice to ensure that the **POLYSOLDER SE3001** maintains all its properties. On receipt, it must be ensured that dry-ice remnants are present in the insulated shipping box. If there is no dry ice, or if the material is not cold, then please contact MacDermid Alpha Electronics Solutions immediately. Exposing to elevated temperatures during shipment and storage will compromise on the performance aspect of the material adversely.

It is recommended to store the syringes of material at -40 °C for a maximum shelf life of 6 months. It is recommended that the material be allowed to thaw before usage. Typical thawing times for 5cc and 10cc syringes are presented in chart below. Remove the syringe from freezer and set aside, allowing it to thaw at room temperature, until it reaches room temperature (90 minutes maximum for 30cc syringe). To prevent contamination of unused product, do not return any material to its original container.

SAFETY & WARNING

It is recommended that the company/operator read and review the Safety Data Sheets for the appropriate health and safety warnings before use. **Safety Data Sheets are available..**

WASTE TREATMENT

Prior to using any recommendations or suggestions for waste treatment, the user is required to know the appropriate local/state/federal regulations for on-site or off-site treatment which may require permits. If there is any conflict regarding our recommendations, local/state/federal regulations take precedent.

CONTACT INFORMATION

To confirm this document is the most recent version, please contact techinfo@MacDermidAlpha.com

www.macdermidalpha.com

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Also read carefully warning and safety information on the Safety Data Sheet. This data sheet contains technical information required for safe and economical operation of this product. READ IT THOROUGHLY PRIOR TO PRODUCT USE. Emergency safety directory assistance: US 1 202 464 2554, Europe + 44 1235 239 670, Asia + 65 3158 1074, Brazil 0800 707 7022 and 0800 172 020, Mexico 01800 002 1400 and (55) 5559 1588