Epoxy Technology EPO-TEK® E4110-PFC Electrically Conductive Epoxy

Category : Polymer , Thermoset , Epoxy , Epoxy, Electrically Conductive

Material Notes:

Product Description: EPO-TEK®E4110-PFC is a two-component, silver filled, electrically conductive adhesive designed for semiconductor IC packaging and general electronic assembly. It is a thixotropic version of EPO-TEK®E4110, suggested for applications requiring a screen printing process as well as jetting.Advantages & Application Notes: A thixotropic paste which enables ultra-fine pitch applications at the wafer or PCB/substrate packaging level. It may be dispensed, printed or jetted.Semiconductor Flip Chip Suggested Applications: Flip Chip attaching of IC's direct to substrate or in semiconductor advanced plastic packages."Dots" of E4110-PFC may be realized at 75µm diameter and 125µm pitch.Compatible with screen printing processes, whether mesh or stencil foils. The former requires > 200 mesh wires while the latter should be laser etched SST foil.Capable of curing at temperatures as low as 45°C for solder replacement.Medical Suggested Applications:Electrically conductive bridge when bonding Au-plated piezo-ceramic arrays to PCBs, used in ultrasonic devices.Flip chip attachment of photo-detector arrays found in X-ray and CT detectorsOpto-electronics Suggested ApplicationsElectrically conductive adhesive found in sensor and fiber optic devicesElectrical bridge of ITO contact pads to PCBs found in LCD/Displays and OLED'sFlex Circuits suggested Applciations.Solar / Photo-voltaic. Adhesive for electrically back-contacting, thin film, organic and dye sensitized solar cells.Flip Chip adhesive dots bridging RFID chips to antennae, or smart card IC packaging.Electrical bridge of Au/PZT arrays to Au/Kapton found on ink-jetting circuitsInformation Provided by Epoxy Technology

Order this product through the following link:
http://www.lookpolymers.com/polymer_Epoxy-Technology-EPO-TEK-E4110-PFC-Electrically-Conductive-Epoxy.php

Physical Properties	Metric	English	Comments
Specific Gravity	2.97 g/cc	2.97 g/cc	Part B
	3.26 g/cc	3.26 g/cc	Part A
Particle Size	<= 20 µm	<= 20 µm	
Viscosity	50000 - 60000 cP @Temperature 23.0 °C	50000 - 60000 cP @Temperature 73.4 °F	5 rpm

Mechanical Properties	Metric	English	Comments
Hardness, Shore D	68	68	
Tensile Modulus	1.53 GPa	222 ksi	Storage
Shear Strength	8.62 MPa	1250 psi	Lap
	>= 11.7 MPa	>= 1700 psi	Die

Thermal Properties	Metric	English	Comments
CTE, linear	48.0 µm/m-°C	26.7 µin/in-°F	Below Tg
	207 µm/m-°C	115 µin/in-°F	Above Tg

Thermal Properties	Metric	English	Comments
Thermal Conductivity	1.66 W/m-K	16.3 BTU-in/hr-ft²-°F	
Maximum Service Temperature, Air	150 °C	302 °F	Continuous
	250 °C	482 °F	Intermittent
Minimum Service Temperature, Air	-55.0 °C	-67.0 °F	Continuous
	-55.0 °C	-67.0 °F	Intermittent
Glass Transition Temp, Tg	>= 40.0 °C	>= 104 °F	Dynamic Cure 20—200°C /ISO 25 Min; Ramp -10—200°C @ 20°C/Min
Decomposition Temperature	337 °C	639 °F	Degradation Temperature; TGA

Electrical Properties	Metric	English	Comments
Volume Resistivity	<= 0.00050 ohm-cm	<= 0.00050 ohm-cm	

Chemical Properties	Metric	English	Comments
Ionic Impurities - Na (Sodium)	13 ppm	13 ppm	
Ionic Impurities - K (Potassium)	2.0 ppm	2.0 ppm	
Ionic Impurities - Cl (Chloride)	32 ppm	32 ppm	

Processing Properties	Metric	English	Comments
Cure Time	60.0 min @Temperature 120 °C	1.00 hour @Temperature 248 °F	Minimum Bond Line
	180 min @Temperature 80.0 °C	3.00 hour @Temperature 176 °F	Minimum Bond Line
	360 min @Temperature 45.0 °C	6.00 hour @Temperature 113 °F	Minimum Bond Line
Pot Life	120 - 180 min	120 - 180 min	
Shelf Life	12.0 Month @Temperature 25.0 °C	12.0 Month @Temperature 77.0 °F	

Descriptive Properties	Value	Comments
Color	Silver	Part A
	Silver	Part B
Consistency	Smooth thixotropic paste	

Descriptive Properties	Value	Comments
Ionic Impurities NH4	20 ppm	
Mix Ratio By Weight	3:1	
Number of Components	Two	
Thixotropic Index	3.3	
Weight Loss	0.37%	200°C
	0.88%	250°C
	1.38%	300°C

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