Ablestik

ABLEBOND® 71-1

ELECTRICALLY CONDUCTIVE POLYIMIDE ADHESIVE

DESCRIPTION

ABLEBOND® 71-1 electrically conductive die attach adhesive is designed for microelectronic and semiconductor packaging applications. This high purity, silver-filled polyimide provides high bond strength at ambient and elevated temperatures.

Typical Uncured Properties	*ABLEBOND 71-1*	*Test Description*	*Test Method*
Filler Type	Silver		
Viscosity @ 25ºC	14,000 cP	Brookfield CP51 @ 5 rpm	ATM-0018
Thixotropic Index	2.9	Viscosity @ 0.5/Viscosity @ 5 rpm	ATM-0089
WorkLife	*Varies with usage conditions. Please consult Ablestik Technical Service for details.*		
Storage Life @ -40ºC	1 year		ATM-0068
Cure Process Data	***ABLEBOND 71-1***	***Test Description***	***Test Method***
Weight Loss on Cure	26%	10 x 10 mm Si die on glass slide	ATM-0031
Recommended Cure Condition	30 minutes @ 150ºC + 30 minutes @ 275ºC		
PHYSIOCHEMICAL PROPERTIES - Post Cure	***ABLEBOND 71-1***	***Test Description***	***Test Method***
Ionics Chloride Sodium Potassium	5 ppm 5 ppm 5 ppm	Teflon flask, 5 gm sample/20-40 mesh, 50 gm DI water, 100ºC for 24 hours	ATM-0007
Water Extract Conductivity	15 µmhos/cm		ATM-0044
pH	6.7		ATM-0002
Weight Loss @ 300ºC	0.35%	Thermogravimetric analysis	ATM-0073
Glass Transition Temperature	240ºC	TMA penetration mode	ATM-0058
Coefficient of Thermal Expansion Below Tg	41 ppm/ºC	TMA expansion mode	ATM-0055
Dynamic Tensile Modulus @-65ºC @ 25ºC @ 25ºC @ 150ºC @ 250ºC	 3600 MPa (520,000 psi) 3400 MPa (490,000 psi) 3200 MPa (460,000 psi) 3000 MPa (430,000 psi) 2300 MPa (330,000 psi)	Dynamic mechanical thermal analysis (DMTA) using <0.5mm thick sample	ATM-0112
Moisture Absorption @ Saturation	0.6	Dynamic vapor sorption after 85ºC/ 85% RH exposure	ATM-0093

The figures shown above are typical values only. If you need to write a specification, please request our current Standard Release Specification.

THERMAL/ELECTRICAL PROPERTIES - Post Cure	ABLEBOND 71-1	Test Description	Test Method
Thermal Conductivity @ 121ºC	2.0 W/mK	C-MATIC conductance tester	ATM-0017
Volume Resistivity	0.00013 ohm-cm	4-point probe	ATM-0020
MECHANICAL PROPERTIES - Post Cure	**ABLEBOND 71-1**	**Test Description**	**Test Method**
Lap Shear Strength @ 25ºC	1000 psi	Al to Al	ATM-0011
Die Shear Strength @ 25ºC	3.8 kg_f/die	2 x 2mm (80 x 80 mil) Si die on Ag/Cu leadframe	ATM-0052

INSTRUCTIONS

Remove the container of adhesive from refrigerated or frozen storage and allow it to warm to room temperature. Warming time can be significantly reduced by blowing room temperature air across the syringe(s). Do not open the container before the contents reach ambient temperature. Remove any moisture that collects on the thawed container before opening the container.

HOMOGENIZATION BY ROLLING (Jars Only)

Adhesive that appears to have separated should not be used without remixing. Separation of silver from resin is indicated by the presence of an amber band along the length or top of the container. Any product showing evidence of separation should be rolled prior to use to maintain homogeneity. These jars should be rolled for a minimum of 8 hours at 5 rpm.

ADHESIVE APPLICATION

Upon warming to ambient temperature, adhesive should be quickly placed into use. If the adhesive is transferred to a final dispensing reservoir, care must be exercised to avoid entrapment of contaminants or air into the adhesive.

Apply enough adhesive to form a 1-2 mil wet bondline thickness and a 25% - 50% fillet height on all sides of the die. Alternate dispense quantities and bondline thicknesses may be required depending on the rheology of 71-1, care must be exercised to prevent the evaporation of solvent during storage, handling and application. Placing an airtight enclosure over the stamping or screening equipment with an open container of NMP inside will significantly reduce the evaporation rate of the NMP from the adhesive during application.

CURE

The polyimide resin in 71-1 is solvent borne. Observe recommended cure conditions to remove the solvent before cure. The initial cure stage will drive off the solvent, while the subsequent 275ºC stage will imidize (cure) the resin. An extended 150ºC dry cycle may be employed if the recommended 30 minute cycle produces an unacceptable amount of voiding.

AVAILABILITY

ABLEBOND die attach adhesives are packaged in syringes or jars per customer specification. Typical syringe sizes range from 1cc to 30cc. Jars are available in sizes ranging from 1 ounce to 1 pound.

STORAGE LIFE

The properties of silver filled semiconductor paste die attach adhesives may change upon storage at room temperature. Over time, silver settling viscosity increases may occur. We recommend that syringes be stored frozen in a vertical position. This adhesive may be stored up to one year at -40ºC. Alternate storage conditions may be used; however, the storage life will decrease with higher storage temperatures.

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Note

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