

STAYSTIK® 181

Silver Filled Electrically Conductive Paste

DESCRIPTION

These thermoplastic adhesive pastes are designed for use in a variety of electronic applications. They are characterized by their excellent bonding. Some applications of these pastes include die and/or substrate attach in hybrid or Multi-Chip Modules (MCMs). The unique reworkability of this thermoplastic adhesive system offers many advantages in applications traditionally ill-suited to thermoset adhesives.

Fully Polymerized Resin – No “Cure”
Easily Reworkable – No Outgassing
Bonds in Seconds – Not in Hours or Minutes
Low Modulus Reduces Stress to Bonded Materials

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

TYPICAL PROPERTIES

Typical Properties	181	282	383	783
Filler Material	Silver	AlN	None	Alumina
Attach Temperature Range	160 to 275 °C	160 to 275 °C	160 to 275 °C	160 to 275 °C
Continuous Use Range	-65 to 150 °C	-65 to 150 °C	-65 to 150 °C	-65 to 150 °C
Max Excursion Temperature	300 °C	300 °C	300 °C	300 °C
Thermal Conductivity (W/M ² K)	≥ 3.0	≥ 1.0	≤ 0.25	≤ 0.6
Volume Resistivity (Ohm – cm)	≤ 5x10 ⁻⁴	≥ 1x10 ⁺⁹	≥ 1x10 ⁺⁹	≥ 1x10 ⁺⁹
Die Adhesion @25 °C	≥ 2500 psi	≥ 3500 psi	≥ 2500 psi	<u>NE</u>
Elastic Modulus (psi)	≥ 350,000	≥ 350,000	> 350,000	≥ 350,000

Typical Properties	181	282	383	783
Viscosity (Brookfield RTV @ 2.5 RPM)	160 to 300 kcps	44 to 445 kcps	59.5 to 110.5 kcps	123.5 to 175.2 kcps
Glass Transition Temp. (T _g)	≥ 98 °C	≥ 98 °C	≥ 98 °C	≥ 98 °C

PASTE CHARACTERISTICS

These products are supplied at a rheology suitable for screen printing. Use a stainless steel screen with a 60 to 105 mesh count and a backside emulsion build-up of 0.5 to 6.0 mils. After screening, the paste can be dried at 120 to 150°C for 15 to 30 minutes.

After drying, substrates can be stored for long periods of time at room temperature in ambient conditions (although dry box storage is recommended) without altering the properties of the adhesive. For silver filled paste expect a wet to dried thickness reduction in the Z-axis of approximately 50%. For Aluminum nitride, aluminum oxide, filled and non-filled pastes, expect a wet to dried thickness reduction of approximately 60 to 70%.

Deposition via syringe is also possible. Standard syringe sizes available are 3cc, 5cc, 10cc, and 30cc. Equipment best suited to dispensing these materials incorporates a mechanical or vacuum pull-back, anti-tailing feature.

BONDING

Bond pre-dried deposits at 160 to 275 °C. Pressure required is dependent on temperature and dwell time at temperature. Lower temperatures require higher pressures. Higher temperatures require little or no pressure. It is critical that both interfaces to be bonded reach the required temperature. Typical pressures for most applications range from 1 to 10 psi. Time required to form a bond will depend on the application. Bonds can be formed in seconds under optimum conditions. Typical recommended bond times are 10 to 60 seconds. Equipment used for heating can range in sophistication from a hot plate to a box oven or continuous feed belt furnace.

It is possible to perform "zero pressure" attachment of small components and die by placing them directly in the wet deposited material. It is necessary to control the heating ramp rate in order to slowly volatilize the solvent system. Typically, the ramp rate should be 10 °C per minute or less with a peak temperature of 250 °C and a dwell time at the peak temperature of at least 10 minutes.

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.**

STORAGE

Material should be stored at (25 °C). Do not freeze. Shelf life of sealed, unopened jars is one year. If the material is kept beyond the recommended shelf life, it is not necessarily unusable. But, a quality control should be performed on the properties relevant to the application.

CONTACT INFORMATION

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

www.macdermidalpha.com

<p>North America 3950 Johns Creek Ct, Suite 300 Suwanee, GA 30024 USA 908.791.2300</p>	<p>Europe Unit 2, Genesis Business Park Albert Drive Woking, Surrey, GU21 5RW, UK 44.01483.758400</p>	<p>Asia 14 Joo Koon Crescent, Singapore 629014 65.6430.0700</p>
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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

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