

CoolTherm™ MD-140 Conductive Adhesive

Description

LORD CoolTherm™ MD-140 silver-filled conductive adhesive offers excellent thermal conductivity. It is designed for use in thermally demanding die attach applications such as microprocessor, power semiconductor and VLSI assembly. CoolTherm MD-140 adhesive is low stress, making it suitable for use with large die.

CoolTherm MD-140 adhesive provides excellent adhesion to a wide variety of surfaces including silicon, silver, gold and copper. Low ionic levels make it ideally suited for demanding semiconductor and hybrid assembly applications.

Features and Benefits

Convenient – provides a working life of up to 72 hours after loading a syringe into the dispensing equipment at room temperature.

Excellent Dispensability – allows high-speed, accurate syringe dispensing of fine dots or lines; can be used with time/pressure, positive displacement or linear dispense heads.

Fast Cure – rapidly cures at 150°C and 180°C.

Typical Properties*

Uncured

Appearance	Silver Paste
Viscosity, cps @ 25°C Brookfield CP52, 10 rpm	36,000
Specific Gravity	3.7

Cured

Volume Resistivity, ohm-cm @ 25°C	0.9×10^{-4}
Thermal Conductivity, W/mK	12
Coefficient of Linear Thermal Expansion, ppm/°C	
alpha 1	60
alpha 2	190
Glass Transition Temperature (T _g), °C by DMA	82
Die Shear Strength, psi @ 25°C	7000
Storage Modulus, MPa @ 25°C	3300
Extractable Ionic Contaminants, ppm	
Chloride	<50
Sodium	<5
Potassium	<1

*Data is typical and not to be used for specification purposes.
Cure for analysis 2 hours at 150°C.

LORD TECHNICAL DATA

Application

Applying – Before using, allow adhesive to be warmed to room temperature (ideally 20-25°C). Thaw adhesive by placing the syringe in a vertical (upright) position with dispense tip facing downward in an ambient environment. Consult handling instructions** for specific guidelines.

Mount syringe onto the dispensing equipment that has been thoroughly cleaned and purge adhesive through the system until an unbroken flow of adhesive is extruded. The system is now ready to begin dispensing.

Curing – Allow adhesive to cure for 5-10 minutes at 120°C, for 3-5 minutes at 150°C, or for 1-3 minutes at 180°C. This time-at-temperature profile refers to the time the material should be allowed to cure once it reaches the target temperature. Allowance should be made for oven ramp rates, parts with large thermal mass and other circumstances that may delay material reaching the target temperature.

Cleanup – Clean equipment and tools prior to adhesive cure with isopropyl alcohol or similar solvents.

Shelf Life/Storage

Shelf life is six months from date of manufacture when stored at -40°C in original, unopened container. Syringe must be maintained at -40°C in a vertical (upright) position with the dispense tip facing down. Do not store syringe on its side (horizontally).

This material is shipped and stored frozen. Consult handling instructions** for thawing.

Cautionary Information

Before using this or any LORD product, refer to the Safety Data Sheet (SDS) and label for safe use and handling instructions.

For industrial/commercial use only. Must be applied by trained personnel only. Not to be used in household applications. Not for consumer use.

***Handling instructions are available on LORD.com.*

Values stated in this technical data sheet represent typical values as not all tests are run on each lot of material produced. For formalized product specifications for specific product end uses, contact the Customer Support Center.

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