

CoolTherm™ MG-121 Thermally Conductive Gel

Description

LORD CoolTherm™ MG-121 thermally conductive gel is a one-component, silicone interface material that exhibits very low thermal resistance properties compared to other thermal interface materials currently available. It is formulated to provide good HAST resistance.

CoolTherm MG-121 gel is designed to provide efficient heat transfer from flip chip microprocessors, PPGAs, BGAs, microBGAs, DSP chips, graphic accelerator chips, and other high wattage electronic components. The gel is formulated to inhibit bleed, separation and pump-out that are typically observed in many thermal interface materials.

Features and Benefits

Thin Bondlines – achieves thin bondlines of 1-2 mils, minimizing the thermal pathway and maximizing heat flow.

HAST Resistance – enhances reliability of non-hermetic packaged devices in high humidity environments.

High Thermal Conductivity – provides high thermal conductivity for applications where superior heat dissipation is required.

Low Thermal Resistance – provides minimal thermal resistance due to low viscosity and good wetting.

High Reliability – provides excellent resistance to moisture and temperature cycling; resists pump-out and cracking.

Reworkability – low modulus at elevated temperatures allows material to be repaired.

Typical Properties*

Uncured

Appearance	Gray Paste
Viscosity, cps @ 25°C	
20 rpm	60,500
10 rpm	75,000
Specific Gravity	2.56
Gel Time, min @ 100°C	8
Working Life, hr @ 25°C	8

Cured

Volume Resistivity, ohm-cm @ 25°C	8×10^{13}
Thermal Conductivity, W/mK	2.3
Coefficient of Linear Thermal Expansion, ppm/°C alpha 2	232
Glass Transition Temperature, °C by TMA	-121
Storage Modulus, Pa @ 25°C	30,000

*Data is typical and not to be used for specification purposes.

LORD TECHNICAL DATA

Application

Applying – Before use with dispensing equipment, allow gel to be warmed to room temperature (ideally 20-25°C). Thaw gel by placing 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 gel through the system until an unbroken flow of gel is extruded. The system is now ready to begin dispensing.

Curing – Allow gel to cure for 2 hours at 100°C, for 60 minutes at 125°C, or for 30 minutes at 150°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.

Shelf Life/Storage

Shelf life is six months from date of manufacture when stored at -30°C in original, unopened container. Syringe must be maintained at -30°C in a vertical (upright) position with the dispense tip facing down. Do not store syringe on its side (horizontally). Material crystallizes at -40°C; avoid storing material at -40°C or below.

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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