

CoolTherm™ SC-305 Thermally Conductive Silicone Encapsulant

Description

LORD CoolTherm™ SC-305 thermally conductive silicone encapsulant is a two-component system designed for encapsulation applications. It is suited for a variety of electronics applications where high heat dissipation is required. CoolTherm SC-305 encapsulant can be either room temperature cured or heat cured for maximum adhesion.

Features and Benefits

Low Stress – exhibits low shrinkage and stress on components as it cures.

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

Durable – composed of an addition-curing polymer that will not depolymerize when heated in confined spaces.

Environmentally Resistant – provides excellent thermal shock resistance and flame retardancy.

Application

Mixing – Thoroughly mix each component prior to combining resin and hardener. Mix CoolTherm SC-305 resin with CoolTherm SC-305 hardener at a 1:1 ratio, by weight or volume, until uniform in color. Automatic meter/mix/dispense equipment may be used for high volume production.

Unless a closed-chamber mechanical mixer is used, air may be introduced into the encapsulant system either during mixing or when catalyzing the mixture. Electrical properties of the silicone encapsulant are best when air bubbles and voids are minimized. Therefore, in extremely high voltage or other critical applications, vacuuming may be appropriate.

Applying – Apply silicone encapsulant using handheld cartridges or automatic meter/mix/dispense equipment.

Avoid applying encapsulant to surfaces that contain cure inhibiting ingredients, such as amines, sulfur, or tin salts. If bonding surface is in question, apply a test patch of encapsulant to the surface and allow it to set for the normal cure time.

Typical Properties*

	SC-305 Resin	SC-305 Hardener	Mixed
Appearance	White Liquid	Dark Gray Liquid	Gray Liquid
Viscosity, cps @ 25°C	3500	3500	3500
Specific Gravity	1.50	1.50	1.50
Gel Time, min @ 60°C	–	–	10
Working Life, min @ 25°C	–	–	30

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

LORD TECHNICAL DATA

Typical Cured Properties**

Volume Resistivity, ohm-cm @ 25°C ASTM D 257	3.3 x 10 ¹⁴
Thermal Conductivity, W/mk Laser Nano Flash Method	0.7
Coefficient of Linear Thermal Expansion, ppm/°C	200
Glass Transition Temperature (Tg), °C	> -100
Hardness Shore A, ASTM D 2240	60
Tensile Strength, psi	215
Elongation at Break, % ASTM D 412	50
Moisture Absorption, %	<0.5
Dielectric Strength, V/mil	500
Dielectric Constant @ 25°C 1 MHz, ASTM D 150	3.2
Dissipation Factor, % @ 25°C 1 MHz, ASTM D 150	0.008

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Cure schedule of 24 hours at 25°C plus 2 hours at 60°C.

Curing – Allow encapsulant to cure for 24 hours at room temperature (25°C), for 30 minutes at 60°C, or for 10 minutes at 100°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 of each component is nine months from date of manufacture when stored at 25°C in original, unopened container.

CoolTherm SC-305 encapsulant evolves minute quantities of hydrogen gas. Do not repackage or store material in unvented containers. Adequately ventilate work area to prevent the accumulation of gas.

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.

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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