CoolTherm® SC-324 Thermally Conductive Silicone Encapsulant

Description

LORD CoolTherm® SC-324 thermally conductive silicone encapsulant is a two-component system designed to provide excellent thermal conductivity for electrical/electronic encapsulating applications, while retaining desirable properties associated with silicones.

Features and Benefits

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

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

Low Viscosity – maintains low viscosity for ease of component encapsulation compared to other highly thermally conductive materials.

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-324 resin with CoolTherm SC-324 hardener at a 1:1 ratio, by weight or volume. 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-324 Resin	SC-324 Hardener	Mixed
Appearance	Pink Liquid	White Liquid	Light Pink Liquid
Viscosity, cP @ 25°C	35,000	35,000	30,000
Specific Gravity	3.2	3.2	3.2
Working Life, min @ 25°C	–	–	30

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

LORD

Typical Cured Properties**

Thermal Conductivity, W/m·K Hot Disc Transient Method	4.0
Coefficient of Linear Thermal Expansion, ppm/°C ASTM D 2240	105
Hardness Shore A, ASTM D 2240	50
Tensile Strength, MPa (psi) ASTM D 412	0.82 (119)
Elongation at Break, % ASTM D 412	10
Moisture Absorption, % ASTM D 570-81	<0.1
Volume Resistivity, ohm-cm @ 25°C ASTM D 257	>2 x 10^{13}
Dielectric Strength, kV/mm (V/mil)	7.4 (188)
Dielectric Constant @ 25°C 1 MHz, ASTM D 150	4.5
Dissipation Factor, % @ 25°C 1 MHz, ASTM D 150	<1
Extractable Ionic Contaminants, ppm	
Chloride	<10
Sodium	<10
Potassium	<10
Ammonium	<10
Bromide	<10
Sulfate	<10

** Data is typical and not to be used for specification purposes.
Cure schedule of 60 minutes at 125°C.

Curing – Allow encapsulant to cure for 24 hours at room temperature (25°C) or for 60 minutes at 125°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 six months when stored at 25°C in original, unopened container.

CoolTherm SC-324 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.

LORD provides valuable expertise in adhesives and coatings, vibration and motion control, and magnetically responsive technologies. Our people work in collaboration with our customers to help them increase the value of their products. Innovative and responsive in an ever-changing marketplace, we are focused on providing solutions for our customers worldwide.

LORD Corporation
World Headquarters
111 Lord Drive
Cary, NC 27511-7923
USA

Customer Support Center (in United States & Canada)
+1 877 ASK LORD (275 5673)

www.lord.com

For a listing of our worldwide locations, visit LORD.com.

LORD