

CoolTherm™ SC-320 Thermally Conductive Silicone Encapsulant

Description

LORD CoolTherm™ SC-320 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.

UL Rated – provides excellent flame retardancy; UL 94 V-0 certified.

Application

Mixing – Thoroughly mix each component prior to combining resin and hardener. Mix CoolTherm SC-320 resin with CoolTherm SC-320 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-320 Resin	SC-320 Hardener	Mixed
Appearance	Pink Liquid	White Liquid	Light Pink Liquid
Viscosity, cps @ 25°C	25,000	20,000	22,000
Specific Gravity	3.1	3.1	3.1
Gel Time, min @ 121°C	–	–	2-5
Working Life, min @ 25°C	–	–	40

*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	>1 x 10 ¹⁴
Thermal Conductivity, W/mk Hot Disc Transient Method	3.2
Coefficient of Linear Thermal Expansion, ppm/°C ASTM E 831	110
Hardness Shore A, ASTM D 2240	60
Tensile Strength, psi ASTM D 412	313
Elongation at Break, % ASTM D 412	50
Moisture Absorption, % ASTM D 570-81	<0.1
Dielectric Constant @ 25°C 1 MHz, ASTM D 150	6
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 nine months from date of manufacture when stored at 25°C in original, unopened container.

CoolTherm SC-320 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.

Information provided herein is based upon tests believed to be reliable. In as much as LORD Corporation has no control over the manner in which others may use this information, it does not guarantee the results to be obtained. In addition, LORD Corporation does not guarantee the performance of the product or the results obtained from the use of the product or this information where the product has been repackaged by any third party, including but not limited to any product end-user. Nor does the company make any express or implied warranty of merchantability or fitness for a particular purpose concerning the effects or results of such use.

CoolTherm and "Ask Us How" are trademarks of LORD Corporation or one of its subsidiaries.

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 ... Ask Us How.

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.