

Thermoset™ SC-320 Thermally Conductive Silicone Encapsulant

Description

LORD Thermoset™ 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 thermal conductive materials.

Environmentally Resistant – provides excellent thermal shock resistance.

UL Rated – meets requirements of UL 94 V-O standard; provides excellent flame retardancy.

Application

Mixing – Thoroughly stir each component prior to mixing together. Mix Thermoset SC-320 resin with Thermoset 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 will 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 Thermoset SC-320 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 Thermoset SC-320 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 Paste	White Paste	Light Pink Paste
Viscosity, cps @ 25°C	25,000	20,000	–
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 C 864	110
Hardness Shore A, ASTM D 2240	60
Tensile Strength, MPa ASTM D 412	2.1
Elongation at Break, % ASTM D 412	50
Moisture Absorption, % ASTM D 570-81	<0.1
Dielectric Constant @ 25°C 1 MHz, ASTM D 150	<4
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

**Cure schedule of 60 minutes at 125°C.

Curing – Allow encapsulant to cure for 60 minutes at 125°C. This time-at-temperature profile refers to the time the bondline 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 bondline actually 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.

Thermoset 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 Material Safety Data Sheet (MSDS) 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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