

Thermoset SC-420 Thermally Conductive Silicone Encapsulant

Description

LORD Thermoset SC-420 thermally conductive silicone encapsulant is a two-component system designed to provide excellent thermal conductivity and flexibility 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.

Application

Mixing – Thoroughly stir each component prior to mixing together. Mix Thermoset SC-420 resin with Thermoset SC-420 hardener at a 2:1 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-420 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-420 encapsulant to the surface and allow it to set for the normal cure time.

Typical Properties*

	SC-420 Resin	SC-420 Hardener	Mixed
Appearance	Black Paste	White Paste	Gray Paste
Viscosity, cps @ 25°C	63,000	27,000	50,000
Specific Gravity	3.18	3.18	3.18
Gel Time, min @ 25°C	–	–	70
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	1 x 10 ¹⁴
Thermal Conductivity, W/mk Hot Disc Transient Method	3.2
Coefficient of Linear Thermal Expansion, ppm/°C ASTM C 864	100
Hardness Shore A, ASTM D 2240	20
Tensile Strength, MPa ASTM D 412	1.0
Elongation at Break, % ASTM D 412	100
Moisture Absorption, % ASTM D 570-81	< 0.5
Dielectric Constant @ 25°C 1 MHz, ASTM D 150	< 5
Dissipation Factor, % @ 25°C 1 MHz, ASTM D 150	< 1

** 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 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 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-420 hardener evolves minute quantities of hydrogen gas. Do not repack 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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