CoolTherm™ SC-252 Thermally Conductive Silicone Encapsulant

Description

LORD CoolTherm™ SC-252 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. CoolTherm SC-252 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.

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

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

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

Environmentally Resistant – provides excellent thermal shock resistance.

Application

Mixing – Thoroughly mix each component prior to combining resin and hardener. Mix CoolTherm SC-252 resin with CoolTherm SC-252 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.

Typical Properties*

	SC-252 Resin	SC-252 Hardener	Mixed
Appearance	Gray Liquid	White Liquid	Gray Liquid
Viscosity, cps @ 25°C $10s^{-1}$ Shear Rate	18,000	17,000	18,000
Specific Gravity	2.92	2.95	2.93
Gel Time, min @ 121°C	–	–	2
Working Life, min @ 25°C	–	–	45

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

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

Avoid applying CoolTherm SC-252 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.

Curing – Allow encapsulant to cure for 24 hours at room temperature (25°C), or for 45 minutes at 85°C, or for 30 minutes at 120°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 from date of manufacture when stored at 25°C in original, unopened container.

CoolTherm SC-252 hardener 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.

Typical Cured Properties**

Volume Resistivity, ohm-cm @ 25°C ASTM D 257	>1 x 10^{14}
Thermal Conductivity, W/mk Hot Disc Transient Method	2.5
Hardness Shore A, ASTM D 2240	60
Tensile Strength, psi	145
Dielectric Constant @ 25°C 1 MHz, ASTM D 150	5
Dissipation Factor, % @ 25°C 1 MHz, ASTM D 150	0.007

** Data is typical and not to be used for specification purposes. Cure schedule of 45 minutes at 85°C.

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.

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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.

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