COOLTHERM® SC-320 SLW THERMALLY CONDUCTIVE SILICONE ENCAPSULANT

Technical Data Sheet

CoolTherm® SC-320 SLW 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

Longer Working Life: CoolTherm SC-320 SLW (SLoW) hardener permits longer open time for processing.

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 SLW 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 (only if prepared and used within the same day) 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.

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 reaching the target temperature.

Typical Properties*

	SC-320 Resin	SC-320 SLW Hardener	Mixed
Appearance	Pink Liquid	White Liquid	Light Pink Liquid
Viscosity, cP @ 25°C	25,000	20,000	22,500
Specific Gravity	3.1	3.1	3.1
Gel Time, minutes @ 120°C	–	–	20
Working Life, hours @ 25°C	–	–	3

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

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Typical Cured Properties**

Property	Value
Thermal Conductivity, W/m·K Hot Disc Transient Method, ISO 22007-2	3.2
Coefficient of Linear Thermal Expansion, ppm/°C ASTM D 864	110
Hardness Shore A, ASTM D 2240	24
Tensile Strength, MPa (psi) ASTM D 412	0.25 (36)
Elongation at Break, % ASTM D 412	40
Moisture Absorption, % ASTM D 570-81	<0.01
Volume Resistivity, ohm-cm @ 25°C ASTM D 257	4×10^{13}
Dielectric Constant @ 25°C 60 Hz, ASTM D 150	6.4
Dissipation Factor, % @ 25°C 60 Hz, ASTM D 150	<1
Extractable Ionic Contaminants, ppm	
Chloride	<10
Sodium	<10
Potassium	<10
Ammonium	<10
Bromide	<10
Sulfate	<10

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Cure schedule of 60 minutes at 125°C.

Shelf Life/Storage

Shelf life of each component is nine months when stored at 25°C in original, unopened container.

CoolTherm SC-320 SLW 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 Parker 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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