COOLTHERM® SC-324 XLW THERMALLY CONDUCTIVE SILICONE ENCAPSULANT

Technical Data Sheet

CoolTherm® SC-324 XLW 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-324 XLW (eXtra Long Working life) 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-324 resin with CoolTherm SC-324 XLW 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.

Curing: Allow encapsulant to cure for 2 hours 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-324 Resin	SC-324 XLW Hardener	Mixed
Appearance	Pink Liquid	White Liquid	Light Pink Liquid
Viscosity, cP @ 77°F (25°C)	35,000	30,000	27,000
Specific Gravity	3.25	3.25	3.25
Working Life, hours @ 25°C	–	–	6

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

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Typical Cured Properties*

Thermal Conductivity, W/m·K Hot Disc Transient Method, ISO 22007-2	4.0
Coefficient of Linear Thermal Expansion, ppm/°C ASTM D 2240	65
Hardness Shore A, ASTM D 2240	20
Tensile Strength, MPa (psi) ASTM D 412	0.31 (45)
Elongation at Break, % ASTM D 412	15
Moisture Absorption, % ASTM D 570-81	< 0.1
Volume Resistivity, ohm-cm @ 25°C ASTM D 257	$>2 \times 10^{13}$
Dielectric Strength, kV/mm (V/mil) ASTM D 149	7.4 (188)
Dielectric Constant @ 25°C 1 MHz, ASTM D 150	5.5
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

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Shelf Life/Storage

Shelf life is six months for CoolTherm SC-324 resin and three months for CoolTherm SC-324 XLW hardener when stored at 5-30°C in original, unopened container.

CoolTherm SC-324 XLW 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.

Verify Volatile Organic Compounds (VOC) requirements with the applicable local, regional and state air quality authorities before importing, selling or using this product. VOC rules, thresholds and reporting obligations vary by jurisdiction; compliance is the responsibility of the importer/seller/owner.

For industrial/commercial use only. Must be applied by trained personnel only. Not to be used in household applications. Not for consumer use.

Parker Lord
Engineered Materials Group
111 LORD Drive
Cary, NC 27511-7923
USA
phone +1 877 275-5673
www.parker.com/APS

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