

COOLTHERM® SC-6703 THERMALLY CONDUCTIVE SILICONE ENCAPSULANT

Technical Data Sheet

CoolTherm® SC-6703 thermally conductive silicone encapsulant is a two-component system designed to provide thermal conductivity for encapsulating densely packed power units.

Features and Benefits

Low Stress: exhibits low shrinkage and stress on components as it cures.

Environmentally Resistant: provides excellent thermal shock resistance.

UL Rated: meets requirements of UL 94 V-0 standard; provides excellent flame retardancy.

Application

Mixing: Thoroughly mix each component prior to combining resin and hardener. Mix CoolTherm SC-6703 resin with CoolTherm SC-6703 hardener at a 1:1 ratio, by weight. 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 automatic meter/mix/dispense equipment.

Avoid applying CoolTherm SC-6703 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 CoolTherm SC-6703 encapsulant to the surface and allow it to set for the normal cure time.

Curing: Allow encapsulant to cure for 4 hours at 65°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 reaching the target temperature.

Shelf Life/Storage

Shelf life of each component is six months when stored at 25°C in original, unopened container. The material must be periodically rotated within its container to maintain maximum shelf life. Settling will occur if not mixed.

Typical Properties*

	SC-6703 Resin	SC-6703 Hardener	Mixed
Appearance	SC-6703 BLK R: Black Liquid SC-6703 WHT R: White Liquid	White Liquid	SC-6703 BLK R/SC-6703 H: Light Gray Liquid SC-6703 WHT R/SC-6703 H: White Liquid
Viscosity, cP @ 25°C	15,000	6000	8000
Specific Gravity ASTM D 1475	2.09	1.91	2.0
Gel Time, minutes @ 66°C	–	–	6
Working Life, hours @ 25°C	–	–	1-2

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

Typical Cured Properties**

Thermal Conductivity, W/m·K Hot Disc Transient Method, ISO 22007-2	0.8
Coefficient of Linear Thermal Expansion, ppm/°C ASTM C 864	220
Hardness Shore A	60
Tensile Strength, MPa (psi) ASTM D 412	1.38 (200)
Elongation at Break, % ASTM D 412	80
Volume Resistivity, ohm-cm @ 25°C ASTM D 257	1 x 10 ¹⁴
Dielectric Strength, kV/mm (V/mil) ASTM D 149	19.7 (500)
Dielectric Constant @ 25°C 1 MHz, ASTM D 150	4.25
Dissipation Factor, % @ 25°C 1 MHz, ASTM D 150	0.02

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Cure schedule of 1-2 hours at 65°C.

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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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