

CoolTherm® SC-324 Thermally Conductive Silicone Encapsulant

Technical Data Sheet

CoolTherm® SC-324 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:

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 and flame retardancy.

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 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 24 hours at room temperature (25°C) or 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.

Shelf Life/Storage:

Shelf life of each component is six months when stored at 5-30°C in original, unopened container.

CoolTherm SC-324 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.

Typical Properties*

	SC-324 Resin	SC-324 Hardener	Mixed
Appearance	Pink Liquid	White Liquid	Light Pink Liquid
Viscosity, cP @ 25°C	37,000	43,000	30,000
Specific Gravity	3.25	3.25	3.25
Working Life, minutes @ 25°C	–	–	30

*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	4.0
Coefficient of Linear Thermal Expansion, ppm/°C ASTM D 2240	105
Hardness*** Shore A, ASTM D 2240	50
Tensile Strength, MPa (psi) ASTM D 412	0.82 (119)
Elongation at Break, % ASTM D 412	10
Moisture Absorption, % ASTM D 570-81	< 0.1
Volume Resistivity, ohm-cm @ 25°C ASTM D 257	>2 x 10 ¹³
Dielectric Strength, kV/mm (V/mil) ASTM D 149	7.4 (188)
Dielectric Constant @ 25°C 1 MHz, ASTM D 150	4.5
Dissipation Factor @ 25°C 1 MHz, ASTM D 150	< 0.01
Extractable Ionic Contaminants, ppm	
Chloride	< 10
Sodium	< 10
Potassium	< 10
Ammonium	< 10
Bromide	< 10
Sulfate	< 10

**Data is typical and not to be used for specification purposes.
Cure schedule of 60 minutes at 125°C.
***Hardness value taken at peak unless otherwise reported.

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.

Values stated in this document 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.

Information provided herein is based upon tests believed to be reliable. In as much as Parker Lord has no control over the manner in which others may use this information, it does not guarantee the results to be obtained. In addition, Parker Lord does not guarantee the performance of the product or the results obtained from the use of the product or this information where the product has been repackaged by any third party, including but not limited to any product end-user. Nor does the company make any express or implied warranty of merchantability or fitness for a particular purpose concerning the effects or results of such use.

WARNING — USER RESPONSIBILITY. FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from Parker-Hannifin Corporation, its subsidiaries and authorized distributors provide product or system options for further investigation by users having technical expertise.

The user, through its own analysis and testing, is solely responsible for making the final selection of the system and components and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application, follow applicable industry standards, and follow the information concerning the product in the current product catalog and in any other materials provided from Parker or its subsidiaries or authorized distributors.

To the extent that Parker or its subsidiaries or authorized distributors provide component or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the components or systems.



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