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Technical Data Sheet

DOWSIL™ SH 850 LTV

Two-part, 1-to-1 mix, UL94 V-0, flowable silicone encapsulant

Features & Benefits

- 1-to-1 mix ratio
- Flowable
- UL94 V-0

Composition

- Two-part
- Polydimethylsiloxane encapsulants

Applications

DOWSIL™ SH 850 LTV is suitable for applications such as:

- Power supplies
- Invertor

Typical Properties

Specification Writers: These values are not intended for use in preparing specifications.

Test	Property	Unit	Result
CTM[1]0176	One or Two-part		Two-part
CTM0176	Color A/B		Red/white
CTM0050	Viscosity[2] (Part A)	mPa-sec	3900
CTM0050	Viscosity[2] (Part B)	mPa-sec	2100
CTM0050	Viscosity[2] (Mixed)	mPa-sec	3500
CTM0055	Working Time at 25°C (Pot Life[3,4])	hour	6
	Heat Cure Time at 100°C	minutes	15
CTM0022	Density[5] (Cured)	g/cm^3	1.53
CTM0099	Hardness (JIS Type A)[6]		68
CTM0137A	Tensile Strength[7]	MPa	3.6

1. CTM: Corporate Test Method, copies of CTM's are available on request.
2. Compliant with ASTM D 1084 (ASTM: American Society for Testing and Materials).
3. Time required for viscosity to double after Parts A and B are mixed at room temperature.
4. Compliant with ASTM D 1824.
5. Compliant with ASTM D 792.
6. Compliant with JIS K 6253 (JIS: Japanese Industrial Standards).
7. Compliant with JIS K 6301.

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Typical Properties (Cont.)

Test	Property	Unit	Result
CTM0137A	Elongation[6]	%	100
	Dielectric Strength[8]	kV/mm	29
	Volume Resistivity[8]	ohm*cm	1E+14
	Dielectric Constant[8] at 1 MHz		3.2
	Dissipation Factor[8] at 1 MHz		1E-03
	UL Flammability Classification		UL94 V-0
	Shelf life at 25°C	months	12

8. Compliant with JIS K 6249.

Description

Dow silicone 1-to-1 encapsulants are supplied as two-part liquid component. When liquid components are thoroughly mixed, the mixture cures to a flexible elastomer, which is well-suited for the protection of electrical/PCB systems assembly applications. Dow silicone encapsulants cure without exotherm at a constant rate regardless of sectional thickness or degree of confinement.

Mixing and De-airing

These products are supplied in a 1-to-1 mix ratio, which is very robust in manufacturing environments and allows for some process and dispense equipment variation. If de-airing is required to reduce voids in the cured elastomer, consider a vacuum de-air schedule of > 8 inches Hg (or a residual pressure of 10–0 mm of Hg) for 10 minutes or until bubbling subsides.

Processing/ Curing

Thoroughly mixed Dow silicone encapsulant may be poured/dispensed directly into the container in which it is to be cured. Care should be taken to minimize air entrapment. When practical, pouring/dispensing should be done under vacuum, particularly if the component being potted or encapsulated has many small voids. If this technique cannot be used, the unit should be evacuated after the silicone encapsulant has been poured/dispensed. Dow silicone encapsulants may be either room temperature (25°C/77°F) or heat cured. Room temperature cure encapsulants may also be heat accelerated for faster cure.

Pot Life and Cure Rate

Cure reaction begins with the mixing process. Initially, cure is evidenced by a gradual increase in viscosity, followed by gelation and conversion to a solid elastomer. Pot life is defined as the time required for viscosity to double after Parts A and B (base and curing agent) are mixed and is highly temperature and application dependent.

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Useful Temperature Ranges

For most uses, silicone elastomers should be operational over a temperature range of -45 to 150°C (-49 to 302°F) for long periods of time. However, at both the low and high temperature ends of the spectrum, behavior of the materials and performance in particular applications can become more complex and require additional considerations and should be adequately tested for the particular end use environment. For low-temperature performance, thermal cycling to conditions such as -55°C (-67°F) may be possible, but performance should be verified for your parts or assemblies. Factors that may influence performance are configuration and stress sensitivity of components, cooling rates and hold times, and prior temperature history. At the high-temperature end, the durability of the cured silicone elastomer is time and temperature dependent. As expected, the higher the temperature, the shorter the time the material will remain useable.

Compatibility

Certain materials, chemicals, curing agents and plasticizers can inhibit the cure of addition cure gels. Most notable of these include: organotin and other organometallic compounds, silicone rubber containing organotin catalyst, sulfur, polysulfides, polysulfones or other sulfur containing materials, unsaturated hydrocarbon plasticizers, and some solder flux residues. If a substrate or material is questionable with respect to potentially causing inhibition of cure, it is recommended that a small-scale compatibility test be run to ascertain suitability in a given application. The presence of liquid or uncured product at the interface between the questionable substrate and the cured gel indicates incompatibility and inhibition of cure.

Repairability

In the manufacture of electrical devices PCB systems assemblies, it is often desirable to salvage or reclaim damaged or defective units. With most non-silicone rigid potting/encapsulating materials, removal or entry is difficult or impossible without causing excessive damage to internal circuitry. Dow silicone encapsulants can be selectively removed with relative ease, depending on the chosen remove method and technique and repairs or changes accomplished, and the repaired area repotted in place with additional product. To remove silicone elastomers, simply cut with a sharp blade or knife and tear and remove unwanted material from the area to be repaired.

Handling Precautions

PRODUCT SAFETY INFORMATION REQUIRED FOR SAFE USE IS NOT INCLUDED IN THIS DOCUMENT. BEFORE HANDLING, READ PRODUCT AND SAFETY DATA SHEETS AND CONTAINER LABELS FOR SAFE USE, PHYSICAL AND HEALTH HAZARD INFORMATION. THE SAFETY DATA SHEET IS AVAILABLE ON THE DOW WEBSITE AT DOW.COM, OR FROM YOUR DOW SALES APPLICATION ENGINEER, OR DISTRIBUTOR, OR BY CALLING DOW CUSTOMER SERVICE.

Usable Life and Storage

Shelf life is indicated by the “Use Before” date found on the product label. Refer to the product label for storage temperature requirements. Special precautions must be taken to prevent moisture from contacting these materials. Containers should be kept tightly closed and head or air space minimized. Partially filled containers should be purged with dry air or other gases, such as nitrogen. Exposure to moisture could reduce adhesion and cause bubbles to form.

Packaging Information

Multiple packaging sizes are available for this product.

Limitations

This product is neither tested nor represented as suitable for medical or pharmaceutical uses.

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Health and Environmental Information

To support customers in their product safety needs, Dow has an extensive Product Stewardship organization and a team of product safety and regulatory compliance specialists available in each area.

For further information, please see our website, dow.com or consult your local Dow representative.

Disposal Considerations

Dispose in accordance with all local, state (provincial) and federal regulations. Empty containers may contain hazardous residues. This material and its container must be disposed in a safe and legal manner.

It is the user's responsibility to verify that treatment and disposal procedures comply with local, state (provincial) and federal regulations. Contact your Dow Technical Representative for more information.

Product Stewardship

Dow has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with Dow products - from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

Customer Notice

Dow strongly encourages its customers to review both their manufacturing processes and their applications of Dow products from the standpoint of human health and environmental quality to ensure that Dow products are not used in ways for which they are not intended or tested. Dow personnel are available to answer your questions and to provide reasonable technical support. Dow product literature, including safety data sheets, should be consulted prior to use of Dow products. Current safety data sheets are available from Dow.

How Can We Help You Today?

Tell us about your performance, design, and manufacturing challenges. Let us put our silicon-based materials experience, application knowledge, and processing experience to work for you.

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To discuss how we could work together to address your specific needs, go to **dow.com** for a contact close to your location. Dow has customer service teams, science and technology centers, application support teams, sales offices, and manufacturing sites around the globe.

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