Novagard® 800 Series 800-505FC UV Cure Silicone Specification Data

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DESCRIPTION

Novagard 800 Series 800-505FC is a UV-curable silicone conformal coating, pottant, or sealant. It has a secondary, neutral alkoxy moisture cure for enhanced adhesion and shadow cure. This non-corrosive, single-component silicone will cure into a solid elastomer in seconds upon exposure to ultraviolet (UV) light.

Our fast cure (FC) version has a secondary moisture cure that cures in roughly 30 minutes versus the 24 to 48 hours for our standard version and is dependent on ambient conditions.

APPLICATIONS

- Printed circuit/wiring boards
- Flexible hybrid electronics
- Rigid electronics
- Sensitive components and harsh environments
- Conformal coating, sealing, and potting

FEATURES & BENEFITS

- Electronics grade
- Exceptionally fast cure
- Room temperature cure
- Single component
- No oxygen inhibition
- 100% solids
- No solvents
- Non-corrosive, neutral cure
- Enhances reliability of delicate components
- Provides stress and shock relief
- Temperature stable from -40°F to 392°F (-40°C to 200°C)

APPLICATION METHOD

Novagard 800-505FC can be applied by spray coating, automated needle dispenses, jetting, hand dispensing, flow coating, or brushing.

PRODUCT SPECIFICATIONS*

Physical Property	Performance Range
Appearance	Clear
Form	Sprayable
Cure Chemistry	UV Alkoxy Dual Cure
Shadow Area Cure	Yes
UV Tracer	Yes

TYPICAL PROPERTIES*

Physical Property	Test Method	Typical Value
Specific Gravity	ASTM D1875	0.98
Viscosity (cPs)	Brookfield LV CPA – 52Z @ 1.5 rpm	670
Refractive Index (uncured)	-	1.40
Hardness (Shore A)	ASTM D2240	8
Tensile Strength (psi)	ASTM D412	13
Elongation (%)	ASTM D412	125

ELECTRICAL PROPERTIES*

Electrical Property	Test Method	Typical Value
Dielectric Strength	ASTM D149	>13 kV/mm >330 V/mil
Dielectric Constant at 100 Hz	ASTM D150	1.18
Dielectric Constant at 100 kHz	ASTM D150	1.18
Dissipation Factor at 100 Hz	ASTM D150	0.0035
Dissipation Factor at 100 kHz	ASTM D150	0.0002
Volume Resistivity (Ω cm)	ASTM D257	2.50×10^{15}

CERTIFICATIONS

Certification	Result
UL 746E	Pass
Flammability (UL-94)	V-1

*The values outlined reflect testing that was conducted under laboratory conditions, actual results may vary. Results are after UV cure and 7 days in ambient conditions.

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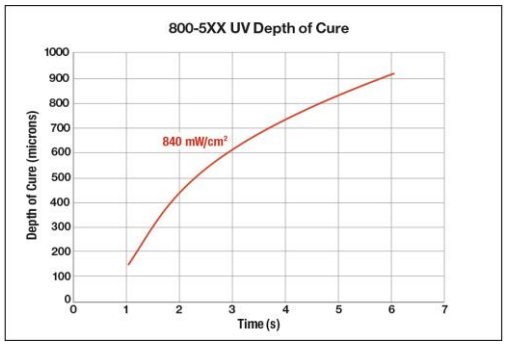
UV CURE CONDITIONS

All laboratory experiments were conducted using a mercury vapor "H" bulb. A broad-spectrum UV source is strongly recommended. A tack-free surface requires 3-5 seconds at a minimum of 1,000 $^{mJ}/_{cm^2}$ (UVA). Note, that longer exposure times are required for lower-intensity lamp conditions.

LED UV lamp systems may provide a sufficient cure if the output wavelength is near 365 nm and a high-power source is used. Users are responsible to test and validate cure efficacy.

Depth of Cure

UV-curable silicones require UV waves to penetrate the silicone to initiate a cure. Therefore, the depth of cure is limited by UV wave transmittance. 800-505FC can be cured to a minimum depth of 500 µm (0.5 mm) with a cure dose of 1,000 mJ/cm2, and a minimum depth of 1,000 µm (1.0 mm) with a cure dose of 2,000 mJ/cm2, respectively using a broad-spectrum mercury vapor “H” bulb.



The product was UV cured using an F300S/F300SQ Fusion UV System equipped with a standard “H” bulb.

TYPICAL SURFACE PREPARATION

Novagard 800 Series 800-505FC can be applied to cleaned and “no clean” surfaces. It is recommended to test this product for compatibility with all contact surfaces.

Clean Up

Common solvents such as isopropyl alcohol (IPA), odorless mineral spirits (OMS), or acetone can be used to help with the cleanup of uncured silicone. For cured silicone, soften the silicone first with solvent and then brush or scrape away.

Repairability

Novagard UV-curable silicone conformal coatings and sealants are repairable and can be removed from substrates and circuitry by scraping or cutting. Additionally, one can use solvents to swell the silicone making it much easier to scrape or brush away from the surface. This method can be used for circuit boards where a component requires replacement. Once a component is replaced, fresh silicone can be brushed or poured on the bare component and then cured.

ADDITIONAL INFORMATION

Useful Temperature Ranges

Silicones withstand extremely high and low temperatures with little to no property change due to its non-reactive and stable structure. Most Novagard silicones have an operating temperature range of -40°F to 257°F (-40°C to 200°C) for long periods of time. This can vary, however, depending on the formulation, configuration, and stress sensitivity of components in the application, in addition to cooling rates, hold times, and prior temperature history.

Novagard believes that the information provided is a true and accurate description of the typical characteristics of the aforementioned product; however, it is the responsibility of the individual user to thoroughly test the product in their specific application to determine performance, efficacy, and safety.

PACKAGING

Novagard 800-505FC is available in 310 ml cartridges (10 ounces) and 5-gallon pails. Samples are typically provided in 30 cc hybrid syringes although larger sample sizes may be an option. If you require a different package size for a long-term commercial purchase, contact your Novagard representative.

STORAGE AND SHELF LIFE

Novagard 800-505FC when stored in its original, unopened container at or below 80°F (27°C) is usable for up to twelve (12) months. Refrigeration down to 37°F (3°C) may prolong the shelf life of the material in unopened, original packaging, and usefulness must be determined by the end user.

CUSTOMIZATION

As the largest R&D group in our class, we have significant expertise and experience in a wide array of technical disciplines. Our team includes experienced Ph.D. scientists and engineers along with subject matter experts who can customize our family of UV and UV dual-cure silicone products to fit your exact needs.

Any of our UV or UV dual cure silicone products may be modified with adhesion promoters designed for specific substrates, even low-energy substrates like polyethylene terephthalate (PET). In addition to modifying the adhesion profiles of any of our UV or UV dual cure silicone products, we can also adjust any of the following physical properties as needed:

Uncured:	Cured:
• Viscosity	• Shore hardness
• Thixotropy	• Tensile strength
• Pot life	• Adhesion
• UV tracer	• Elongation

Contact us at (216) 881-8111 or products@novagard.com. We’d be happy to discuss your specific project.

COMPLIANCE INFORMATION

Novagard 800-505FC does not contain any substances included on the most recently published REACH “Candidate List of Substances of Very High Concern”.

Novagard 800-505FC does not contain any chemicals on the Prop65 list at a level requiring special labeling.

PRECAUTIONS

Consult and obey all applicable local, state, and federal regulations for the disposal of solvent and silicone waste. For additional information consult the product safety data sheet (S.D.S).

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