

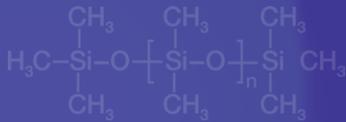
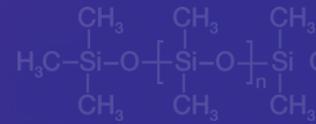
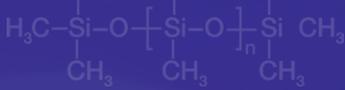


The performance of **silicone**  
at the speed of light.

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UV Cure **Silicone** Product Selection Guide  
*for electronic devices and component assemblies*

**NOVAGARD**<sup>®</sup>  
Performance Silicones | Woman Owned



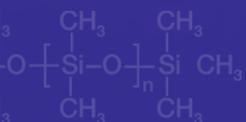
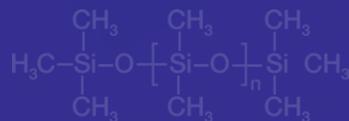
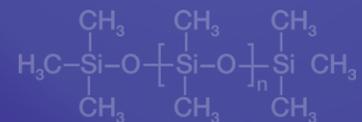
**UV light plays a pivotal role**  
in achieving greater throughput at a lower total cost of ownership.

It provides a faster cure than an oven, while using less energy,  
reducing maintenance costs, and having a footprint  
measured in inches, not yards.

For this reason, UV cure systems hold great promise for the  
manufacture of both your simple and densely packed electronic devices.

Especially when coupled with the one type of coating whose chemical  
make-up offers superior performance and advantages over all the others:

## Silicone.



# Why **silicone** coatings are better for electronics

Smaller, faster, hotter, more power, more durability ... the demands put on today's electronic components are simply overwhelming. Overwhelming, but not impossible. Not with silicones.

Their unique molecular structure provides the rare combination of increased flexibility and high temperature resistance, which allows more versatility in the design, assembly process, and performance characteristics of modern electronics, enabling them to perform reliably under challenging conditions.

## Benefits



### Extreme Thermal Stability

You can count on silicones to perform at extreme temperatures ranging as low as -45°C and as high as 250°C — with no degradation — so the electrical and mechanical properties of the semiconductor's silicone encapsulation remain true even after years and years of loading cycles.



### Superior Stress Relief

Because they adhere to most common substrates and maintain their flexibility over a wide temperature range, silicones will protect sensitive components in demanding environments. In fact, the unique bond-angle of their molecular structure provides the highest level of flexibility for maximum vibration damping.



### High Dielectric Strength & Insulation Resistance

The high chemical purity and minimum water absorption of silicones provide the peak level of dielectric and insulation performance needed to handle modern power modules operating at many thousands of volts.



### Clean and Green

Most silicones have no solvents, so there are no harmful VOC emissions or outgassing. This 100% solid coating is safer for people and the planet. While reducing complexity, cost, and time from your manufacturing process.

### Use silicones to:

- Seal, encapsulate, and bond electrical parts
- Create a thermal shield for batteries
- Sheath, protect, and insulate wiring
- Protect against moisture and vibration

# Industry relies on **silicones**

Thousands of consumer, business, medical, and military electronic systems depend on silicones to seal, bond, and encapsulate electrical parts in order to protect delicate components and modules, enhance their reliability, and extend the useful life of the product.

Including

## PCBs & Power Modules

While component sizes keep going down, performance demands keep going up—silicones provide the broad and potent mix of performance and handling requirements.



- Power Converters and Inverters
- Micro-Electronic Packaging
- Hybrids ICs
- High-Voltage Insulation
- Membrane Switches
- Photo Couplers

## Consumer Electronics

They need to be dependable, safe, and durable — silicones enhance reliability while providing heat resistance, flame retardancy, and low volatility for sensitive components.



- Flat Panel Displays
- PCs and Smart Phones
- LED Lighting
- Gaming Systems

## Automotive & Transportation

Ever more mechanical components are being replaced by electronic solutions — silicones allow the design flexibility and protection required to assure long-term reliability in abusive operating conditions of all types.



- ECU Potting, Sealing, Coating
- Wire Connector Sealing
- Sealing and Encapsulating Sensors
- Headlamp Assemblies
- Vibration Dampening

## EV & Battery Systems

In the quest to reduce the carbon footprint, achieving dependable battery power is paramount — silicones offer dependable performance and increased power density for emerging technologies.



- Battery Pack Thermal Gap Fillers
- Charging Systems
- Computer Control Modules
- Wiring Harness Pin Connectors

## Aviation & Aerospace Electronics

Ensuring the operational integrity of complex systems is critical — silicones help them withstand stress and temperature extremes while blocking dangerous moisture and contaminants.



- Avionics
- Circuits and Terminals
- Wire Sealants
- Aviation Lighting

## Solar & Renewable Energy

Long life cycles under harsh weather extremes are crucial to creating confidence in these newer power sources — silicones protect against mother nature like no other.



- Terminal Box Potting
- EVA Plate Sealing

## Medical Electronics & Wearables

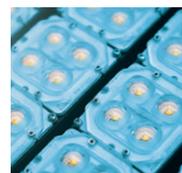
Healthcare has never been pushed to such amazing lengths—silicones deliver the performance options needed to keep new developments happening.



- CPAP Machines
- Insulin Pumps
- Glucose Monitors
- Fitness Trackers

## LED & Lighting

People demand beautiful lighting that lasts — silicones possess the thermal and photo stability to allow higher lumen density for optical materials, while effectively maintaining superior color and lumen quality.



- Diode Encapsulation
- Power Module Protection
- Wiring Enclosures

# Why Novagard UV Dual Cure **Silicone** coatings are *best* for your *electronics*

Among the earliest pioneers of this technology, we were the only one to have gone on to develop three generations of UV curable silicones. So we can offer you the broadest range of choices. Yet we'll provide you something even more important—the very one you need to meet your exact requirements. If we don't already have it on the shelf, we can make it in the lab.

Because, just like you, our future depends on constantly developing new and better solutions.

## Practice makes perfect... especially 30 years of it.

Three solid decades of silicone experimentation and development can only result in a strong, broad roster of proven silicone formulations. Along with an innate understanding of how each reacts, their strengths and limitations, and the potential for furthering their ability to better match a fresh, new challenge.

## We don't push products, we push performance.

Even with 30 years of silicone expertise, and hundred of successful formulations, our accomplished engineers know the first thing to focus on is **you**. That's why they are involved from day one: "What are you building? Why? What's the end goal?"

**Our** end goal is to help you reduce time, risk, and cost at every stage of your product development. Oh, and pain. Tell us exactly what pains you: "What product has already failed you? In what way is it letting you down? Is there a reason you're not happy with how the supplier is trying to fix the problem ... and end the pain?"

With every consideration now on the table, we start with selecting our most promising candidate formulation. It may be just what you need. But if it's not quite right, we begin making the modifications to further improve both the desired performance of your electronics and the efficiency of your manufacturing process.

## Faster Cure = Lower TCO

Some of our UV silicones cure in less than 5 seconds, without any oven, or racking, or outgassing, or nasty solvents to deal with ... shortening production time and reducing energy and environmental costs. This means a fast payback to the modest investment in UV equipment and training. And a lower Total Cost of Ownership.



Every project begins with a meeting of the minds (yours and ours) on the Novagard Knowledge Portal

# Path to perfection: “What do you need it to do?”

Are any fine wires or dense components endangered by thermal cycling? Will your component be exposed to moisture or dust? Is your board supposed to withstand intense vibration or impact?

Your electronics have very specific operational goals – good thing silicone has so many diverse properties, allowing our experienced Novagard engineers to expertly combine those that will cater to your every requirement.

## Modifications to silicone properties may include

LOW

### HARDNESS

HIGH

#### Provides thermal and physical stress relief

- Allows components to expand and contract at different rates without crowding/contacting/harming each other
  - Absorbs shock so vibration does not get transmitted to components
- Best for:** Dense topography, high thermal environments

#### Provides abrasion and impact resistance

- Protects raised, delicate components from being broken or knocked off
  - Protects integrity of entire board/build against violent jolts and collisions
- Best for:** Delicate topography, protruding components, punishing environments

LOW

### VISCOSITY

HIGH

#### Provides speedier and assured coverage throughout

- High-speed application and superior ‘wet-out’ ability
  - Easily flows into tight spaces, under components, and through vias
- Best for:** Intricate architecture, delicate potting, high-speed manufacturing, automated dispensing

#### Provides precise flow and distance spread control

- Allows for extremely targeted ‘spot’ application with no spread into ‘keep-out’ areas
  - Permits damming and filling larger, tightly defined areas
  - Thicker application provides extra protection and vibration damping
- Best for:** Staking, laminating, filling large gaps, vertical surfaces

LOW

### ADHESION

HIGH

#### Provides more controlled adhesion

- Permits future access to components for reworking and repair
  - Coating will come off clean leaving substrate ready for reapplication
- Best for:** Products that reach ‘failure mode’ or require regular maintenance

#### Permanent adhesion, including low energy surfaces

- Simplifies process with no primer or corona treatment necessary
  - Various types of substrates may be permanently bonded together
- Best for:** Assembly of difficult substrates, protecting unique technologies

LOW

### THERMAL CONDUCTIVITY

HIGH

#### No conductive fillers, no fuss

- Meets the needs of most standard applications
- Best for:** Products emitting minimal heat, cost effectiveness

#### Actively moves heat away from components

- Protects components from thermal damage
  - Standard thermal filler packages provide pathway for heat to travel & dissipate
  - Capable of reaching very high levels of thermal conductivity 16W/mK and higher
- Best for:** Semiconductors (Si, SiC, GaN), batteries, LED lighting, power supplies

### THIXOTROPY

When you need absolute precision during dispensing, we can adjust thixotropy ratios to achieve it with your machinery. So when the pressure stops, the flow stops, and the bead holds its shape perfectly. Crucial for dot placement, bead formation, dam contours, and precise injections into extremely small crevices with no sagging, no spreading, and no dripping.

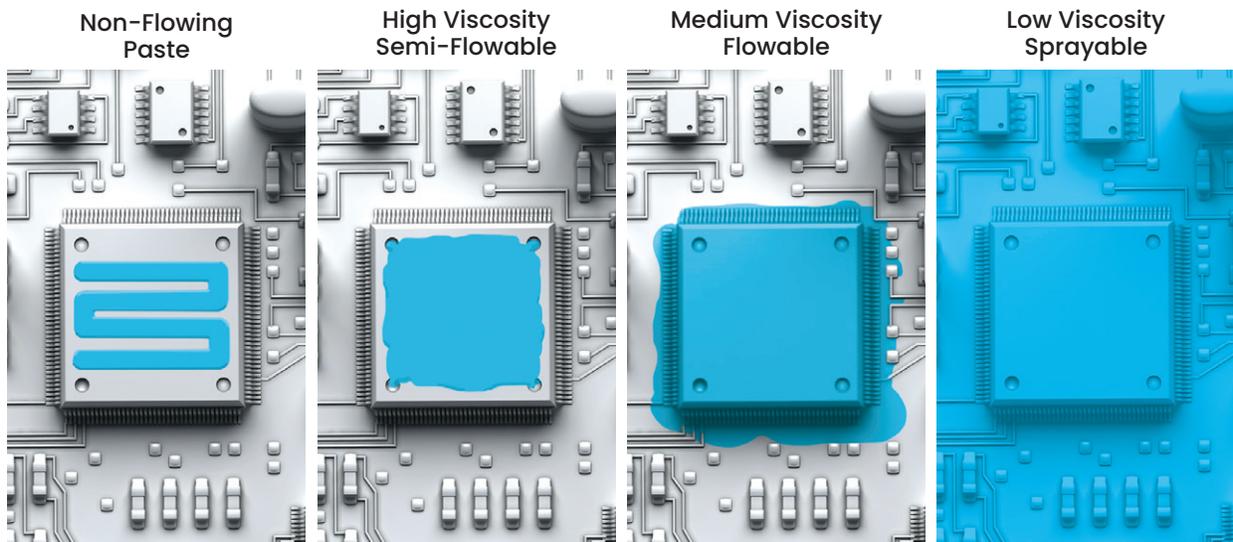
### CURE TIME

Depending on your application and your process – and even the precise set-up of your line – we can adjust and fine tune our silicone formulations to cure as quick (or not) as you need, and offer you tack-free handling in less than 5 seconds.

# Path to perfection: "How will it be applied?"

Just as crucial as achieving the required material performance is assuring the silicone is getting to where it needs to go using the dispensing equipment on your line. This is where proper viscosity and flowability selection is critical.

## Viscosity and flowability must meet your technological needs



Higher viscosity provides greater control of speed and distance of flow to prevent spreading into safe areas, while enabling thicker coating layers in one pass.

Lower viscosity aids high-speed production techniques such as spraying, flow, or jetting, and allows your coating to flow through vias or under chips.

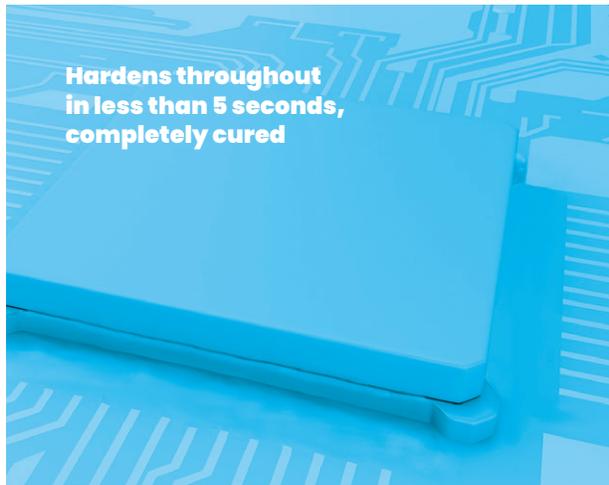
# Path to perfection: "What's best for your process?"

After coating, what happens next? Does the board get installed later that day? Are you packaging the part immediately? Is this a fully automated mass production process or a short run batch?

Whatever your volume or line set-up is, we'll make sure your UV silicone coating provides the optimum cure metrics.

## Choosing the optimum cure profile

### UV Cure Silicone



#### Appropriate for:

- Boards with deep sections (up to 0.75")
- Immediate processing for next stage
- Immediate packaging

#### Not appropriate for:

- Superior adhesion
- Boards with shadow areas

### UV/Moisture Dual Cure Silicone



#### Appropriate for:

- Boards with shadow areas
- Immediate processing for next stage
- Superior adhesion

#### Not appropriate for:

- Applications where an opaque coating is required
- Board with deep section greater than 1"

# Let's get everything right.

Your sealant, your product, your process... everything benefits and only gets better when we both work closely together; leave nothing to chance; share openly and honestly; have each other's back. It's all about embracing the challenge, whatever that is, and seeing every step of overcoming it all the way through.

## What if the answer isn't a UV-cured silicone?

We'll tell you. And then provide you with the better answer.

Just like we did with Company F. (Not their real name, but this is their real story):

As a manufacturer of a wearable electronic product, Company F needed a strong, durable coating that could be applied very thinly to miniature-sized applications. It couldn't degrade over time and had to bend, flex, and twist without cracking. Further, the sealant needed to bond well to low energy substrates and withstand high temperatures.

While a silicone-based material (with select properties we prioritized and optimized) featuring an Alkoxy cure chemistry was the answer to their performance needs, a question remained: what type of cure-mechanism would best leverage their injection and compression molding processes?



Company F initially asked for a UV-curable silicone solution. However, our sales engineer soon figured out through consultation that they needed to keep the viscosity and cure rate constant, despite changing environmental conditions. To provide the desired control, the team opted for a two-component silicone delivered through a static mixer -- the mixing ratios of base to catalyst can be adjusted to compensate for variations in temperature and humidity.

So, in the case of Company F, the flexibility provided by the two-component formulation of our 500 Series Alkoxy Silicone led to its selection for their application.

## A better way to bond.

Replace riveting and bolting with our Novagard Electronics-Grade Silicones. These single-component adhesives provide a uniform bond, act like a gasket to protect against moisture and dust, and help dampen vibrations. Featuring fast tack-free times, fire resistance, and curing with no corrosive byproducts, our electronics-grade product line can provide additional processing flexibility for your operations.



We're ready to talk when you are.

Look over our UV Dual Cure (and other) silicone product specs on the following pages. Get familiar with what they can do. Then, call us at +1 (216) 881-8111. If there's anything more they need to do for your product or process, our engineers will clarify your requirements and get right on it.

Just as UV light plays a pivotal role in achieving greater throughput, we at Novagard would like to play a pivotal role in helping you achieve even more than you ever thought possible.

To better understand how UV cure technology works and learn more about what considerations you should put into choosing the best light curing system for your process, visit our website and download our White Paper: Understanding UV Curing Lamp Options.



# Novagard UV-Cure **Silicone**: Sprayable

Easily applied using standard PCB spray coating equipment, these low viscosity silicone conformal coatings flow through vias and under chips, to offer complete protection against moisture and contaminants while lessening thermal stresses and absorbing shocks. The alkoxy chemistries of our UV/dual cure silicones enable full, deep cures in seconds, eliminating rack-and-stack waiting periods thanks to a secondary moisture cure of shadow areas inaccessible to UV.

## **800-505**

Novagard 800-505 is an IPC-CC-830C qualified, 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 to a solid elastomer in seconds upon exposure to ultraviolet (UV) light.

## **800-505FC (Fast Cure)**

Novagard 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. Utilizing our Fast Cure technology, this secondary moisture cure begins in as little as 30 minutes and can develop full adhesion in hours.

## **800-505FCLF (Fast Cure, Low Friction)**

Novagard 800-505FC is a UV-curable, silicone conformal coating, pottant, or sealant with a secondary, neutral alkoxy moisture cure for enhanced adhesion and shadow cure. Fast Cure technology allows the secondary moisture cure to begin in as little as 30 minutes. This material is specially formulated with a high-hardness, low-energy surface after curing, resulting in a low friction surface that resists dust and dirt pickup in outdoor applications.

## **800-506FC (Fast Cure)**

Novagard 800-506FC features a UV primary cure and a secondary moisture cure. 800-506FC's extremely low viscosity allows it to flow easily into even the most complex geometries. 800-506FC will UV-cure to a depth of 5mm in a single pass.

## **800-510**

Novagard 800-510 is an IPC-CC-830C qualified, 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 to a solid elastomer in seconds upon exposure to ultraviolet (UV) light. The slightly higher viscosity of this material improves spray performance in certain applications.

## **800-510FC (Fast Cure)**

Novagard 800-510FC 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 version of our original 800-510 conformal coating utilizes Fast Cure technology to begin moisture cure of shadow areas in as little as 30 minutes.

## **800-515**

Novagard 800-515 is an IPC-CC-830C qualified, UV-curable, silicone conformal coating, pottant, or sealant. With nominal viscosity of 1,500 cPs, it responds predictably in automated dispense equipment. It has a secondary, neutral alkoxy moisture cure for enhanced adhesion and shadow cure. This non-corrosive, single component silicone will cure to a solid elastomer in seconds upon exposure to ultraviolet (UV) light.

## **800-515FC (Fast Cure)**

Novagard 800-515FC is a UV-curable, silicone conformal coating, pottant, or sealant. It has a secondary, neutral alkoxy moisture cure for enhanced adhesion and shadow cure. With nominal viscosity of 1,500 cPs, it responds predictably to automated dispense equipment. By applying our Fast Cure technology to the original 800-515 conformal coating, the shadow area moisture cure starts in as little as 30 minutes.

## **800-610**

Novagard 800-610 is a low viscosity, pourable encapsulant. Its extremely low viscosity ensures the material flows easily around components for thorough wet-out. This is a UV cure with no secondary moisture cure, offering very low adhesion.

	800-505	800-505 FC	800-505 FCLF	800-506 FC	800-510	800-510 FC	800-515	800-515 FC	800-610
<b>PHYSICAL PROPERTIES</b>									
Form	Sprayable	Sprayable	Sprayable	Sprayable	Sprayable	Sprayable	Sprayable	Sprayable	Sprayable
Cure Chemistry	UV Alkoxy Dual Cure	UV Alkoxy Dual Cure	UV Alkoxy Dual Cure	UV Alkoxy Dual Cure	UV Alkoxy Dual Cure	UV Alkoxy Dual Cure	UV Alkoxy Dual Cure	UV Alkoxy Dual Cure	UV Only
Electronics Grade	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Shadow Area Cure	Yes	Yes, Fast Cure	Yes, Fast Cure	Yes, Fast Cure	Yes	Yes, Fast Cure	Yes	Yes, Fast Cure	No
Appearance	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear
UV Indicator	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
UV Cure Depth (mm)	1.0	1.0	0.5	5.0	1.0	1.0	1.0	1.0	
Specific Gravity	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	0.99
Viscosity (cPs)	700	700	800	1,000	1,000	1,000	1,500	1,500	630
Durometer Shore A	15	25	30	15	10	19	10	20	21
Durometer Shore 00				70					70
Tensile Strength (psi)	65	135	50	95	65	114	61	60	73
Elongation (%)	60	110	100	250	165	111	200	108	270
<b>ELECTRICAL PROPERTIES</b>									
Dielectric Strength	12.7 kV/mm 322 V/mil	12.7 kV/mm 322 V/mil	12.7 kV/mm 322 V/mil	13.7 kV/mm 348 V/mil	12.7 kV/mm 322 V/mil	12.7 kV/mm 322 V/mil	12.7 kV/mm 322 V/mil	12.7 kV/mm 322 V/mil	15 kV/mm 381 V/mil
Dielectric Constant at 100 Hz	3.08	2.18	2.44	2.00	3.26	2.06	3.08	2.48	3.43
Dielectric Constant at 100 kHz	3.05	2.18	2.44	1.99	3.26	2.06	3.06	2.48	3.42
Dissipation Factor at 100 Hz	1.40x10 <sup>-3</sup>	3.19x10 <sup>-4</sup>	3.31x10 <sup>-4</sup>	.00165	9.00x10 <sup>-4</sup>	2.06x10 <sup>-4</sup>	1.20x10 <sup>-3</sup>	1.22x10 <sup>-4</sup>	6.00x10 <sup>-4</sup>
Dissipation Factor at 100 kHz	2.10x10 <sup>-3</sup>	4.20x10 <sup>-4</sup>	5.43x10 <sup>-4</sup>	.000062	1.20x10 <sup>-3</sup>	4.74x10 <sup>-4</sup>	1.90x10 <sup>-3</sup>	5.01x10 <sup>-4</sup>	8.00x10 <sup>-4</sup>
Volume Resistivity (Ω cm)	5.50x10 <sup>12</sup>	2.15x10 <sup>10</sup>	2.40x10 <sup>10</sup>	2.66x10 <sup>13</sup>	3.43x10 <sup>12</sup>	2.50x10 <sup>10</sup>	6.53x10 <sup>12</sup>	2.26x10 <sup>10</sup>	5.79x10 <sup>12</sup>
<b>CERTIFICATIONS</b>									
IPC-CC-830C		Pending	Pending			Pending		Pending	
UL 746E	Pending	Pending	Pending		Pending	Pending	Pending	Pending	
Flammability (UL-94)	Conforms to UL 94 HB per IPC-CC-830C test results	Pending	Pending		Conforms to UL 94 HB per IPC-CC-830C test results	Pending	Conforms to UL 94 HB per IPC-CC-830C test results	Pending	

# Novagard UV-Cure **Silicone**: Flowable

Ideal for encapsulation or dam and fill applications, yet still low enough in viscosity to easily flow through vias and under chips. The non-corrosive, flexible cure offers the same superior protection against thermal stress, corrosion, vibration and shock that you'd expect from a silicone. The UV/dual cure silicones in this family are available in an alkoxy or oxide chemistry.

## **800-520**

Novagard 800-520 is an IPC-CC-830C qualified, UV-curable, silicone conformal coating, pottant, or sealant. With its excellent dielectric properties, this sprayable/flowable formulation is ideal for applying thicker layers of coating for applications requiring additional protection. A secondary, neutral alkoxy moisture cure is included.

## **800-520FC (Fast Cure)**

Novagard 800-520FC is a UV-curable, silicone conformal coating, pottant, or sealant. This version of our original 800-520 coating utilizes Fast Cure technology to begin moisture cure of shadow areas in as little as 30 minutes, and provides a harder, more durable surface than our standard 800-520.

## **800-550**

Novagard 800-550 is a UV-curable, silicone coating, pottant, or sealant. With nominal viscosity of 5,000 cPs, 800-550 flows readily to surround the complex geometry of modern circuitry design. It has a secondary, neutral alkoxy moisture cure for enhanced adhesion and shadow cure. This non-corrosive, single component silicone will cure to a solid elastomer in seconds upon exposure to ultraviolet (UV) light.

## **800-551FC (Fast Cure)**

Novagard 800-551FC features a UV primary cure and a secondary moisture cure. 800-551FC's flowable viscosity allows it to be dispensed and flow easily and predictably into even the most complex geometries. 800-551FC will UV-cure to a depth of 5mm in a single pass.

## **800-245**

Novagard 800-245 is a UV-cured conformal coating. Its moderately flowable viscosity easily coats complex geometries. Fully cured with UV light only (no secondary cure), this silicone offers moderate hardness with good electrical properties.

## **800-620**

Novagard 800-620 is a very soft, clear, encapsulant/gel, designed to maximize vibration damping. It is a low strength silicone with limited adhesion which reduces strain on delicate components. UV only cure.

## **800-255**

Novagard 800-255 is a first-generation pin connector sealant. Its oxime secondary moisture cure provides improved physical properties. The oxime moisture cure can present potential corrosion issues in enclosed applications. Please review your design with your Novagard representative.

## **800-260**

Novagard 800-260 is a first-generation conformal coating for printed circuit boards. While its oxime secondary moisture cure provides improved physical properties, it offers limited adhesion and can present potential corrosion issues in enclosed applications. This silicone is rated UL 746 E, V-1.

	800-520	800-520 FC	800-550	800-551 FC	800-245	800-620	800-255	800-260
<b>PHYSICAL PROPERTIES</b>								
Form	Flowable	Flowable	Flowable	Flowable	Flowable	Flowable	Flowable	Flowable
Cure Chemistry	UV Alkoxy Dual Cure	UV Alkoxy Dual Cure	UV Alkoxy Dual Cure	UV Alkoxy Dual Cure	UV Only	UV Only	UV Oxime Dual Cure	UV Oxime Dual Cure
Electronics Grade	Yes	Yes	Yes	Yes	Yes	Yes		
Shadow Area Cure	Yes	Yes, Fast Cure	Yes	Yes, Fast Cure			Yes	Yes
Appearance	Clear	Clear	Clear	Clear	Translucent	Clear	Translucent	Translucent
UV Indicator	Yes	Yes		Yes				Yes
UV Cure Depth (mm)	1.0	1.0	1.0	5.0				
Specific Gravity	1.02	1.02	1.02	.98	1.00	0.97	0.98	0.98
Viscosity (cPs)	2,000	2,000	5,000	6,000	4,400	18,000	2,200	2,200
Durometer Shore A	15	20	10	5	22	5	17	17
Durometer Shore 00				50	72	54	65	66
Tensile Strength (psi)	65	75	57	110	65	24	87	114
Elongation (%)	175	140	122	250	180	260	270	380
<b>ELECTRICAL PROPERTIES</b>								
Dielectric Strength	12.7 kV/mm 322 V/mil	12.7 kV/mm 322 V/mil	12.47 kV/mm 316 V/mil	12.47 kV/mm 316 V/mil	14.46 kV/mm 367 V/mil	14.38 kV/mm 365 V/mil	14.0 kV/mm 356 V/mil	15.2 kV/mm 385 V/mil
Dielectric Constant at 100 Hz	3.01	2.31	2.84	1.69	3.45	3.35	3.23	3.28
Dielectric Constant at 100 kHz	3.00	2.31	2.82	1.65	3.46	3.33	3.20	3.22
Dissipation Factor at 100 Hz	1.00x10 <sup>-3</sup>	3.19x10 <sup>-4</sup>	1.30x10 <sup>-3</sup>	.001567	3.00x10 <sup>-4</sup>	1.20x10 <sup>-3</sup>	3.00x10 <sup>-4</sup>	3.20x10 <sup>-3</sup>
Dissipation Factor at 100 kHz	2.10x10 <sup>-3</sup>	4.38x10 <sup>-4</sup>	2.00x10 <sup>-3</sup>	.000061	8.00x10 <sup>-4</sup>	1.40x10 <sup>-3</sup>	1.10x10 <sup>-3</sup>	1.50x10 <sup>-3</sup>
Volume Resistivity (Ω cm)	3.19x10 <sup>12</sup>	2.67x10 <sup>10</sup>	1.98x10 <sup>12</sup>	3.31x10 <sup>13</sup>	5.07x10 <sup>12</sup>	1.66x10 <sup>12</sup>	4.58x10 <sup>12</sup>	5.02x10 <sup>12</sup>
<b>CERTIFICATIONS</b>								
IPC-CC-830C		Pending						
UL 746E								Yes
Flammability (UL-94)	Conforms to UL 94 HB per IPC-CC-830C test results	Pending						V-1

# Novagard UV-Cure **Silicone**: Self-Leveling

These silicones are primarily used in applications where a semi-flowable, self-leveling silicone sealant is required to fill small gaps or voids. The higher viscosity also offers more control, making them a good choice for form-in-place gasketing. They also provide excellent unprimed adhesion to use in bonding a very wide range of substrates.

## **800-750**

Novagard 800-750 is a UV-curable, silicone coating, pottant, or sealant. With viscosity of 50,000 cPs, 800-750 clings readily to components for staking and glob-top applications. This non-corrosive, single component silicone will cure to an extremely soft elastomer in seconds upon exposure to ultraviolet (UV) light, making it ideal for stress and strain relief as well as protection of delicate circuits. It has a secondary, neutral alkoxy moisture cure for enhanced adhesion and shadow cure.

## **800-230**

Novagard 800-230 offers design engineers a higher viscosity coating option, while still remaining flowable. 800-230 is an ideal staking material for securing small components against vibration. It is a UV only cure, providing limited adhesion.

## **800-235**

Novagard 800-235 is UV-cured, semi-flowable material. A UV-cure only silicone with limited adhesion, its higher viscosity makes it ideal for cured-in-place gaskets.

## **800-240**

Novagard 800-240 is a UV-cure only, semi flowable material similar to 800-235. 800-240 offers higher hardness and abrasion resistance with good elongation and electrical properties.

## **800-751TFC (Thixotropic, Fast Cure)**

Novagard 800-751TFC features an uncured viscosity of 35,000 cPs, providing greater control and precision during dispense. UV primary cure and secondary moisture cure. 800-751TFC will UV-cure to a depth of 5mm in a single pass.

## **800-754**

Novagard 800-754 is a UV-cure only pottant that cures to a soft, compliant elastomer that relieves stress and strain on delicate components. 800-754 will UV-cure to a depth of 14mm in a single pass.

	800-750	800-230	800-235	800-240	800-751 TFC	800-754
<b>PHYSICAL PROPERTIES</b>						
Form	Semi-Flowable	Self-Leveling	Semi-Flowable	Semi-Flowable	Semi-Flowable	Semi-Flowable
Cure Chemistry	UV Alkoxy Dual Cure	UV Only	UV Only	UV Only	UV Alkoxy Dual Cure	UV Only
Electronics Grade	Yes	Yes	Yes	Yes	Yes	Yes
Shadow Area Cure	Yes				Yes, Fast Cure	
Appearance	Clear	Translucent	Translucent	Translucent	Translucent	Clear
UV Indicator					Yes	
UV Cure Depth (mm)	1.0				5.0	14.0
Specific Gravity	1.02	1.02	1.06	1.08	.98	0.96
Viscosity (cPs)	50,000	25,000	79,000	60,000	35,000	50,000
Durometer Shore A	n/a	18	18	29	10	
Durometer Shore 00	60	72	70	78	65	50
Tensile Strength (psi)	50	85	148	228	30	
Elongation (%)	255	420	610	490	500	
<b>ELECTRICAL PROPERTIES</b>						
Dielectric Strength	11.8 kV/mm 300 V/mil	13.0 kV/mm 329 V/mil	16.3 kV/mm 414 V/mil	15.8 kV/mm 400 V/mil	13.78 kV/mm 350 V/mil	8.34 kV/mm 212 V/mil
Dielectric Constant at 100 Hz	2.74	3.42	3.36	3.78	2.10	2.08
Dielectric Constant at 100 kHz	2.72	3.43	3.36	3.75	2.10	2.08
Dissipation Factor at 100 Hz	2.90x10 <sup>-3</sup>	4.00x10 <sup>-4</sup>	6.00x10 <sup>-4</sup>	1.20x10 <sup>-3</sup>	.000835	.0038
Dissipation Factor at 100 kHz	3.60x10 <sup>-3</sup>	7.00x10 <sup>-4</sup>	1.30x10 <sup>-3</sup>	1.90x10 <sup>-3</sup>	.000145	.000076
Volume Resistivity (Ω cm)	5.35x10 <sup>11</sup>	1.14x10 <sup>12</sup>	9.16x10 <sup>12</sup>	1.93x10 <sup>13</sup>	3.94x10 <sup>13</sup>	3.23x10 <sup>13</sup>

# Novagard UV-Cure **Silicone**: Paste

For the ultimate control during application, these non-flowing silicone pastes are the answer. They offer more precision of speed and distance of flow to prevent spreading into safe areas, while enabling thicker coating in one pass. May be applied by automated needle dispense, jetting, or hand dispense.

## 800-750T (Thixotropic)

Novagard 800-750T is a UV-curable, silicone coating, pottant, or sealant. With a nominal viscosity of 50,000 cPs, 800-750T is formulated with a high thixotropic ratio so it will hold its shape more readily when dispensed than our standard 800-750. 800-750T clings easily to components for staking and glob-top applications, but cures to a harder and tougher surface than our standard 800-750 for more robust needs. This silicone uses a UV primary cure with a secondary, neutral alkoxy moisture cure for enhanced adhesion and shadow cure.

## 800-750TFC (Thixotropic, Fast Cure)

Novagard 800-750TFC is a UV-curable, silicone coating, pottant, or sealant. 800-750TFC is also formulated with a high thixotropic ratio to maintain shape and predictable consistency during dispensing. The UV primary cure reacts in seconds, while the addition of our Fast Cure technology allows the secondary, neutral alkoxy moisture cure to begin within 30 minutes for enhanced adhesion and a complete cure, even in shadow areas.

## 800-400

Novagard 800-400 is a UV-only, fast-curing paste without adhesion. With nominal viscosity of 360,000 cPs, 800-400 consistently holds its shape even when dispensed into complex shapes. With its nearly instant UV cure, 800-400 is widely used for automated dispensing and cured-in-place gaskets (CIPG).

	800-750T	800-750TFC	800-400
	<b>PHYSICAL PROPERTIES</b>		
Form	Paste	Paste	Paste
Cure Chemistry	UV Alkoxy Dual Cure	UV Alkoxy Dual Cure	UV Only
Electronics Grade	Yes	Yes	Yes
Shadow Area Cure	Yes	Yes, Fast Cure	
Appearance	Translucent	Translucent	Translucent
UV Indicator	Available	Available	Available
UV Cure Depth (mm)	1.0	1.0	
Specific Gravity	1.02	1.02	1.11
Viscosity (cPs)	50,000 (Thixotropic)	50,000 (Thixotropic)	360,000
Durometer Shore A	16	20	20
Durometer Shore 00			73
Tensile Strength (psi)	132	102	377
Elongation (%)	386	250	1200
	<b>ELECTRICAL PROPERTIES</b>		
Dielectric Strength	12.7 kV/mm 322 V/mil	12.7 kV/mm 322 V/mil	14.9 kV/mm 378 V/mil
Dielectric Constant at 100 Hz	3.69	2.34	3.34
Dielectric Constant at 100 kHz	3.67	2.33	3.33
Dissipation Factor at 100 Hz	1.50x10 <sup>-3</sup>	6.16x10 <sup>-4</sup>	1.10x10 <sup>-3</sup>
Dissipation Factor at 100 kHz	2.10x10 <sup>-3</sup>	2.12x10 <sup>-4</sup>	2.10x10 <sup>-3</sup>
Volume Resistivity (Ω cm)	9.20x10 <sup>12</sup>	2.50x10 <sup>10</sup>	3.01x10 <sup>13</sup>

# Novagard UV-Cure **Silicone**: Gel

## 800-755

800-755	
PHYSICAL PROPERTIES	
Form	Semi-Flowable
Cure Chemistry	UV Only
Electronics Grade	Yes
Shadow Area Cure	
Appearance	Clear
UV Indicator	Yes
UV Cure Depth (mm)	14.0
Specific Gravity	0.97
Viscosity (cPs)	55,000
Durometer Shore A	n/a
Durometer Shore 000	20

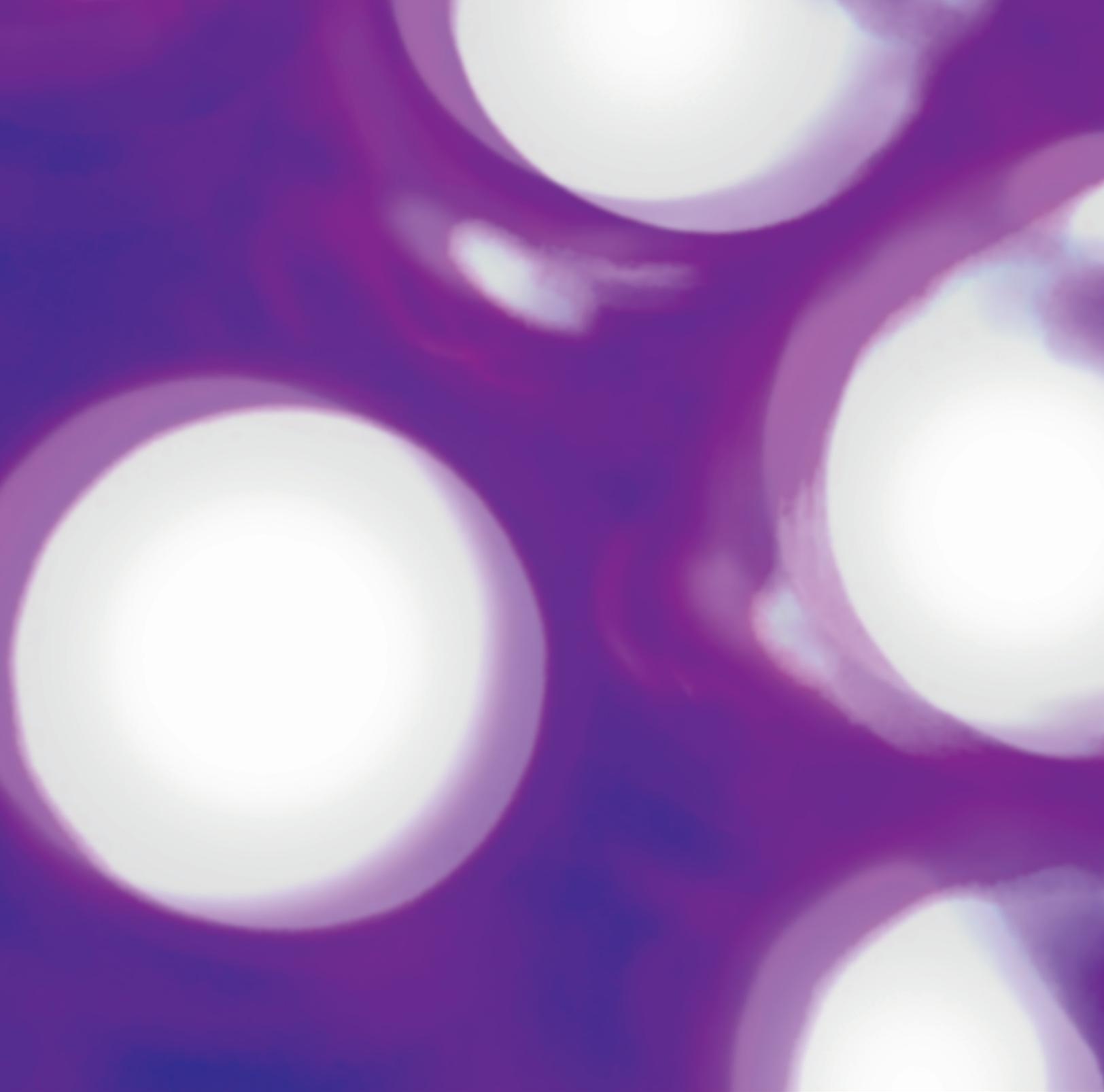
Novagard 800-755 is an incredibly soft non-corrosive, single-component gel and is an ideal pottant or encapsulant that will also dramatically increase your throughput. It will cure-in-place in seconds upon exposure to ultraviolet (UV) light, forming a soft, flexible, resilient cushion to provide stress relief and protect delicate circuitry and interconnections from thermal and mechanical stresses. Also isolates circuits from moisture and other contaminants while providing insulation for high voltage electrical currents. 800-755 will UV-cure to a depth of 14mm in a single pass.

### Clean and Green

Most Novagard silicones have no solvents, so there is no harmful VOC emissions or outgassing. Our 100% solid coatings are simply safer for people and the planet, while removing complexity, cost, and time from your manufacturing processes.



The values outlined in the enclosed tables reflect testing that was conducted under laboratory conditions, actual results may vary. Some data in the enclosed tables are derived from pre-production samples and are subject to change. The information provided in the tables is not intended for use in preparing specifications. Please consult manufacturer for additional info.



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