

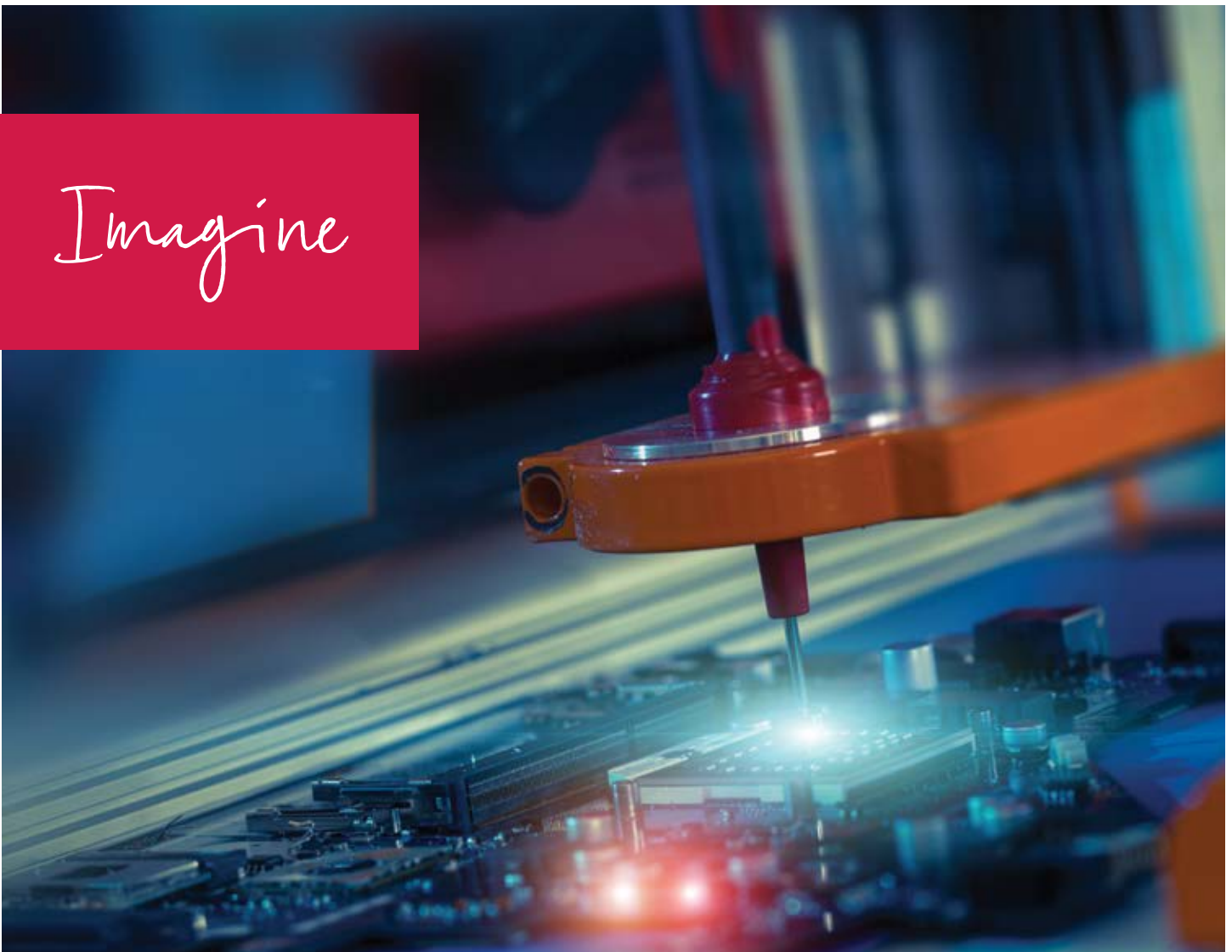


Conformal Coatings Selection Guide

Flexible Options for Processing, Protection, and Performance from a Conformal Coating

DOWSIL™

Imagine





Why Choose Dow Performance Silicones?

Dow Performance Silicones has been a global leader in silicone-based technology for more than 70 years. Headquartered in Michigan, USA, we maintain manufacturing sites, sales and customer service offices, and research and development labs in every major geographic market worldwide to ensure you receive fast, reliable support for your processing and application development needs.

Unique product technology

To describe Dow Performance Silicones is to describe the history and evolution of silicone technology, which generated a legacy of innovative and reliable products under the Dow Corning label for more than seven decades. Today that legacy continues under the DOWSIL™ brand name, which encompasses more than 7,000 proven silicone products and services. Few companies offer a conformal coatings portfolio with comparable breadth and proven performance, and none match our history in silicone technology.

Extensive know-how

Dow Performance Silicones multiplies the value of its products with deep in-house expertise as well as an extended network of industry resources.

Collaborative culture

Dow Performance Silicones works closely with our customers to help reduce time, risk, and cost at every stage of your new product development.

Stability

For over seven decades, Dow Performance Silicones has been a global leader, who invests in manufacturing and quality to help fuel customer innovation through a consistent supply of proven silicone products.

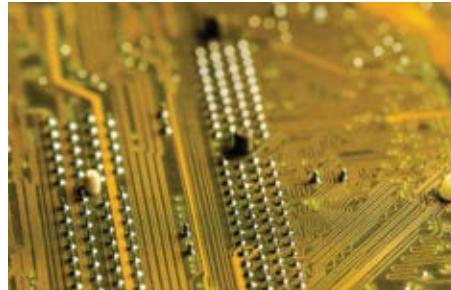
Why Silicone Coatings from Dow?

In one word: Reliability. The versatility of silicone chemistry expands design freedoms, increases processing options, broadens performance parameters, and introduces unique options for sustainability. Compared specifically to organic-based coatings, silicone solutions offer these valuable benefits.



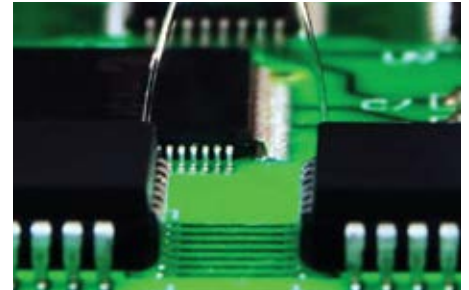
Greater thermal stability

Silicones perform reliably at sustained temperatures as low as -45°C and as high as 150°C – a far broader range than organic coatings, which degrade at such extreme temperatures. Many silicones can even withstand brief exposure to temperatures up to 250°C .



Stress relief

Silicone conformal coatings offer an extraordinarily broad range of durometers, as well as extremely low modulus options. That means they deliver better stress relief on delicate board components during thermal cycling.



Simple solventless options

Silicones are nearly all solventless, making them the material of choice where emerging regulations impose complex and costly special handling and processing requirements.

Choose Your Viscosity



DOWSIL™ conformal coatings come in a range of viscosities to help you meet all of your processing and application demands.

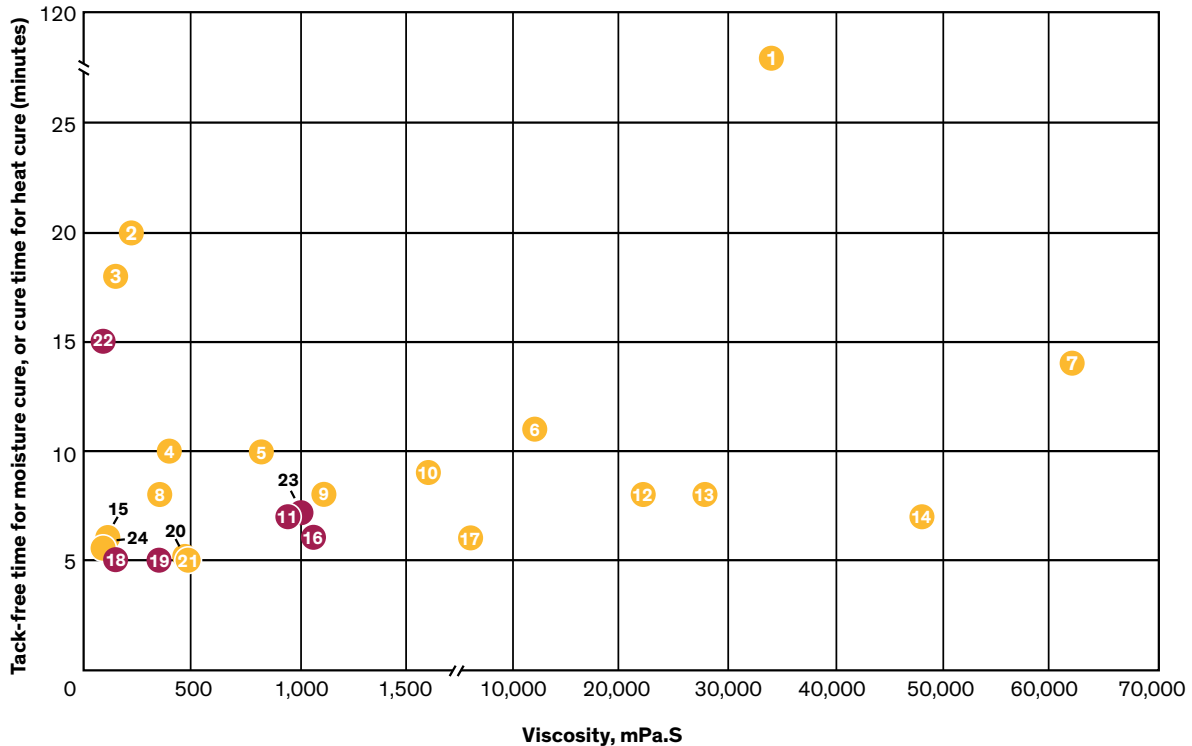
Low viscosity for high-speed production

Our low-viscosity silicone coatings support high-speed production methods, including manual or automated spraying, flow or jetting techniques. These faster flowing materials are also suitable options when you want your coating to flow through vias or under chips.

Higher viscosity for greater control

Offering incrementally higher viscosities, this category of silicone coatings provides increasing control over the speed and distance of flow, to prevent their spread into “no go” areas. Higher viscosity silicones also enable thicker coating layers in one pass, and some grades even offer a stable coat on tall vertical surfaces.

Viscosity/Cure Profile



- | | | |
|---|--|---|
| 1 DOWSIL™ 3140 RTV Coating | 9 DOWSIL™ SE 9187 L Black, Clear or White Adhesive | 17 DOWSIL™ SE 9157 |
| 2 DOWSIL™ CC-4555 Long Bath Life Conformal Coating* | 10 DOWSIL™ HC 1100 | 18 DOWSIL™ 1-2620 Dispersion |
| 3 DOWSIL™ HC 2000 | 11 DOWSIL™ 1-2577 Conformal Coating | 19 DOWSIL™ 1-2620 Low VOC Conformal Coating |
| 4 DOWSIL™ HC 2100 | 12 DOWSIL™ SE 9189 L Gray or White RTV Adhesive | 20 SYLGARD™ 1-4128 Conformal Coating Kit* |
| 5 DOWSIL™ Q1-4010 Conformal Coating* | 13 DOWSIL™ SE 9186 L Sealant | 21 DOWSIL™ 1-4105 Conformal Coating* |
| 6 DOWSIL™ HC 1000 Gray Conformal Coating | 14 DOWSIL™ 3-1944 HP RTV Coating | 22 DOWSIL™ CC-2571 Conformal Coating |
| 7 DOWSIL™ 3-1944 RTV Coating | 15 DOWSIL™ 3-1965 Conformal Coating | 23 DOWSIL™ CC-2570 Conformal Coating |
| 8 DOWSIL™ 3-1953 Conformal Coating | 16 DOWSIL™ 1-2577 Low VOC Conformal Coating | 24 DOWSIL™ CC-3122 Conformal Coating |
- Solventless ● Solvent based *Heat cure

Choose Your Cure Profile

Versatile DOWSIL™ silicone coatings offer flexible cure profiles to allow you to select the optimal solution for your production line setup, volume, and application.

Fast, moisture cure

These coatings cure quickly at room temperature to provide a “dispense and forget” solution that is tack-free, and ready to move down the production line in less than ten minutes, making them the ideal option for high-volume assembly operations.

Extended-working-time moisture cure

Silicone coatings in this category also cure at room temperature, but permit more time for the material to flow further over large or complex boards. They are also the preferred solution for applications that require a thicker coating.

Heat cure

Sometimes labeled “command cure” for the control they allow over the rate of cure, coatings in this category are the material of choice when your processing operation demands full cure in under five minutes. They may also impose lower stress on board components during thermal cycling.

Choose Your Hardness

Silicones can deliver lower modulus than any organic conformal coating material. This makes them ideal for minimizing stress on small, fine wires or sensitive solder joints. Yet silicone's versatile chemistry enables hard coatings that exhibit abrasion resistance, approaching acrylic or urethane solutions. Regardless of what your application requires, Dow can provide a conformal coating with the right durometers to meet your demands.

Highest stress relief (<15 Shore A)

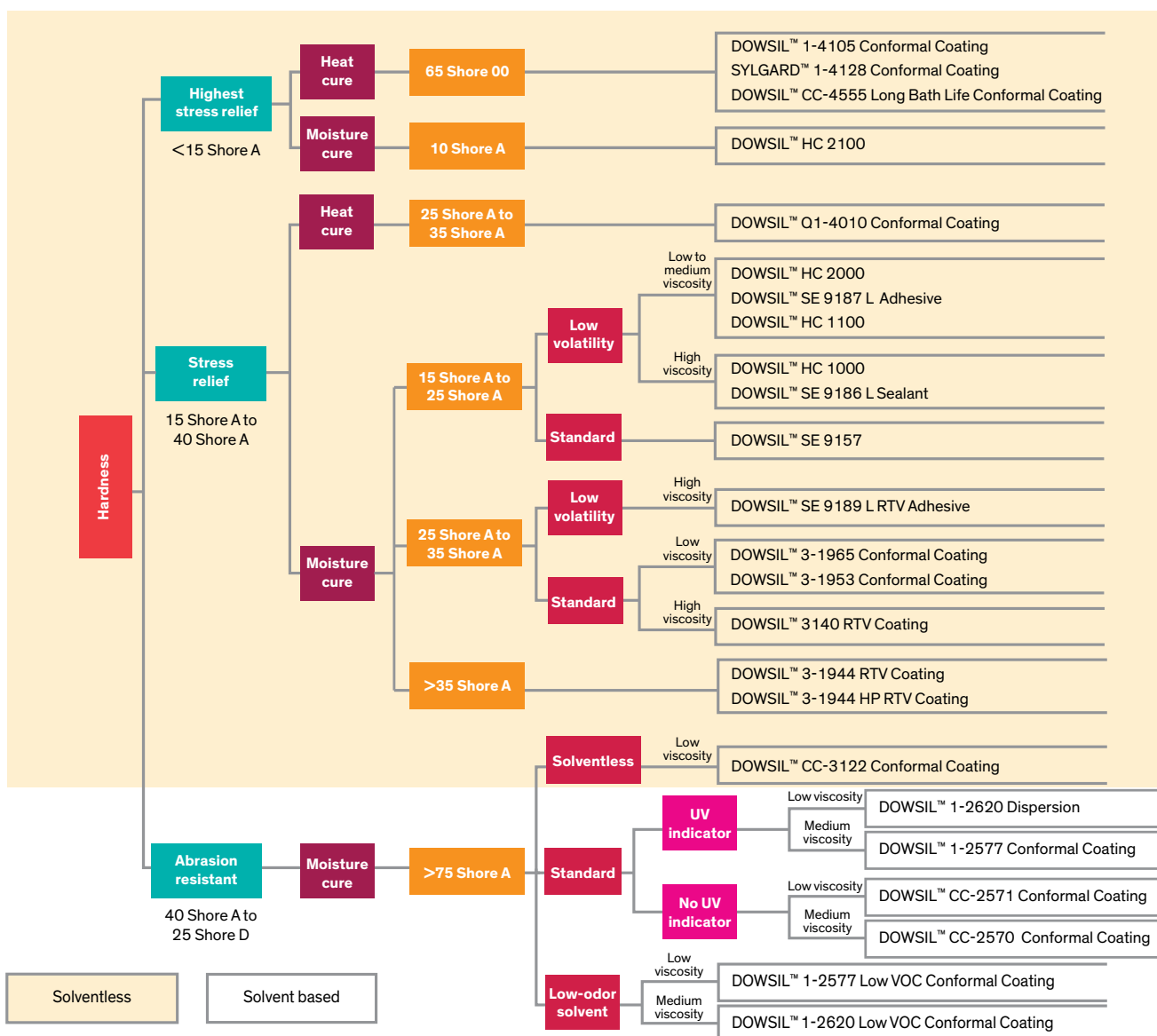
Our softest silicone coatings maximize stress relief on very fine wires, or dense components that can be most susceptible to thermal cycling.

Stress relief (15 Shore A to 40 Shore A)

The ideal alternative to brittle organic coatings, silicones in this category offer an optimal combination of stress relief and protection against harsher environmental elements, such as moisture, dust, vibration, and impact.

Abrasion resistant (40 Shore A to 25 Shore D)

Silicones in this class cure to form hard, tough coatings comparable to acrylics – except silicones offer greater flexibility, and perform reliably at much higher and lower temperatures.



Choose Solventless Silicones

While Dow offers solvent-based elastoplastic coatings that mimic the hardness of acrylic, most of our silicone products are solventless.

This is becoming an important selection criterion for coatings, as the use of solvents may require implementation of worker safety protocols, special equipment, handling and processing considerations for flammable solvents, and the need to meet environmental regulations. Choosing solventless silicone coatings can eliminate complexity, cost, and time to your manufacturing operations.



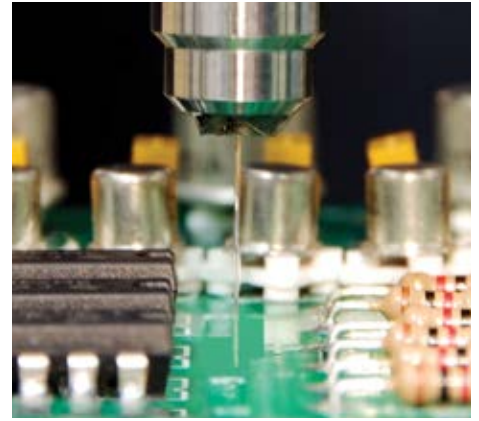
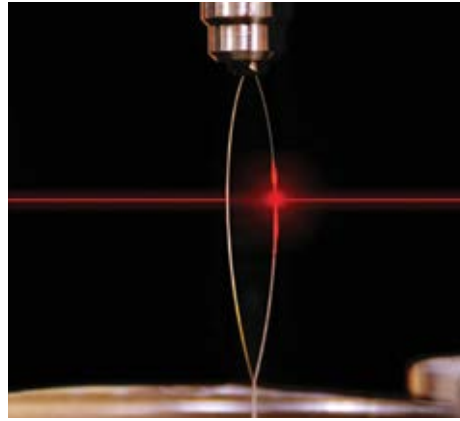
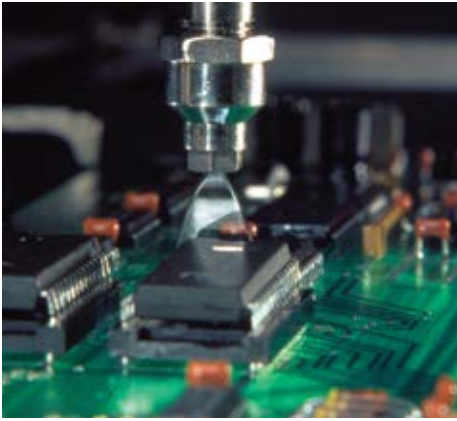
| | Product Name | Benefits & Features | Viscosity, cP | Durometer | Tack-Free Time (minutes) | Room Temperature Cure Time (minutes)* | Heat Cure Time (minutes) | Heat Cure Conditions | Specific Gravity | UL 94 Rating | UL 746 E Approval | Mil Specification | Mil Specification Type, Class Group | IPC-CC Test |
|------------------------------------|---|--|---------------|------------|--------------------------|---------------------------------------|--------------------------|----------------------|------------------|--------------|-------------------|----------------------|-------------------------------------|-------------|
| Solventless RTV Conformal Coatings | DOWSIL™ 3-1953 Conformal Coating | Medium viscosity | 350 | 34 Shore A | 8 | 60 | 0.5 | 60°C/ 15% RH | 0.98 | V-0 | Yes | MIL-I-46058C Amend 7 | Type SR, QPL | IPC-CC-830 |
| | DOWSIL™ 3-1965 Conformal Coating | Thinner cured coating; greater coverage area per kg; faster dispensing; easier to jet-dispense | 115 | 33 Shore A | 6 | 60 | 0.5 | 60°C/ 15% RH | 0.99 | V-0 | No | MIL-I-46058C Amend 7 | Type SR, QPL | IPC-CC-830 |
| | DOWSIL™ 3-1944 RTV Coating | Coverage of taller components, wire bonds and edges | 64,000 | 36 Shore A | 14 | 60 | | | 1.03 | V-0 | Yes | MIL-I-46058C Amend 7 | Type SR, QPL | IPC-CC-830 |
| | DOWSIL™ 3-1944 HP RTV Coating | Allows higher-thickness coverage in critical areas | 49,000 | 36 Shore A | 7 | 60 | | | 1 | V-0 | No | | | |
| | DOWSIL™ 3140 RTV Coating | Allows higher one-pass coating thickness | 34,400 | 32 Shore A | 116 | 72 hours | | | 1.05 | V-1 | Yes | MIL-I-46058C Amend 7 | Type SR, QPL | IPC-CC-830 |
| | DOWSIL™ SE 9189 L Gray or White RTV Adhesive | High viscosity; controlled volatility | 24,500 | 33 Shore A | 8 | 300 | | | 1.19 | V-0 | No | | | |
| | DOWSIL™ SE 9187 L Black, Clear (Translucent), or White Adhesive | Medium viscosity; controlled volatility | 1,100 | 17 Shore A | 8 | 300 | | | 1 | V-0** | Yes** | | | |

*Highly dependent on thickness, temperature, humidity, and other cure conditions.

**Applies to translucent.

| | Product Name | Benefits & Features | Viscosity, cP | Durometer | Tack-Free Time (minutes) | Room Temperature Cure Time (minutes)* | Heat Cure Time (minutes) | Heat Cure Conditions | Specific Gravity | UL 94 Rating | UL 746 E Approval | Mil Specification | Mil Specification Type, Class Group | IPC-CC Test |
|--|--|---|---------------|-------------|--------------------------|---------------------------------------|--------------------------|----------------------|------------------|--------------|-------------------|----------------------|-------------------------------------|-------------|
| Solventless RTV Conformal Coatings | DOWSIL™ SE 9186 L Sealant, Translucent or Black | High viscosity; controlled volatility | 27,000 | 25 Shore A | 8 | 300 | | | 1.02 | | No | | | |
| | DOWSIL™ SE 9157 Clear | Medium viscosity | 5,675 | 25 Shore A | 6 | 300 | | | 1 | | No | | | |
| | DOWSIL™ HC 1000 Gray | High viscosity; controlled volatility | 12,000 | 24 Shore A | 11 | 30 | | | 1.07 | V-0 | No | | | |
| | DOWSIL™ HC 2000 | Low viscosity; controlled volatility | 150 | 25 Shore A | 18 | 210 | | | 1.01 | | No | | | |
| | DOWSIL™ HC 1100 Gray | Controlled volatility | 2,375 | 22 Shore A | 9 | 30 | | | 1.08 | V-0 | No | | | |
| | DOWSIL™ HC 2100 | Low viscosity; controlled volatility | 400 | 10 Shore A | 10 | 30 | | | 0.98 | | No | | | |
| | DOWSIL™ CC-3122 Conformal Coating | Low viscosity; controlled volatility | 80 | 75 Shore A | 6 | | | | 1.03 | | No | | | |
| Solventless Heat Cure Conformal Coatings | DOWSIL™ 1-4105 Conformal Coating | Long open time; "command cure"; uses CTE to its advantage to hold chips down to board | 450 | 65 Shore 00 | | | 10 | 105°C | 0.97 | V-1 | Yes | | | |
| | DOWSIL™ Q1-4010 Conformal Coating | Allows higher one-pass coating thickness | 825 | 33 Shore A | | | 10 | 100°C | 1 | V-1 | Yes | MIL-I-46058C Amend 7 | Type SR, QPL | IPC-CC-830 |
| | SYLGARD™ 1-4128 Conformal Coating | Two-part; much longer room-temperature shelf life | 470 | 65 Shore 00 | | | 5 | 105°C | 0.97 | | No | | | |
| | DOWSIL™ CC-4555 Long Bath Life Conformal Coating | Optimized version for dip-coating | 225 | 78 Shore 00 | | | 20 | 120°C | 0.98 | V-0 | No | | | |
| Solvent-Based RTV Conformal Coatings | DOWSIL™ 1-2577 Conformal Coating | Medium viscosity with firm, abrasion-resistant surface after cure | 950 | 20 Shore D | 7 | 60 | 2 | 60°C 15% RH | 1.11 | V-0 | Yes | MIL-I-46058C Amend 7 | Type SR, QPL | IPC-CC-830 |
| | DOWSIL™ 1-2577 Low VOC Conformal Coating | Solvent is not considered a volatile organic compound; low odor; not ozone-depleting | 1,050 | 25 Shore D | 6 | 60 | 2 | 60°C 15% RH | 1.12 | V-0 | Yes | MIL-I-46058C Amend 7 | Type SR, QPL | IPC-CC-830 |
| | DOWSIL™ 1-2620 Dispersion | Thinner cured coating; greater coverage area per kg; faster dispensing | 150 | 25 Shore D | 5 | 60 | 2 | 60°C 15% RH | 1.11 | V-0 | Yes | MIL-I-46058C Amend 7 | Type SR, QPL | IPC-CC-830 |
| | DOWSIL™ 1-2620 Low VOC Conformal Coating | Low viscosity | 350 | 25 Shore D | 5 | 60 | 2 | 60°C 15% RH | 1.12 | V-0 | Yes | MIL-I-46058C Amend 7 | Type SR, QPL | IPC-CC-830 |
| | DOWSIL™ CC-2570 Conformal Coating | No fluorescence; better optical performance | 1,000 | 25 Shore D | 7 | 60 | 2 | 60°C 15% RH | 1.11 | V-0 | Yes | | | |
| | DOWSIL™ CC-2571 Conformal Coating | No fluorescence; better optical performance | 75 | 25 Shore D | 15 | 60 | 2 | 60°C 15% RH | 1.11 | V-0 | Yes | | | |

*Highly dependent on thickness, temperature, humidity, and other cure conditions.



Learn More

We bring more than just an industry-leading portfolio of advanced silicone-based materials. As your dedicated innovation leader, we bring proven process and application expertise, a network of technical experts, a reliable global supply base, and world-class customer service.

To find out how we can support your applications, visit consumer.dow.com/pcb.

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Your exclusive remedy for breach of such warranty is limited to refund of purchase price or replacement of any product shown to be other than as warranted.

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