

## Innovative Silicone Conformal Coatings from Dow Corning

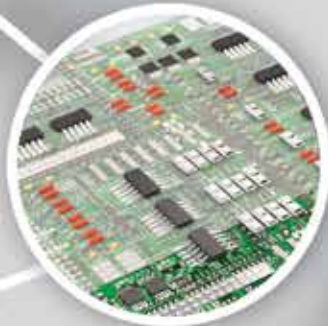
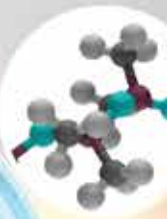
# IMAGINE

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



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# RELIABILITY

## Why Dow Corning?

Dow Corning has been a global leader in silicone-based technology for more than 70 years. Why do our customers consistently choose to work with us?

### UNIQUE PRODUCT TECHNOLOGY

Dow Corning was founded to explore the power and versatility of the silicon atom. Today, we make that power and versatility available to you through our portfolio of more than 7,000 proven products and services built on our versatile silicone chemistry.

### EXTENSIVE KNOW-HOW

Dow Corning multiplies the value of our products with in-house expertise and an extended network of industry resources.

### COLLABORATIVE CULTURE

We work closely with our customers to help reduce time, risk and cost at every stage of your product development.

### GLOBAL REACH

Headquartered in Midland, Michigan, USA, Dow Corning is a truly global company with approximately 11,000 employees working across the world, plus a comprehensive distributor network.

### PROVEN

Dow Corning has reliably supported its customers' innovation for more than seven decades and has been a global leader that invests in manufacturing and quality for silicon-based materials to ensure a steady, consistent supply of high-quality products to our customers.



## Why Silicone Coatings from Dow Corning?

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



### GREATER THERMAL STABILITY

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



### STRESS RELIEF

Silicone conformal coatings offer an extraordinarily broad range of hardness, 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 requirements for handling and processing.







## Choose Your Viscosity

Dow Corning offers conformal coatings 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 also are 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.

## Choose Your Cure Profile

Dow Corning’s versatile silicones offer flexible cure profiles to allow you to select the optimal solution for your production line setup, volume or 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 10 minutes, making them the ideal option for high-volume assembly operations.

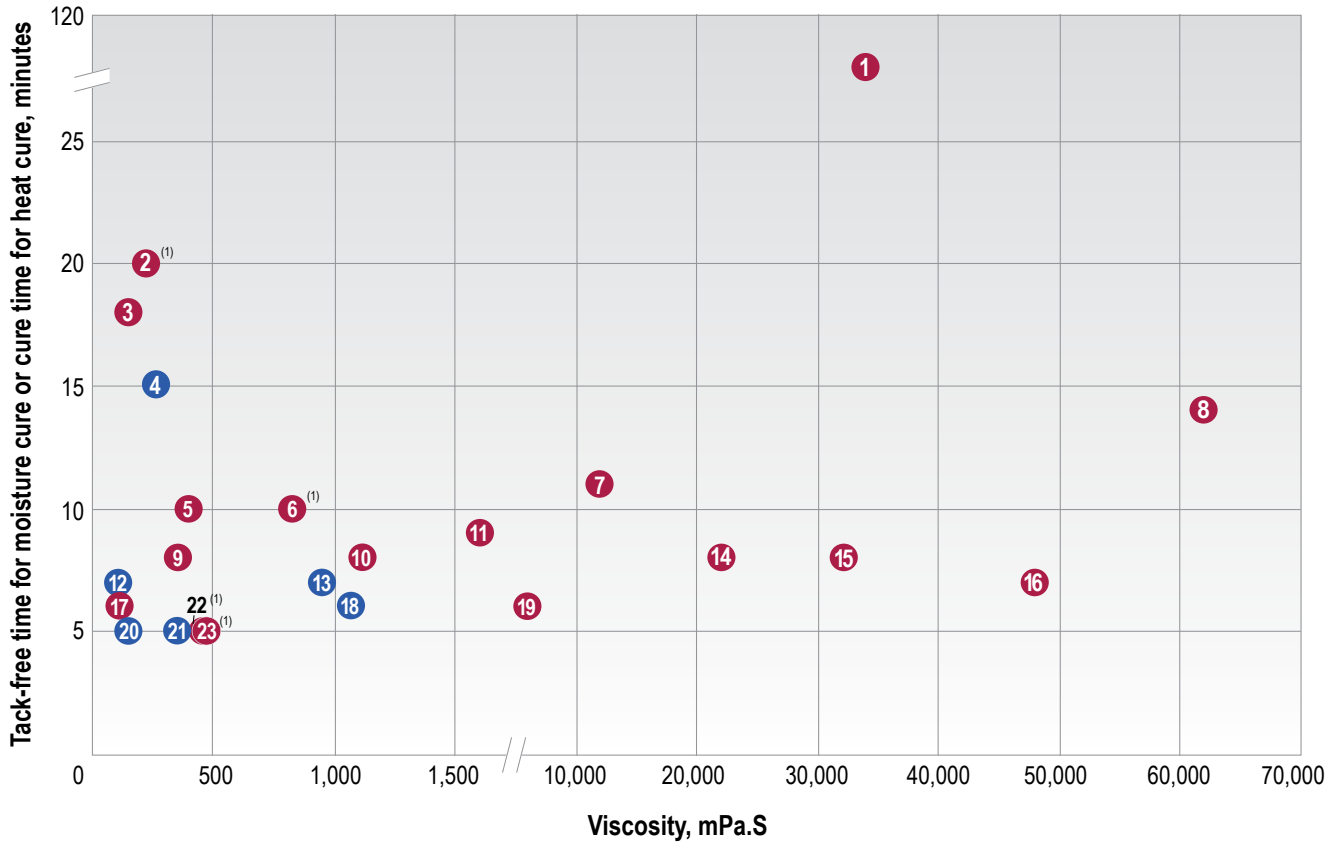
### EXTENDED-WORKING-TIME MOISTURE CURE

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 also are 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 also may impose lower stress on board components during thermal cycling.

## Viscosity/Cure Profile



- 1 Dow Corning® 3140 RTV Coating
- 2 Dow Corning® CC-4555 Long Bath Life Conformal Coating<sup>(1)</sup>
- 3 Dow Corning® HC 2000
- 4 Dow Corning® CC-3040 Conformal Coating **NEW**
- 5 Dow Corning® HC 2100 Coating
- 6 Dow Corning® Q1-4010 Conformal Coating<sup>(1)</sup>
- 7 Dow Corning® HC 1000 Gray Conformal Coating
- 8 Dow Corning® 3-1944 RTV Coating
- 9 Dow Corning® 3-1953 Conformal Coating
- 10 Dow Corning® SE 9187 L Black, Clear or White Adhesive
- 11 Dow Corning® HC 1100
- 12 Dow Corning® LDC 2577D Dispersion Coating
- 13 Dow Corning® 1-2577 Conformal Coating
- 14 Dow Corning® SE 9189 L Gray or White RTV Adhesive
- 15 Dow Corning® SE 9186L Coating
- 16 Dow Corning® 3-1944 HP RTV Coating
- 17 Dow Corning® 3-1965 Conformal Coating
- 18 Dow Corning® 1-2577 Low VOC Conformal Coating
- 19 Dow Corning® SE 9157
- 20 Dow Corning® 1-2620 Dispersion
- 21 Dow Corning® 1-2620 Low VOC Conformal Coating
- 22 Sylgard® 1-4128 Conformal Coating Kit<sup>(1)</sup>
- 23 Dow Corning® 1-4105 Conformal Coating<sup>(1)</sup>

- Solventless system;  
>95% solid content
- Solvent based

<sup>(1)</sup>Heat cure.

## 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 Corning can provide a conformal coating with the right durometer to meet your demands.

### HIGHEST STRESS RELIEF (<15 SHORE A)

Our softest silicone coating materials 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.

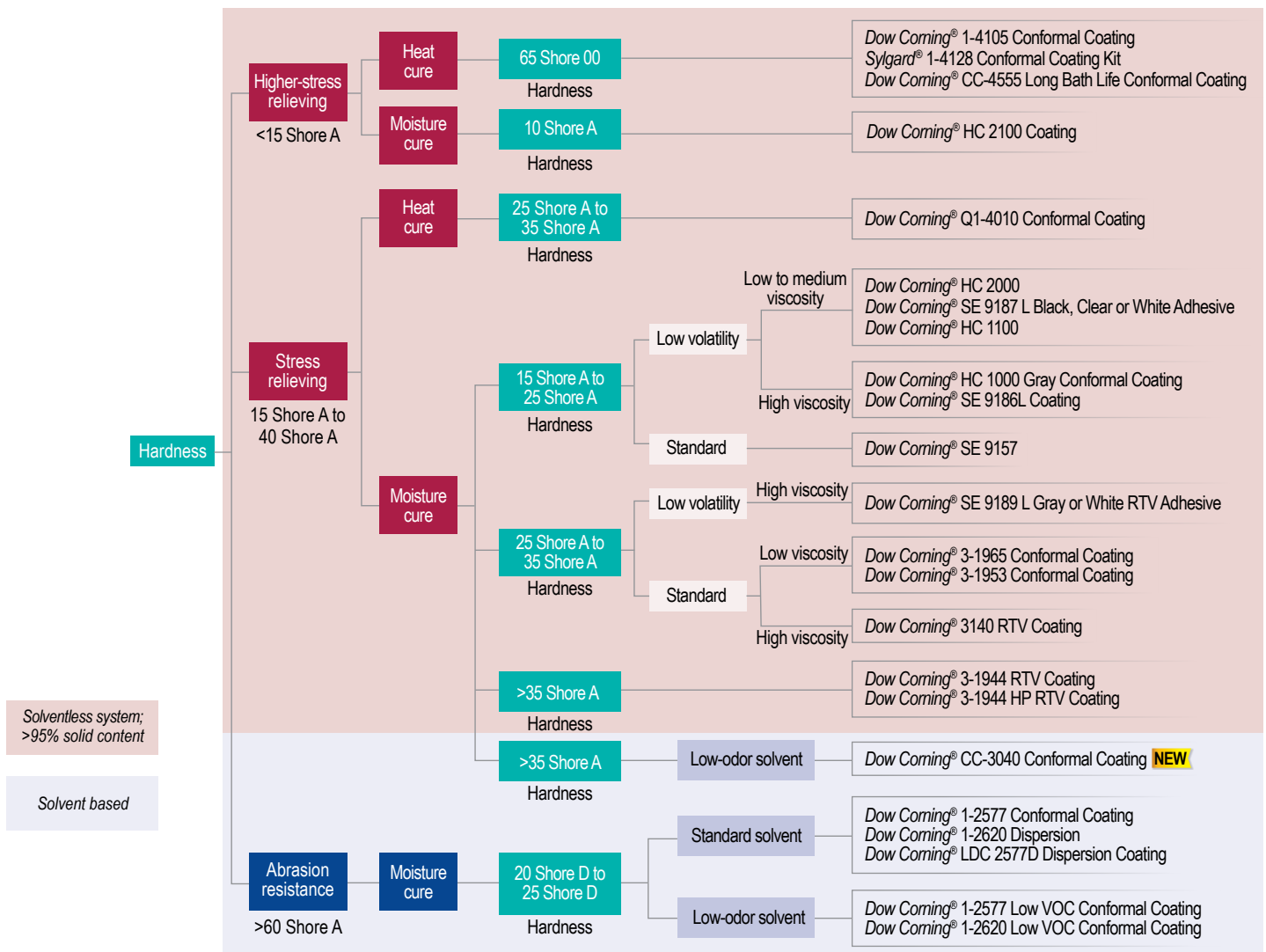
### ABRASION RESISTANT (40 SHORE A TO 25 SHORE D)

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 Corning 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 it impacts worker safety protocols, special equipment, handling and processing for flammable solvents and meeting environmental regulations. Choosing solventless silicone coatings can eliminate complexity, cost and time for your manufacturing operations.



Product Type	Product Name	Benefits & Features	Viscosity, cP	Durometer	Tack-Free Time, minutes	Room Temperature Cure Time, minutes <sup>(2)</sup>	Heat Cure Time, minutes	Heat Cure Conditions	Specific Gravity	UL		Mil Spec		IPC-CC Test
										UL 94 Rating	UL 746 Approval	Mil Specification	Mil Spec Type, Class Group	IPC-CC
Solventless RTV Conformal Coating	Dow Corning® 3-1953 Conformal Coating	Medium viscosity	350	34 Shore A	8	60	0.5	60°C/ 15% RH	0.98	V-0	Yes			IPC-CC-830
	Dow Corning® 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	Pending			IPC-CC-830
	Dow Corning® 3-1944 RTV Coating	Coverage of taller components, wire bonds & edges	64,000	36 Shore A	14	60			1.03	V-0	Yes			IPC-CC-830
	Dow Corning® 3-1944 HP RTV Coating	Allows higher-thickness coverage in critical areas	49,000	36 Shore A	7	60			1					
	Dow Corning® 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
	Dow Corning® SE 9189 L Gray or White RTV Adhesive	High viscosity; controlled volatility	24,500	33 Shore A	8	300			1.19	V-0	No			
	Dow Corning® SE 9187 L Black, Clear or White Adhesive	Medium viscosity; controlled volatility	1,100	17 Shore A	8	300			1	V-0 <sup>(3)</sup>	Yes			
	Dow Corning® SE 9186L Coating, Black or Clear	High viscosity; controlled volatility	27,000	25 Shore A	8	300			1.02		No			
	Dow Corning® SE 9157, Clear	Middle-level viscosity	5,675	25 Shore A	6	300			1		No			
	Dow Corning® HC 1000 Gray Conformal Coating	High viscosity; controlled volatility	12,000	24 Shore A	11	30			1.07	V-0	No			
	Dow Corning® HC 2000	Low viscosity; controlled volatility	150	25 Shore A	18	210			1.01		Pending			
	Dow Corning® HC 1100, Gray	Middle-level viscosity; controlled volatility	2,375	22 Shore A	9	30			1.08	V-0	No			
Dow Corning® HC 2100 Coating	Low viscosity; controlled volatility	400	10 Shore A	10	30			0.98		Pending				
Solventless Heat Cure Conformal Coating	Dow Corning® 1-4105 Conformal Coating	Long open time; "command cure"; uses CTE to its advantage to hold chips down to board	450	65 Shore 00			5	100°C	0.97	V-1	Yes			
	Dow Corning® 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	
	Sylgard® 1-4128 Conformal Coating Kit	Two parts; much longer room-temperature shelf life	470	65 Shore 00			5	105°C	0.97		No			
	Dow Corning® CC-4555 Long Bath Life Conformal Coating	Optimized version for dip-coating	225	78 Shore 00			20	120°C	0.98		No			
Solvent-Based RTV Conformal Coating	Dow Corning® 1-2577 Conformal Coating/ Dow Corning Toray Pelgan Z Spray	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-830B
	Dow Corning® 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
	Dow Corning® 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	
	Dow Corning® 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
	Dow Corning® LDC 2577D Dispersion Coating	Thinner cured coating; greater coverage area per kg; faster dispensing	105	25 Shore D	7	60		60°C/ 15% RH	1.12					
	Dow Corning® CC-2570 Conformal Coating	No fluorescence; better optical performance	950	25 Shore D	7	60	2	60°C/ 15% RH	1.11					
Dow Corning® CC-3040 Conformal Coating <b>NEW</b>	Tougher conformal coating with good anti-scratch resistance	260	38 Shore A	11	60			1.1						

<sup>(2)</sup>Highly dependent on thickness, temperature, humidity and other cure conditions.

<sup>(3)</sup>For translucent.

**NEW**

## Dow Corning® CC-3040 Conformal Coating

- Tougher conformal coating with anti-scratch property
- Flexible and transparent
- High flowability

Target properties for this new product are:

- Viscosity: 260 cP
- Durometer: 38 Shore A
- Tack-free time: 11 minutes



## How Can We Help You Today?

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

For more information about our materials and capabilities, visit [dowcorning.com](http://dowcorning.com).

To discuss how we could work together to meet your specific needs, email [electronics@dowcorning.com](mailto:electronics@dowcorning.com) or go to [dowcorning.com/ContactUs](http://dowcorning.com/ContactUs) for a contact close to your location. Dow Corning has customer service teams, science and technology centers, application support teams, sales offices, and manufacturing sites around the globe.

Cover – AV25466, AV17988, AV25473\*, AV25463, AV21747; Page 2 – AV22783, AV22157, AV15391, AV14432, AV22913, AV21772; Page 3 – AV13149, AV25475\*, AV25465, AV25464, AV25470\*; Page 4 – AV25471\*, AV25472\*; Page 8 – AV01782, AV25476\*, AV25474\*, AV23005

(\*Photo courtesy of Nordson ASYMTEK.)

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