Electronics
Solutions

DOW CORNING

Advanced Silicone Materials for Electric Vehicle Electronics

IMAGINE

Improved Thermal Management,
Reliability and Cost-Effectiveness
for Electric Vehicle Electronics

IMAGINE

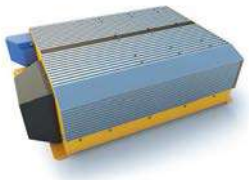
Designs for the Future … Today

The market for plug-in hybrid and battery-powered electric vehicles (xEV) has the potential to grow exponentially in the coming years. But realizing that potential will depend on a number of factors, including the industry's ability to meet consumer expectations for performance and value.

This will challenge battery makers to design for the large-volume production of lithium battery packs that are smaller, lighter and less expensive. These higher-energy-density packs will be capable of delivering more power, longer, through better thermal control.

Manufacturers and designers of other xEV components – including battery management systems, power control units, DC/DC converters and electric motors – face many of the same thermal management, assembly and protection challenges.

Dow Corning can help, with an extensive portfolio of proven, innovative and emerging silicone technologies for xEV electronics.

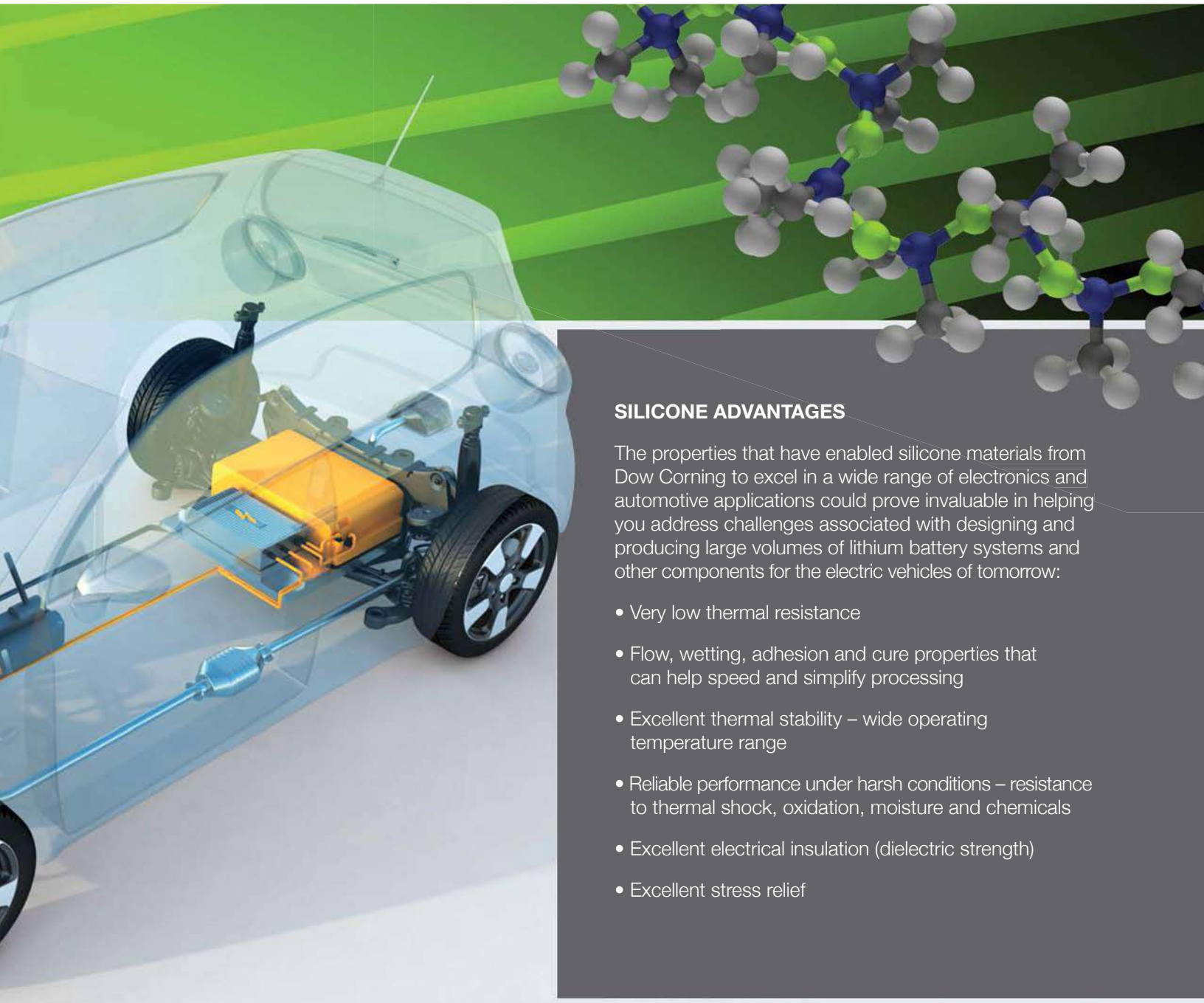


AC/DC Charger

Inverter/Converter

Motor/Generator

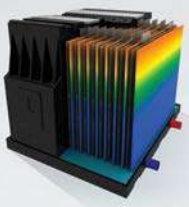
Electric Compressor for Air Conditioner



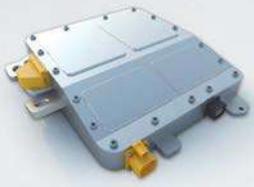
SILICONE ADVANTAGES

The properties that have enabled silicone materials from Dow Corning to excel in a wide range of electronics and automotive applications could prove invaluable in helping you address challenges associated with designing and producing large volumes of lithium battery systems and other components for the electric vehicles of tomorrow:

- Very low thermal resistance
- Flow, wetting, adhesion and cure properties that can help speed and simplify processing
- Excellent thermal stability – wide operating temperature range
- Reliable performance under harsh conditions – resistance to thermal shock, oxidation, moisture and chemicals
- Excellent electrical insulation (dielectric strength)
- Excellent stress relief



Battery Module

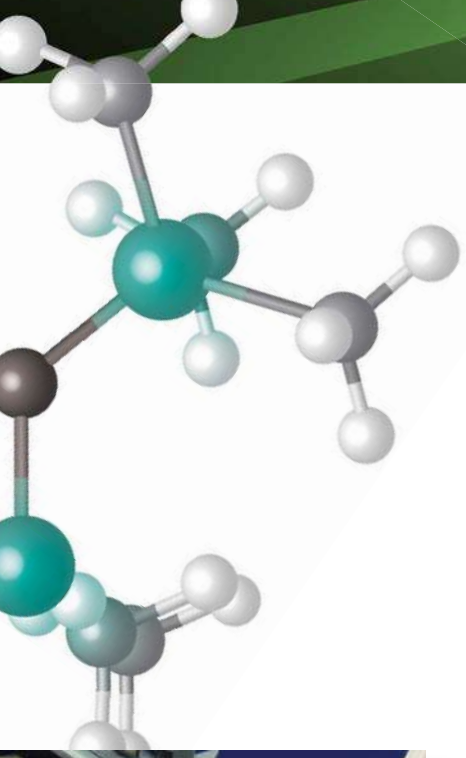


DC/DC Converter

Sheath Heater

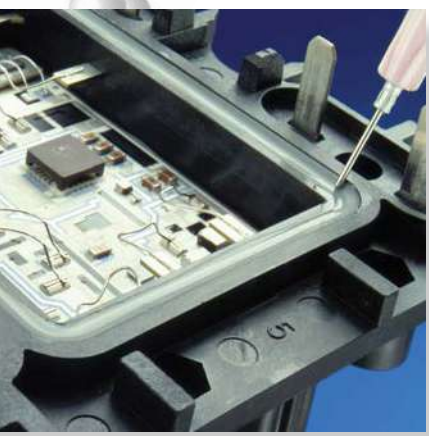
PTC Heater

Battery Management System (BMS)



Enabling & Problem-Solving Silicone Materials

Silicone is an amazingly versatile material that can be produced in many forms. Dow Corning is a silicone pioneer and a global leader in engineering silicones to meet specific performance and processing requirements.



FOR THERMAL MANAGEMENT

Thermally conductive silicone materials from Dow Corning have properties that can help you reduce operating temperatures and extend the life and performance of batteries and other electric vehicle electronic components.

Dow Corning offers a wide range of thermal interface materials with the potential for creating effective, efficient designs and assembly applications. Examples of leading technologies include:

- **Thermally conductive silicone adhesives** for coupling the battery pack to the heat sink; also may be appropriate for use within or between cells
- **Noncuring thermally conductive silicone compounds**, with a possible applied temperature range of -40 to 150°C, for conducting heat from the battery cells to the heat sink
- **Thermally conductive silicone gels and encapsulants** are flowable materials that facilitate high-volume processes in automated production; can be used as an alternative to precured pads to couple cells and modules to heat sinks or as conformable gap-fillers

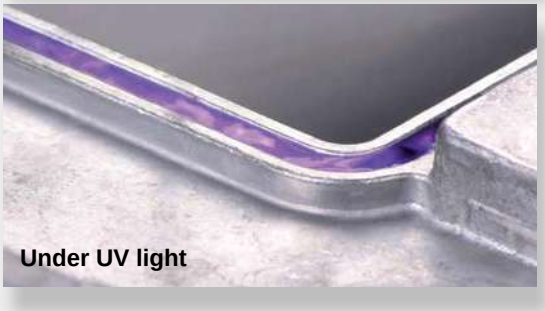
FOR OTHER CHALLENGES

Dow Corning offers proven and innovative materials to help you meet a wide range of electric vehicle application challenges.

- **Silicone gels** for potting of electronics in the battery pack's power management system
- **Adhesives** for a variety of bonding applications, including staking large capacitors for vibration control, extra support for large components on circuit boards, and housing sealing
- **Conformal coatings** for protecting electronic circuit boards in the power management system
- **Engineered elastomers** for heat-resistant sealing and gasketing

BREAKTHROUGH Technologies

To meet needs for performance, design flexibility and cost control



Under UV light

Dow Corning® EA-7100 Adhesive

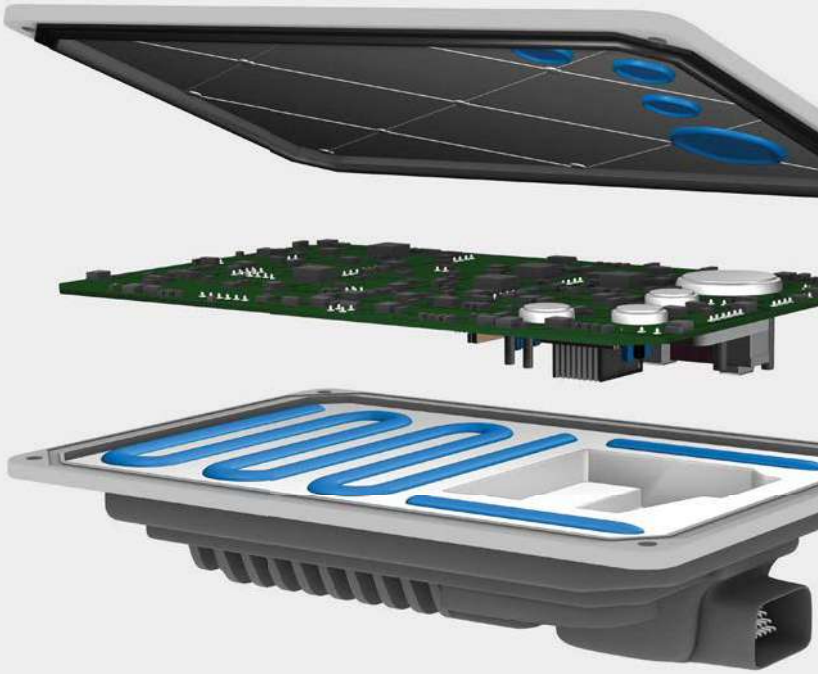
A Thermal Radical Cure™ *adhesive for use in the assembly of electronics housings and for attaching connectors, electronic control units or sensors to substrates*

Dow Corning® EA-7100 Adhesive cures much faster at moderate temperatures than conventional heat-curable silicones, and it may allow you to eliminate some cleaning steps, enabling faster throughput and lower energy costs. Plus, it offers durable adhesion to a broad range of diverse substrates for greater design flexibility. Other quality- and performance-enhancing benefits include adhesion in harsh environments, low void formation, superior anti-corrosion performance and less sensitivity to contamination.

Dow Corning® TC-4525 Thermally Conductive Gap Filler

A cost-effective way to manage the rising heat in next-generation electronics designs

Dow Corning® TC-4525 Thermally Conductive Gap Filler is a soft and compressible silicone material designed to dissipate heat from electronic devices. This high-performing new silicone technology delivers thermal conductivity of 2.5 W/m.K, greatly improved dispensability and stable performance for more reliable electronics in harsh automotive underhood environments.



xEV Battery Pack

THERMAL MANAGEMENT

Product		1 or 2 Part	Color	Thermal Conductivity, W/m.K	Thermal Resistance, °C/W
Thermally Conductive Gap Fillers	*Dow Corning*® TC-4515 Thermally Conductive Gap Filler†	In development: 1.8 W/m.K silicone gap filler material for automotive electronics			
	Dow Corning® TC-4525 Thermally Conductive Gap Filler	2 part (1:1 mix ratio)	Part A: White Part B: Blue	2.6	0.42 @ 85 µm 0.73 @ 115 µm 1.23 @ 309 µm
	Dow Corning® TC-4525 GB Thermally Conductive Gap Filler	Glass bead option (180 micron) for *Dow Corning*® TC-4525 Thermally Conductive Gap Filler			
	Dow Corning® TC-4525 CV Thermally Conductive Gap Filler	2 part (1:1 mix ratio)	Part A: White Part B: Blue	2.6	-
	Dow Corning® TC-4529 Thermally Conductive Gap Filler	1 part	Gray	3.2	0.44 @ 78 µm 0.58 @ 100 µm 1.84 @ 400 µm
	Dow Corning® TC-4530 Thermally Conductive Gap Filler†	In development			
Thermally Conductive Adhesives	*Dow Corning*® TC-2030 Thermally Conductive Adhesive	2 part (1:1 mix ratio)	Gray	2.7	-
	Dow Corning® TC-2035 Thermally Conductive Adhesive	2 part (1:1 mix ratio)	Part A: White Part B: Reddish brown	3.3	0.25 @ 50 µm 0.44 @ 100 µm
	Dow Corning® SE 4485 Thermally Conductive Adhesive	1 part	White	2.8	-
	Dow Corning® SE 4485 L Thermally Conductive Adhesive	1 part	White	2.2	-
	Dow Corning® SE 4486 Thermally Conductive Adhesive	1 part	White	1.6	-
Thermally Conductive Encapsulants	*Dow Corning*® TC-4605 Thermally Conductive Encapsulant	2 part (1:1 mix ratio)	Gray	1	-
	Dow Corning® TC-4605 HLV Thermally Conductive Encapsulant	2 part (1:1 mix ratio)	Gray	1	-

(1)Tack-free time is the time required for the product to develop a nontacky surface based on adhesion to a polyethylene film.

ASSEMBLY

Product		1 or 2 Part	Color	Viscosity, cP	Density, g/cm^3
Adhesives	*Dow Corning*® EA-5151 *QiC*™ Adhesive(1)†	1 part	-	60,000 @ 120°C	1.08
	Dow Corning® 7091 Adhesive/Sealant(2)	1 part	Black, white, gray	-	1.4
	Dow Corning® SE 9168 RTV Adhesive	1 part	Gray	-	Cured: 1.32
	Dow Corning® SE 9185 Clear or White Adhesive	1 part	Clear or white	-	Cured: 1.05
	Dow Corning® EA-1236 Base and Catalyst Special Black Adhesive	2 part; (base-to-catalyst mix ratio by weight: 100 to 14)	Base: White Catalyst: Black	180,000 @ 0.5 s^{-1} 160,000 @ 5 s^{-1}	Base: 1.31 Catalyst: 1.05 Cured: 1.28
Silicone Foam	*Dow Corning*® 3-8209 Silicone Foam(5)	2 part (1:1 mix ratio)	Part A: Dark gray Part B: Colorless	Part A: 11,000-17,000 Part B: 12,000-17,000	Part A: 1.07 Part B: 1.01 Density: 200-280 (cured @ 23°C and tested after 24 hr)

(1)Developmental product data. *QiC*™: quick-in-connect adhesive. Utilizes silicone technology to achieve instant green strength when dispensed and cures to a strong moisture-cured silicone adhesive.
(2)Used as formed-in-place gasket (FIPG) material. Mechanical properties: cured 7 days in air at 23°C (73°F) and 50% relative humidity.
(3)Tack-free time is the time required for the product to develop a nontacky surface based on adhesion to a polyethylene film.
(4)Measured after 7-day cure at room temperature.
(5)Designed to be dispensed and cured directly on parts to form an integrated compression gasket.

	Lap Shear	Cure, time/temp.	Viscosity, cP	Density, g/cm^3	Durometer	CTE, ppm/K	Notes
	In development: 1.8 W/m.K silicone gap filler material for automotive electronics						
	-	120 min/25°C 20 min/50°C 10 min/80°C	Part A: 207,000 Part B: 193,000 Mixed: 217,000	2.9	55 (Shore 00)	-50 to 80°C: 95 -50 to 150°C: 123	-
	Glass bead option (180 micron) for *Dow Corning*® TC-4525 Thermally Conductive Gap Filler						
	-	120 min/25°C 10 min/80°C	Part A: 223,000 Part B: 216,000 Mixed: 217,000	Cured: 2.9	40 (Shore 00) 32 (Asker C)	-	-
	-	Noncuring	300,000	3.1	-	-	-
	In development						
	Al: 435 psi, 3 MPa, 300 N/cm^2	60 min/130°C	Part A: 250,000 Part B: 200,000 Mixed: 220,000	-	92 (Shore A)	-	-
	Al: 381 psi, 2.63 MPa, 263 N/cm^2 Cu: 416 psi, 2.87 MPa, 287 N/cm^2	30 min/125°C 10 min/150°C	Part A: 130,000 Part B: 118,000 Mixed: 125,000	Wet: 3	95 (Shore A [JIS Type A]) 45 (Shore D)	-50 to 200°C: 92	-
	Glass to glass: 168 psi, 1.2 MPa, 120 N/cm^2	Tack-free time(1) @ 25°C: 10 min	Fluidity: 54 mm	Cured: 2.9	90 (Shore A [JIS])	-	UL 94 V-0
	Glass to glass: 262 psi, 1.8 MPa, 180 N/cm^2	Tack-free time(1) @ 25°C: 8 min	Fluidity: 47.4 mm	Cured: 2.84	90 (Shore A [JIS])	-	-
	Glass to glass: 240 psi, 1.65 MPa, 165 N/cm^2	Tack-free time(1) @ 25°C: 4 min	19,600 Fluidity: 60 mm	Cured: 2.6	81 (Shore A [JIS])	-	-
	Al: 110 psi	60 min/120°C	Part A: 3,100 Part B: 2,500 Mixed: 2,900	Cured: 1.67	30 (Shore A)	-	UL flammability @ 1.5 mm: 94 V-0
	Anodized Al: 220 psi	60 min/120°C	Part A: 1,600 Part B: 1,400 Mixed: 1,900	Cured: 1.67	60 (Shore A)	-	UL flammability @ 1.5 mm: 94 V-0

†Dow Corning developmental material. The composition, features, benefits and other properties are subject to change. The future availability of this product is not guaranteed. You are responsible to determine the suitability of the Product for your contemplated use. The Product is provided "AS IS" WITH ALL FAULTS, AND WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

	Cure, time/temp.	Lap Shear	Durometer	Tensile Strength, MPa	Elongation, %	Notes
	Room temperature cure when exposed to moisture in the air	Polycarbonate lap shear adhesion: 1 day: 0.5 MPa 7 days: 1.7 MPa	55-57 (Shore A)	4.5-4.7	>900	Can be used with standard hot-melt dispensing equipment
	Room temperature cure when exposed to moisture in the air; tack-free time(3): 28 min	-	32 (Shore A)	2.5	680	FIPG(2)
	Room temperature cure when exposed to moisture in the air; tack-free time(3) @ 25°C: 6.5 min	Glass: 275 psi, 1.9 MPa, 189 N/cm^2	44 (Shore A [JIS])	3.69	363	UL 94 V-0
	Room temperature cure when exposed to moisture in the air; tack-free time(3) @ 25°C: 8 min	Glass: 120 N/cm^2	31 (Shore A)	3	515	-
	Room temperature cure; tack-free time(3): 10 min	-	36 (Shore A)(4)	2.2	300	Fast room-temperature cure
	Room temperature cure when exposed to moisture in the air; tack-free time(3) @ 25°C: max 10 min	-	45 (Shore 00)	-	-	Compression set @ 50% compression, 22 hr @ 70°C: • Non-post-cured: 32% • Post-cured 1 hr @ 100°C: 4% • Stress-strain characteristics in compression, 50% compression: 74 KPa

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xEV Battery Pack *(continued)*

CONNECTOR

Product		1 or 2 Part	Color	Viscosity, cP	Density, g/cm^3	
Encapsulants	*Sylgard*® 170 Silicone Elastomer	2 part (1:1 mix ratio)	Black	Part A: 3,160 Part B: 1,110 Mixed: 2,135	Part A, Uncured: 1.37 Part B, Uncured: 1.37	
	Sylgard® 170 Fast Cure Silicone Elastomer	2 part (1:1 mix ratio)	Black	Part A: 3,436 Part B: 1,287 Mixed: 2,361	Part A, Uncured: 1.38 Part B, Uncured: 1.38	
	Sylgard® 567 Silicone Encapsulant	2 part (1:1 mix ratio)	Black	Part A: 2,060 Part B: 570	Uncured: 1.24	
Adhesive	*Dow Corning*® SE 9186 Clear or White Adhesive	1 part	Clear or white	64,000	Cured: 1.03	
Silicone Foam	*Dow Corning*® 3-6548 Silicone RTV Foam[(2)]	2 part	Black	Part A: 40,000-60,000 Part B: 50,000-75,000	Part A: 1.05-1.11 Part B: 1.05-1.11 Cured: 0.22-0.32	

[(1)]Tack-free time is the time required for the product to develop a nontacky surface based on adhesion to a polyethylene film.
[(2)]Silicone RTV foam for fire-resistant penetration seals.

Battery Management System (BMS)

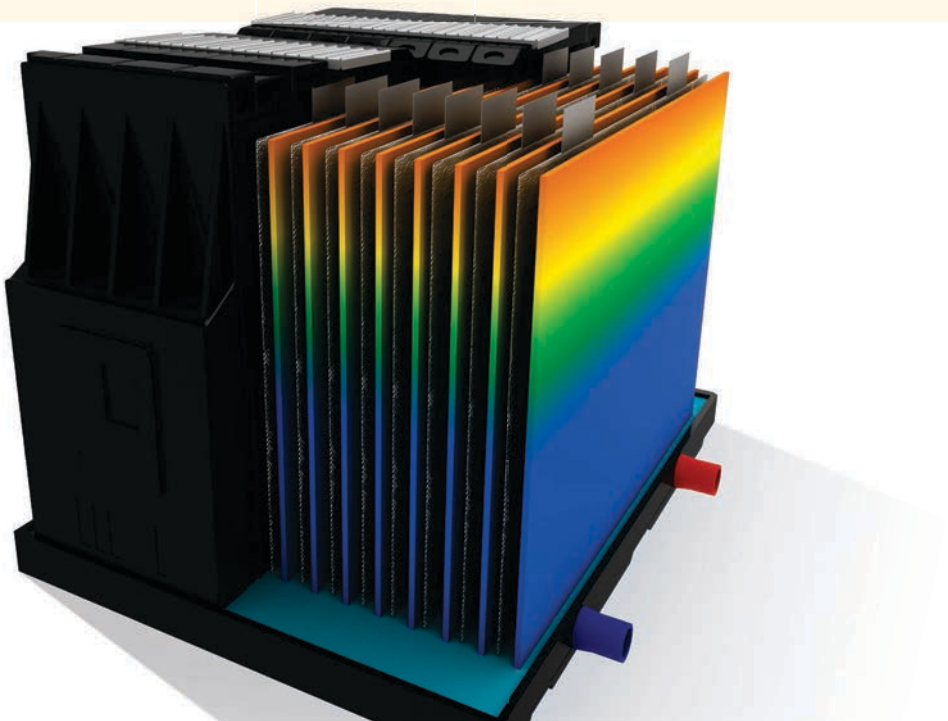
PCB PROTECTION

Product		1 or 2 Part	Color	Viscosity, cP	Density, g/cm^3	
Conformal Coatings	*Dow Corning*® 3-1953 Conformal Coating	1 part	Translucent	350	Cured: 0.98	
	Dow Corning® 3-1965 Conformal Coating	1 part	Translucent	115	Cured: 0.99	
	Dow Corning® 1-2577 Low VOC Conformal Coating	1 part	Transparent	1,050	Cured: 1.12	

[(1)]Tack-free time is the time required for the product to develop a nontacky surface based on adhesion to a polyethylene film.

	Cure, time/temp.	Lap Shear	Durometer	Tensile Strength, MPa	Elongation, %	Notes
	24 hr/25°C 25 min/70°C 10 min/100°C	-	47 (Shore A)	-	-	Thermal conductivity: 0.48 W/m.K
	0.2 hr/25°C	-	41 (Shore A)	-	-	Thermal conductivity: 0.4 W/m.K
	180 min/70°C 120 min/100°C	-	40 (Shore A)	-	-	Thermal conductivity: 0.29 W/m.K
	Room temperature cure when exposed to moisture in the air; tack-free time[3] @ 25°C: max 10 min	Glass: 360 psi, 2.5 MPa, 25 N/cm^2	20 (Shore A)	2.5	550	-
	-	-	-	228,000 N/m^2, 33 psi	-	Compression deflection: • @ 20% compression: 35,900 N/m^2, 5.2 psi • @ 40% compression: 69,600 N/m^2, 10.1 psi • @ 60% compression: 146,000 N/m^2, 21.2 psi

	Tack-Free Time[1], time/temp.	Nonvolatile Content (NVC), %	Durometer	Notes
	8 min/25°C 0.5 min/60°C (15% RH)	99.4	34 (Shore A)	UL 94 V-0; MIL I-46058C Amend 7; IPC-CC-830B; UL 746E
	6 min/25°C	-	33 (Shore A)	UL 94 V-0; MIL I-46058C Amend 7; IPC-CC-830 with Amendment 1
	6 min/25°C 1.5 min/60°C (15% RH)	NVC – forced draft volatility: 33.6	85 (Shore A) 25 (Shore D)	UL 94 V-0; MIL I-46058C Amend 7; IPC-CC-830B; UL 746E



Power Control Unit (PCU), Including Inverter, Converter, Etc.

THERMAL MANAGEMENT

Product		1 or 2 Part	Color	Thermal Conductivity, W/m.K	Thermal Resistance, °C/W	
Thermally Conductive Compounds	*Dow Corning*® TC-5026 Thermally Conductive Compound	1 part	Gray	2.9	0.03°C-cm²/W @ 7 µm (40 psi)	
	Dow Corning® TC-5625 C Thermally Conductive Compound	1 part	Green gray	2.6	0.1°C-cm²/W (20 psi)	
	Dow Corning® SC 4471 CV Thermally Conductive Compound	1 part	White	2	-	
Thermally Conductive Gap Fillers	*Dow Corning*® TC-4515 Thermally Conductive Gap Filler†	In development: 1.8 W/m.K silicone gap filler material for automotive electronics				
	Dow Corning® TC-4525 Thermally Conductive Gap Filler	2 part (1:1 mix ratio)	Part A: White Part B: Blue	2.6	0.42 @ 85 µm 0.73 @ 115 µm 1.23 @ 309 µm	
	Dow Corning® TC-4525 GB Thermally Conductive Gap Filler	Glass bead option (180 micron) for *Dow Corning*® TC-4525 Thermally Conductive Gap Filler				
	Dow Corning® TC-4525 CV Thermally Conductive Gap Filler	2 part (1:1 mix ratio)	Part A: White Part B: Blue	2.6	-	
	Dow Corning® TC-4529 Thermally Conductive Gap Filler	1 part	Gray	3.2	0.44 @ 78 µm 1.84 @ 400 µm	
	Dow Corning® TC-4530 Thermally Conductive Gap Filler†	In development				
Thermally Conductive Adhesives	*Dow Corning*® Q1-9226 Thermally Conductive Adhesive	2 part (1:1 mix ratio)	Gray	0.8	-	
	Dow Corning® 1-4174 Thermally Conductive Adhesive	1 part	Gray	1.78	-	
	Dow Corning® TC-2030 Thermally Conductive Adhesive	2 part (1:1 mix ratio)	Gray	2.7	-	
	Dow Corning® TC-2035 Thermally Conductive Adhesive	2 part (1:1 mix ratio)	Part A: White Part B: Reddish brown	3.3	0.25 @ 50 µm 0.44 @ 100 µm	

	Lap Shear	Cure, time/temp.	Viscosity, cP	Density, g/cm^3	Durometer	CTE, ppm/K	Notes
	-	Noncuring	102,118	Uncured: 3.5	-	-	-
	-	Noncuring	81,757	Uncured: 4.2	-	-	-
	-	Noncuring	116,000	Cured: 2.76	-	-	-
	In development: 1.8 W/m.K silicone gap filler material for automotive electronics						
	-	120 min/25°C 20 min/50°C 10 min/80°C	Part A: 207,000 Part B: 193,000 Mixed: 217,000	2.9	55 (Shore 00)	-50 to 80°C: 95 -50 to 150°C: 123	-
	Glass bead option (180 micron) for *Dow Corning*® TC-4525 Thermally Conductive Gap Filler						
	-	120 min/25°C 10 min/80°C	Part A: 223,000 Part B: 216,000 Mixed: 217,000	Cured: 2.9	40 (Shore 00) 32 (Asker C)	-	
	-	Noncuring	300,000	3.1	-	-	-
	In development						
	Al: 375 psi, 2.6 MPa, 260 N/cm^2	Heat cure (100°C or above)	Part A: 48,000 Part B: 43,000 Mixed: 59,000	Cured: 2.14	67 (Shore A)	-	-
	Al: 646 psi, 4.5 MPa, 445 N/cm^2	90 min/100°C 30 min/125°C 20 min/150°C	62,300	Uncured: 2.71	92 (Shore A)	125 ppm/°C	UL 94-V0
	Al: 435 psi, 3 MPa, 300 N/cm^2	60 min/130°C	Part A: 250,000 Part B: 200,000 Mixed: 220,000	-	92 (Shore A)	-	-
	Al: 381 psi, 2.63 MPa, 263 N/cm^2 Cu: 416 psi, 2.87 MPa, 287 N/cm^2	30 min/125°C 10 min/150°C	Part A: 130,000 Part B: 118,000 Mixed: 125,000	Wet: 3	95 (Shore A [JIS Type A]) 45 (Shore D)	-50 to 200°C: 92	-

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Power Control Unit (PCU), Including Inverter, Converter, Etc. *(continued)*

ASSEMBLY

Product		1 or 2 Part	Color	Viscosity, cP	Density, g/cm³	Cure, time/temp.
Adhesives	*Dow Corning*® EA-7100 Adhesive[1]	1 part	Gray	360,000	Cured: 1.09	15 min/100°C
	Dow Corning® EA-5151 *QiC*™ Adhesive[2]†	1 part	-	60,000 @ 120°C	1.08	Room temperature cure when exposed to moisture in the air
	Dow Corning® EA-6060 Adhesive†	In development				
	Dow Corning® 3-6265 Thixotropic Adhesive	1 part	Black	Low shear: 1,020,000 High shear: 235,000	Cured: 1.34	60 min/125°C 30 min/150°C
	Dow Corning® 3-6265 HP Adhesive	1 part	Black	1,070 Pa-sec	Cured: 1.33	240 min/100°C 25 min/125°C 10 min/150°C
	Dow Corning® 3-1598 HP Adhesive	1 part	Black	82,000	Cured: 1.31	180 min/100°C 30 min/125°C 15 min/150°C
	Dow Corning® 866 Primerless Silicone Adhesive	1 part	Gray	48,000	Cured: 1.29	60 min/125°C 30 min/150°C
	Dow Corning® 7091 Adhesive/Sealant[3]	1 part	Black, white, gray	Extrusion rate: 185 g/min	1.4	Room temperature cure when exposed to moisture in the air; tack-free time[4]: 28 min
	Dow Corning® 744 RTV Sealant	1 part	-	Extrusion rate: 184 g/min	Cured: 1.42	Room temperature cure; tack-free time[4]: 55 min
	Dow Corning® EA-1236 Base and Catalyst Special Black Adhesive	2 part (base-to-catalyst mix ratio by weight: 100 to 14)	Base: White Catalyst: Black	180,000 @ 0.5 s^{-1} 160,000 @ 5 s^{-1}	Base: 131 Catalyst: 1.05 Cured: 1.28	Room temperature cure; tack-free time[4]: 10 min
Silicone Foam	*Dow Corning*® 3-8209 Silicone Foam[6]	2 part (1:1 mix ratio)	Part A: Dark gray Part B: Colorless	Part A: 11,000-17,000 Part B: 12,000-17,000	Part A: 1.07 Part B: 1.01 Density: 200-280 (cured @ 23°C and tested after 24 hr)	Room temperature cure when exposed to moisture in the air; tack-free time[4] @ 25°C: max 10 min

[1]Durable adhesion to a wide variety of substrates, including plastics, metals, cured silicones and other substrates (contact Dow Corning for details).
[2]Developmental product data. *QiC*™: quick-in-connect adhesive. Utilizes silicone technology to achieve instant green strength when dispensed and cures to a strong moisture-cured silicone adhesive.
[3]Used as formed-in-place gasket (FIPG) material. Mechanical properties: cured 7 days in air at 23°C (73°F) and 50% relative humidity. Extrusion rate measured using 3.18 mm diameter nozzle at 0.62 MPa.
[4]Tack-free time is the time required for the product to develop a nontacky surface based on adhesion to a polyethylene film.
[5]Measured after 7-day cure at room temperature.
[6]Designed to be dispensed and cured directly on parts to form an integrated compression gasket.

ASSEMBLY *(continued)*

Product		1 or 2 Part	Color	Extrusion Rate, g/min	Density, g/cm³	Cure, time/temp.
CIPGs (Cured-in-Place Gaskets)	*Dow Corning*® RBL-9694-20P A & B Silicone Elastomer	2 part (1:1 mix ratio)	Part A: Black Part B: White	[1]Part A: 119 Part B: 282	1.17	165 sec/115°C, T90%
	Dow Corning® RBL-9694-30P A & B Silicone Elastomer	2 part (1:1 mix ratio)	Part A: Black Part B: White	[1]Part A: 75 Part B: 178	1.2	Part A: 46 sec/115°C, T90% Part B: 92 sec/115°C
	Dow Corning® RBL-9694-45M Kit Silicone Elastomer	2 part (1:1 mix ratio)	Part A: Black Part B: White	[2]Part A: 77 Part B: 98	1.2	34 sec/115°C, T90%

[1]Extrusion rate: 3.2 mm nozzle at 0.63 MPa.
[2]Extrusion rate: 90 psi, 1/8-inch orifice.

PCB PROTECTION

Product		1 or 2 Part	Color	Viscosity, cP	Density, g/cm³
Conformal Coatings	*Dow Corning*® 3-1953 Conformal Coating	1 part	Translucent	350	Cured: 0.98
	Dow Corning® 3-1965 Conformal Coating	1 part	Translucent	115	Cured: 0.99
	Dow Corning® 1-2577 Low VOC Conformal Coating	1 part	Transparent	1,050	Cured: 1.12

[1]Tack-free time is the time required for the product to develop a nontacky surface based on adhesion to a polyethylene film.

Lap Shear	Durometer	Tensile Strength, MPa	Elongation, %	CTE, ppm/°C	Notes
Al: 350 psi, 2.4 MPa, 240 kg/cm^2 PBT: 375 pcs, 2.6 MPa, 260 N/cm^2	43 (Shore A)	3.4	260	247	Durable adhesion to a wide variety of substrates
Polycarbonate lap shear adhesion: 1 day: 0.5 MPa 7 days: 1.7 MPa	55-57 (Shore A)	4.5-4.7	>900	-	Can be used with standard hot-melt dispensing equipment
In development					
Al: 611 psi	60 (Shore A)	4.8	165	275	UV indicator for inspection
Al: 825 psi, 5.7 MPa, 568 N/cm^2	68 (Shore A)	5.8	275	215	High tensile strength
Al: 712 psi, 4.97 MPa, 497 N/cm^2	57 (Shore A)	5.4	260	277	Able to flow, fill or self-level after dispensing
Al: 774.5 psi, 5.34 MPa, 534 N/cm^2	57 (Shore A)	6.4	210	350	High tensile strength
-	32 (Shore A)	2.5	680	-	FIPG[3]
Al: 430 psi, 3 MPa, 296 N/cm^2	37 (Shore A)	2.7	590	-	Bonding large components to circuit boards
-	36 (Shore A)[5]	2.2	300	-	Fast room-temperature cure
-	45 (Shore 00)	-	-	-	Compression set @ 50% compression, 22 hr @ 70°C: • Non-post-cured: 32% • Post-cured 1 hr @ 100°C: 4% • Stress-strain characteristics in compression, 50% compression: 74 KPa

†Dow Corning developmental material. The composition, features, benefits and other properties are subject to change. The future availability of this product is not guaranteed. You are responsible to determine the suitability of the Product for your contemplated use. The Product is provided "AS IS" WITH ALL FAULTS, AND WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Durometer	Tensile Strength, MPa	Elongation @ Break, %	Modulus 100%, MPa	Tear Strength, kN/m	Compression Set @ -25%, %	Lap Shear Adhesion, MPa
21 (Shore A)	Die C, 5.9	925	0.39	Die B, 13	Compression for 22 hr @ 132°C: 36	Vinyl ester (10 min/150°C): 1.3
32 (Shore A)	Die C, 7.2	820	0.8	Die B, 14	Compression for 22 hr @ 177°C: 31	Al (10 min/150°C): 1.0
45 (Shore A)	Die C, 7.25	600	1.45	Die B, 45	Compression for 22 hr @ 177°C: 29	Al (10 min/150°C): 1.64 PA66 GF30 (10 min/150°C): 1.35

Tack-Free Time[1], time/temp.	Nonvolatile Content (NVC), %	Durometer	Notes
8 min/25°C 0.5 min/60°C (15% RH)	99.4	34 (Shore A)	UL 94 V-0; MIL I-46058C Amend 7; IPC-CC-830B; UL 746E
6 min/25°C	-	33 (Shore A)	UL 94 V-0; MIL I-46058C Amend 7; IPC-CC-830 with Amendment 1
6 min/25°C 1.5 min/60°C (15% RH)	NVC – forced draft volatility: 33.6	85 (Shore A) 25 (Shore D)	UL 94 V-0; MIL I-46058C Amend 7; IPC-CC-830B; UL 746E

Electric Motor

PROTECTION

Product		1 or 2 Part	Color	Thermal Conductivity, W/m.K	Thermal Resistance, °C/W	
Thermally Conductive Encapsulants	*Dow Corning*® CN-8760 G Thermally Conductive Encapsulant	2 part (1:1 mix ratio)	Dark gray	0.67	-	
	Dow Corning® TC-4605 Thermally Conductive Encapsulant	2 part (1:1 mix ratio)	Gray	1	-	
	Dow Corning® TC-4605 HLV Thermally Conductive Encapsulant	2 part (1:1 mix ratio)	Gray	1	-	

PROTECTION *(continued)*

Product		1 or 2 Part	Color	Viscosity, cP	Density, g/cm^3	
Conformal Coatings	*Dow Corning*® 3-1953 Conformal Coating	1 part	Translucent	350	Cured: 0.98	
	Dow Corning® 3-1965 Conformal Coating	1 part	Translucent	115	Cured: 0.99	
	Dow Corning® 1-2577 Low VOC Conformal Coating	1 part	Transparent	1,050	Cured: 1.12	
	Dow Corning® LDC-2577D Dispersion Coating	1 part	Transparent	104	Cured: 1.0	

(1)Tack-free time is the time required for the product to develop a nontacky surface based on adhesion to a polyethylene film.

CONTROL UNIT THERMAL MANAGEMENT

Product		1 or 2 Part	Color	Thermal Conductivity, W/m.K	Thermal Resistance, °C/W	
Thermally Conductive Encapsulant	*Dow Corning*® TC-6020 Thermally Conductive Encapsulant(1)†	2 part (1:1 mix ratio)	Gray	2.7	-	

(1)Developmental product data.

	Lap Shear	Cure, time/temp.	Viscosity, cP	Density, g/cm^3	Durometer	CTE, ppm/K	Notes
	-	24 hr/25°C	Part A: 2,900 Part B: 3,200 Mixed: 3,200	Cured: 1.58	45 (Shore A)	-	UL 94 V-0; UL RTI rating: 150°C
	Al: 110 psi	60 min/120°C	Part A: 3,100 Part B: 2,500 Mixed: 2,900	Cured: 1.67	30 (Shore A)	-	UL flammability @ 1.5 mm: 94 V-0
	Anodized Al: 220 psi	60 min/120°C	Part A: 1,600 Part B: 1,400 Mixed: 1,900	Cured: 1.67	60 (Shore A)	-	UL flammability @ 1.5 mm: 94 V-0

	Tack-Free Time(1), time/temp.	Nonvolatile Content (NVC), %	Durometer	Notes
	8 min/25°C 0.5 min/60°C (15% RH)	99.4	34 (Shore A)	UL 94 V-0; MIL I-46058C Amend 7; IPC-CC-830B; UL 746E
	6 min/25°C	-	33 (Shore A)	UL 94 V-0; MIL I-46058C Amend 7; IPC-CC-830 with Amendment 1
	6 min/25°C 1.5 min/60°C (15% RH)	NVC – forced draft volatility: 33.6	85 (Shore A) 25 (Shore D)	UL 94 V-0; MIL I-46058C Amend 7; IPC-CC-830B; UL 746E
	5 min/25°C 2 min/60°C (15% RH)	-	23 (Shore D)	-

	Lap Shear	Cure, time/temp.	Viscosity, cP	Density, g/cm^3	Durometer	CTE, ppm/K	Notes
	Al: 40.5 psi	23 min/60°C, T90% 13 min/80°C, T90% 5 min/100°C, T90%	Part A: 10,800 Part B: 9,960 Mixed: 10,640	2.926	63 (Shore A)	-	-

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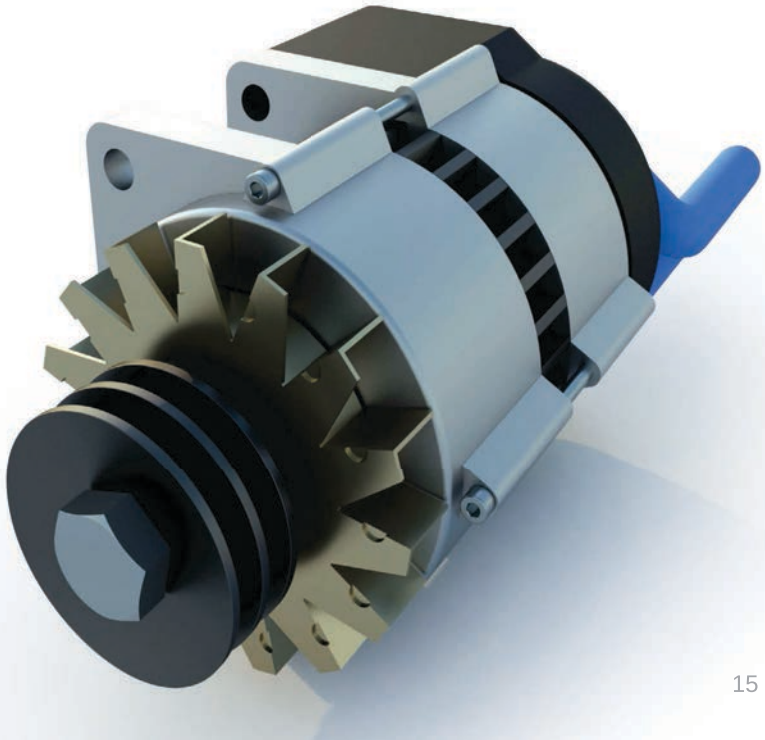

On-Board Charger

THERMAL MANAGEMENT

Product		1 or 2 Part	Color	Thermal Conductivity, W/m.K	Thermal Resistance, °C/W	
Thermally Conductive Encapsulants	*Dow Corning*® TC-4605 Thermally Conductive Encapsulant	2 part (1:1 mix ratio)	Gray	1	-	
	Dow Corning® TC-4605 HLV Thermally Conductive Encapsulant	2 part (1:1 mix ratio)	Gray	1	-	
	Dow Corning® TC-6020 Thermally Conductive Encapsulant[(1)†]	2 part (1:1 mix ratio)	Gray	2.7	-	

[(1)]Developmental product data.

ASSEMBLY

Product		1 or 2 Part	Color	Viscosity, cP	Density, g/cm^3	Cure, time/temp.	
Adhesive	*Dow Corning*® EA-9189 H White RTV Adhesive	1 part	White	-	Cured: 1.68	Room temperature cure when exposed to moisture in the air; tack-free time[(1)] @ 25°C: 2 min	

[(1)]Tack-free time is the time required for the product to develop a nontacky surface based on adhesion to a polyethylene film.

PROTECTION

Product		1 or 2 Part	Color	Viscosity, cP	Density, g/cm^3	
Conformal Coatings	*Dow Corning*® 3-1953 Conformal Coating	1 part	Translucent	350	Cured: 0.98	
	Dow Corning® 3-1965 Conformal Coating	1 part	Translucent	115	Cured: 0.99	
	Dow Corning® 1-2577 Low VOC Conformal Coating	1 part	Transparent	1,050	Cured: 1.12	

[(1)]Tack-free time is the time required for the product to develop a nontacky surface based on adhesion to a polyethylene film.

	Lap Shear	Cure, time/temp.	Viscosity, cP	Density, g/cm^3	Durometer	CTE, ppm/K	Notes
	Al: 110 psi	60 min/120°C	Part A: 3,100 Part B: 2,500 Mixed: 2,900	Cured: 1.67	30 (Shore A)	-	UL flammability @ 1.5 mm: 94 V-0
	Anodized Al: 220 psi	60 min/120°C	Part A: 1,600 Part B: 1,400 Mixed: 1,900	Cured: 1.67	60 (Shore A)	-	UL flammability @ 1.5 mm: 94 V-0
	Al: 0.5 psi	23 min/60°C, T90% 13 min/80°C, T90% 5 min/100°C, T90%	Part A: 10,800 Part B: 9,960 Mixed: 10,640	2.926	63 (Shore A)	-	-

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	Lap Shear	Durometer	Tensile Strength, MPa	Elongation, %	CTE, ppm/°C	Notes
	Al: 327 psi, 2.2 MPa, 225 N/cm^2 Cu: 343 psi, 2.3 MPa, 236 N/cm^2 PC: 187 psi, 1.2 MPa, 128 N/cm^2 FR4: 349 psi, 2.4 MPa, 240 N/cm^2	80 (Shore A)	3.9	32	-	Thermal conductivity: 0.88 W/m.K UL 94 V-0

	Tack-Free Time[(1)], time/temp.	Nonvolatile Content (NVC), %	Durometer	Notes
	8 min/25°C 0.5 min/60°C (15% RH)	99.4	34 (Shore A)	UL 94 V-0; MIL I-46058C Amend 7; IPC-CC-830B; UL 746E
	6 min/25°C	-	33 (Shore A)	UL 94 V-0; MIL I-46058C Amend 7; IPC-CC-830 with Amendment 1
	6 min/25°C 1.5 min/60°C (15% RH)	NVC – forced draft volatility: 33.6	85 (Shore A) 25 (Shore D)	UL 94 V-0; MIL I-46058C Amend 7 IPC-CC-830B; UL 746E

PTC Heater

THERMAL MANAGEMENT AND ASSEMBLY

Product		1 or 2 Part	Color	Thermal Conductivity, W/m.K	Thermal Resistance, °C/W	
Thermally Conductive Adhesives	*Dow Corning*® Q1-9226 Thermally Conductive Adhesive	2 part (1:1 mix ratio)	Gray	0.8	-	
	Dow Corning® SE 4402 Thermally Conductive Adhesive	1 part	Gray	0.9	-	
	Dow Corning® TC-2035 Thermally Conductive Adhesive	2 part (1:1 mix ratio)	Part A: White Part B: Reddish brown	3.3	0.25 @ 50 µm 0.44 @ 100 µm	

Electric Compressor

PROTECTION

Product		1 or 2 Part	Color	Viscosity, cP	Density, g/cm^3	
Conformal Coatings	*Dow Corning*® 3-1953 Conformal Coating	1 part	Translucent	350	Cured: 0.98	
	Dow Corning® 3-1965 Conformal Coating	1 part	Translucent	115	Cured: 0.99	
	Dow Corning® 1-2577 Low VOC Conformal Coating	1 part	Transparent	1,050	Cured: 1.12	

(1)Tack-free time is the time required for the product to develop a nontacky surface based on adhesion to a polyethylene film.

Sheath Heater

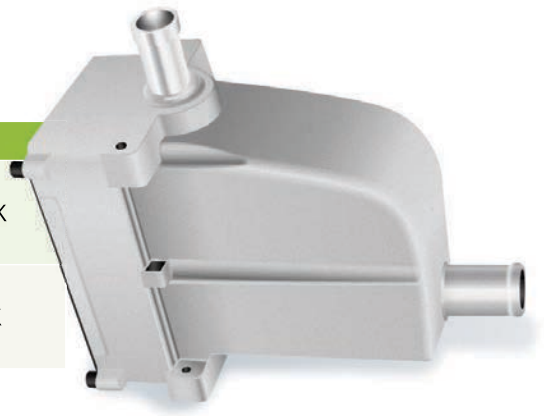
PROTECTION

Product		1 or 2 Part	Color	Viscosity, cP	Density, g/cm^3	
Encapsulants	*Sylgard*® 170 Silicone Elastomer	2 part (1:1 mix ratio)	Black	Part A: 3,160 Part B: 1,110 Mixed: 2,135	Part A, Uncured: 1.37 Part B, Uncured: 1.37	
	Sylgard® 170 Fast Cure Silicone Elastomer	2 part (1:1 mix ratio)	Black	Part A: 3,436 Part B: 1,287 Mixed: 2,361	Part A, Uncured: 1.38 Part B, Uncured: 1.38	

	Lap Shear	Cure, time/temp.	Viscosity, cP	Density, g/cm^3	Durometer	CTE, ppm/K	Notes
	Al: 375 psi, 2.6 MPa, 260 N/cm^2	Heat cure (100°C or above)	Part A: 48,000 Part B: 43,000 Mixed: 59,000	Cured: 2.14	67 (Shore A)	-	-
	Al: 530 psi, 3.65 MPa, 365 N/cm^2	30 min/150°C	32,000	Cured: 2.2	75 (Shore A)	-	-
	Al: 381 psi, 2.63 MPa, 263 N/cm^2 Cu: 416 psi, 2.87 MPa, 287 N/cm^2	30 min/125°C 10 min/150°C	Part A: 130,000 Part B: 118,000 Mixed: 125,000	Wet: 3	95 (Shore A [JIS Type A]) 45 (Shore D)	-50 to 200°C: 92	-

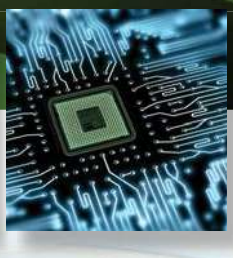
	Tack-Free Time[1], time/temp.	Nonvolatile Content (NVC), %	Durometer	Notes
	8 min/25°C 0.5 min/60°C (15% RH)	99.4	34 (Shore A)	UL 94 V-0; MIL I-46058C Amend 7; IPC-CC-830B; UL 746E
	6 min/25°C	-	33 (Shore A)	UL 94 V-0; MIL I-46058C Amend 7; IPC-CC-830 with Amendment 1
	6 min/25°C 1.5 min/60°C (15% RH)	NVC – forced draft volatility: 33.6	85 (Shore A) 25 (Shore D)	UL 94 V-0; MIL I-46058C Amend 7; IPC-CC-830B; UL 746E

	Cure, time/temp.	Durometer	Notes
	24 hr/25°C 25 min/70°C 10 min/100°C	47 (Shore A)	Thermal conductivity: 0.48 W/m.K
	0.2 hr/25°C	41 (Shore A)	Thermal conductivity: 0.4 W/m.K



IMAGINE

The Value of Materials Innovation, Expertise and Support from Dow Corning



Established specifically to explore and develop the potential of silicones, Dow Corning Corporation has grown to be a global leader in silicones, silicon-based technology and innovation. We bring you:

- More than 65 years of success in game-changing materials innovation for the world's transportation industry
- Specific expertise in the development of performance-enhancing and enabling technologies for automotive electronics
- Decades of experience in the development and application of silicone-based thermal management materials

To help make electric vehicles a high-performing, cost-effective transportation alternative, Dow Corning is investing in new solutions for the design and assembly of xEV electronics. And we are looking for opportunities to collaborate with battery cell makers, system designers, assemblers, tier suppliers and vehicle OEMs to improve the efficiency and reliability of next-generation battery packs and systems.

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DOW CORNING

Industrial Equipment
and Maintenance
Solutions

Dow Corning® Silicone Sealants and Foams for Industrial Assembly and Maintenance

Selection Guide

SEAL
ADHERE
PROTECT

SOLUTIONS FOR

INDUSTRIAL ASSEMBLY AND MAINTENANCE

Dow Corning® Brand Silicone Sealants

Silicon-based sealants from Dow Corning last longer and are more versatile than most organic polymer sealants. They are durable RTV sealants; cure at room temperature to a tough, rubbery solid with exceptional performance characteristics; and meet a wide variety of your industrial bonding and sealing needs.

Benefits of *Dow Corning* silicone sealants include:

Stability over a wide temperature range
When properly cured, most of our products can be used at temperatures ranging from -56 to 177°C (204°C intermittent), with still others capable of higher thermal stability up to and exceeding 260°C (315°C intermittent).

Weather resistance
High resistance to ultraviolet (UV) rays, radiation and weather prevents our products from hardening, cracking, crumbling, drying and becoming brittle.

Chemical stability
Our sealants do not readily degrade, even under long-term exposure to many chemicals and atmospheric pollutants.

Good bond strength
Our products provide good adhesion to a wide variety of industrial materials, including glass; ceramics; wood; masonry; painted surfaces; and many metals and plastics.

Electrical properties
Designed for a variety of applications, our products can be used in various electrical and electronic applications, including devices that are thermally cycled over a wide temperature range.

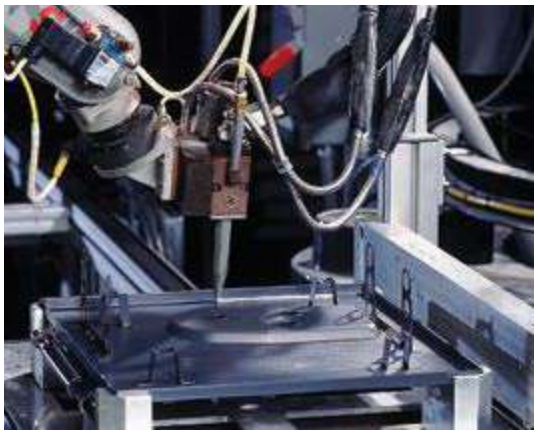
Low flammability
In fire conditions, silicone adhesives/sealants are reluctant to burn. Many products comply with UL flammability standards.

When you specify an assembly and maintenance product from Dow Corning, you receive a solution backed by the world leader in silicone technology with more than 70 years of expertise and innovations.

Why Silicones?

For application versatility, durability, aesthetics and value, silicones outperform organics. Silicone sealants from Dow Corning are unrivaled, delivering:

- Protection that typically lasts three times longer than organic materials in the same applications, thus avoiding premature and costly renovations
- Proven performance with successful track records in a range of diverse applications
- Outstanding life-cycle value
- All-weather application and performance, with resistance to UV exposure, ozone, rain, snow and extreme temperatures
- More durability than organic-based materials
- Continued flexibility and adhesion, even while being stretched or compressed
- Resistance to cracking, splits or tears without hardening or fading
- Easy application over a wide temperature range



Organics are prone to chemical reversion, a phenomenon in which organic polyurethane loses its cured properties and reverts to a substance with the softness of chewing gum. The differences between silicones and organics are the difference between long-term value and premature failure. Silicones prevail.

Which Silicone?

Silicone sealants from Dow Corning are offered in a wide range of formulation options, including:

- **RTV (room-temperature vulcanizing) sealants**
  These silicone polymers work with a condensation reaction in humidity at typical room conditions, but the cure can be accelerated by increasing temperature and humidity. RTV sealants are easy to install, and they offer relatively low cost and good adhesion.

- **Heat-cure sealants**
  Delivering much shorter cure times than RTV sealants, these materials can be automatically dispensed to meet industrial equipment assembly requirements.

- **Hot-melt silicone sealants**
  Ideal for automated applications in the manufacturing of various components, these reactive hot-melt materials provide instant green strength, which can increase productivity, improve quality and reduce costs in industrial assembly applications.

- **One-part materials**
  Containing all the ingredients needed to produce a cured material, these sealants use external factors – such as moisture in the air, heat or the presence of UV light – to initiate, speed or complete the curing process. One-part sealant formulations are easy to use and typically have a low- or room-temperature cure, but moisture-curing materials may take 24 hours or more to fully cure.

- **Two-part materials**
  With the reactive ingredients separated to prevent premature initiation of the cure process, these materials often use the addition of heat to facilitate or accelerate cure. Two-part formulations typically offer longer shelf life, high-speed cure and the ability to carefully control working/open time and cure time by manipulating the formulation, but they require mixing and may involve more sophisticated processes and application expertise.

- **Silicone foams**
  Ideal as compression gaskets or as “environmental seals” to protect against ambient air, splashed water, dust and moisture, these materials are a cost-effective sealing solution compared to preformed gaskets and foam tapes for use sealing high-tolerance gaps. Applied using automated robotic dispensing, these materials have a fast room-temperature or low-temperature cure.

Sealant Chemistry

Silicone sealants typically consist of an inorganic siloxane (Si-O-Si-O-Si) polymer and appropriate filler, crosslinker, catalyst, adhesion promoter, pigment and plasticizer.

To meet specific needs, silicone sealants are offered in a variety of chemistries and cure types, each with their own benefits. The following tables will assist you in selecting the right material to help meet your performance requirements.

TABLE I. SEALANT CHEMISTRIES

Chemistry	Surface Cure	Green Strength	Primerless Adhesion	Shelf Life	Clear/Translucent	Features	Limitations
Acid Cure							
Acetoxy (One-Part)	●●●	●	●	●●●	●●	• Competitively priced versus organics • Fast cure • No-catalyst versions available • Good shelf life • Clear • Adhesion durability	• Acidic; potentially corrosive to metals • Strong odor
Neutral Cure							
Alkoxy (One-Part)	●	●	●●	●●	LA[1]	• Neutral cure • Robust adhesion • Economical; chalk filled • Low VOC	• Stability of silica system not robust, so achieving clarity is difficult • Slower cure speed • 12-month shelf life
Oxime (One-Part)	●●	●●	●	●	●●	• Fast cure • Low-catalyst options possible • Good silica versions with clear/ translucent offerings	• High-temperature (40°C) storage causes discoloration • Strong odor • High VOC, typically due to large leaving group
Alkoxy (Two-Part)	●●	●●●	●	●	NA	• Fast cure/green strength; parts can be moved in under 4 hours • Total VOC low when mixed • Tunable cure profile based on mix ratio • Adhesion to many substrates	• Dispensing equipment and maintenance • Settling of components can be an issue • Catalyst is flammable
Hot Melt (One-Part)	●●	●●●	●●●	●●	●●●	• Instant green strength for immediate hold • Instant assembly – no "hold time" requirement • Worker friendly – low odor, nonhazardous • Long pot life and long open time • Proven neutral-cure 100% silicone chemistry • Aggressive adhesion to a variety of substrates	• Not intended for use when in total confinement (atmospheric moisture required for cure) • Not intended for continuous water immersion • Not intended for use on surfaces that might bleed oils, plasticizers or solvents
Platinum (Two-Part) "Silicone Foams"	●	—	—	●	NA	• Fast-curing products available in heat cure and room temperature cure options • Ideal choice for compression gaskets • Provides environmental sealing versus elements • Low sealing force/modulus • Ideal for sealing enclosures requiring serviceability • Allows for flexibility in seal and bead design	• Not optimized for fluid sealing • Does not offer high adhesion without a primer or surface treatment • Cure inhibition ("poisoning" of platinum catalyst)

NA = Not available LA = Limited availability – = Poor • = Good •• = Better ••• = Best
[1]*Dow Corning*® 3145 RTV MIL-A-46146 Adhesive Sealant is available in clear translucent.

TABLE II. ACETOXY SEALANTS

	Acetoxy Sealants				
	Dow Corning® 730 FS Solvent Resistant Sealant	*Dow Corning®* 732 Multi-Purpose Sealant	*Dow Corning®* 734 Flowable Sealant	*Dow Corning®* 786 Mildew-Resistant Sealant	*Dow Corning®* 1890 Protective Coating
Special Features	Solvent-resistant	Multipurpose; FDA; NSF	Flowable; self-leveling	Mildew-resistant	Excellent moisture protection and resistance to sand, dust and dirt particles; easy-to-apply, thin coating that will not run or drip when applied to vertical or overhead surfaces
Primary Uses	Bonding, sealing and caulking where resistance to fuels, oils and solvents is required	General-purpose bonding and sealing; making formed-in-place gaskets	To fill voids, cracks and crevices; conformal coating for connections and battery terminals	Interior sealing applications exposed to high moisture	General-purpose coating for protecting motors and electrical equipment; maintenance coating
Applications[1]	Assembling and repairing fuel lines and tanks; bonding components exposed to fuels, oils and solvents; making formed-in-place gaskets for chemical compressors, fluid-filled distributors and transformers; repairing rubber linings exposed to corrosive conditions; sealing pipe joints on lines carrying corrosive chemicals	Sealing flashing, vents, flues, gutters, marine cabins and windows, and electrical boxes; caulking joints in sheet metal stacks and ductwork; bonding appliance parts, signs and sign letters; adhering auto trim, appliance trim and nameplates; making formed-in-place gaskets for compressors, gearboxes and pumps	Coating mechanical devices; making formed-in-place gaskets for compressors, gearboxes and pumps; potting electrical terminals; sealing ammunition fuses, trailers and truck cabs	Sealing tubs, sinks, plumbing fixtures and interior walls	Coating motor windings, bus bars, splines, connectors, transformers, insulators, trailers, truck cabs and wooden pole tops
Temperature Range[2], °C, continuous (intermittent)	-57 to 177 (204)		-57 to 177 (204)		
Skin-Over Time, min	5	10	7	5	15
Tack-Free Time, min	25	20	13	20	25
Extrusion Rate, g/min	250	350	650	350	—
Durometer, Shore A	40	25	27	25	21
Tensile, MPa	2	2.2	1.5	2.2	—
Elongation	200	600	315	600	—
Specific Gravity	1.4	1.04	1.03	1.04	1.03
Listings/Specs	—	FDA 21[3], NSF 51, NSF 61, UL 94 HB, MIL spec	FDA 21[3], NSF 51, UL 94 HB, MIL spec	FDA 21[4], NSF 51	FDA 21[3]
Color	White	Aluminum, black, clear translucent, white	Clear translucent, white	Clear translucent, white	Gray
Sealant Type for Fluid Resistance Table[5]	FVMQ	MQ	MQ	MQ	MQ
Primerless Adhesion					
Acrylic	*	*	*	*	*
Acrylonitrile Butadiene Styrene (ABS)	*	Fair	*	*	*
Low Density Polyethylene (LDPE)	*	*	*	*	*
Nylon 6/6	*	Fair	*	*	*
Polycarbonate	*	*	*	*	*
Polypropylene (PP)	*	*	*	*	*
Glass	*	Fair	*	Fair	*
Aluminum, Mill Finish	*	*	*	*	*
Copper	*	*	*	*	*
Steel, Galvanized	*	*	*	*	*
Steel, Low Carbon	*	*	*	*	*
Steel, Stainless	*	*	*	*	*

**Consult your local Dow Corning office for further advice on adhesion properties.*

[1]Most paints will not adhere to sealant; not for underwater structural or adhesive applications; requires atmospheric moisture to cure. May stress-crack some plastics; test before use.

[2]Estimated service temperatures based on product formulation and laboratory testing. Actual service temperature range is dependent on other factors, including the specific application environment.

	Acetoxy Sealants			High-Temperature Acetoxy Sealants	
	Dow Corning® SLT-5132 Sealant Acetoxy	*Dow Corning®* SLT-3445 Sealant Acetoxy	*Dow Corning®* Silicone AP Adhesive Sealant	*Dow Corning®* 736 Heat Resistant Sealant	*Dow Corning®* Q3-1566 Heat Resistant Adhesive/Sealant
	Acetoxy; one-component; RTV silicone sealant	Acetoxy; flowable, one-component RTV silicone sealant for high temperature release coatings; self-leveling liquid, suitable for spraying or dipping	Acetoxy; one-component RTV adhesive/sealant; non-sag, paste consistency	High-temperature-resistant	High-temperature-resistant
				Sealing and bonding applications exposed to temperatures as high as 315°C	Sealing and bonding applications exposed to temperatures as high as 350°C
	Suitable for sealing and adhesive applications; diverse sealing and bonding applications, such as space-filling rubber adhesive	Typically used to coat plates or molds, used to produce bakery products or other foodstuffs	General industrial sealing, gasketing and bonding applications	Sealing fired heaters, flanged pipe joints, access doors, moving oven belts, industrial ovens and boilers, plywood drying ovens, bag filters on smokestacks, and flues on gas appliances; bonding appliance parts and electrical and electronic equipment; caulking joints in sheet metal stacks and ductwork	Can be used in ovens, cookers and other heating equipment; automotive oil and other coolant sealing applications
		260 (300)	-50 to 180	-65 to 260 (315)	-50 to 275 (350)
	10-11	10	11	10	5
	18	21	21	17	18
	397	468	450	390	270
	25	25	25	26	43
	2.4	1.5	2.2	2.4	3.6
	475	300	540	600	340
	1.03	1.05	1.03	1.04	1.06
	—	XV BfR Recommendation and 90/128/EEC under EU Food Regulations 21 CFR 175.105 and 21 CFR 177.2600 under U.S. FDA Regulations	—	FDA 21[3], NSF 51, UL 94 HB, MIL spec	—
	Red	Red	Clear, white, gray, black	Red	Black
	VMQ	VMQ	VMQ	MQ	MQ
	*	*	*	*	*
	Fair	*	Fair	Fair	*
	*	*	*	*	*
	Excellent	Excellent	Excellent	Fair	*
	Excellent	Excellent	Excellent	*	*
	*	*	*	*	*
	Excellent	Excellent	Excellent	Fair	*
	Fair	Excellent	Fair	*	*
	Good	Excellent	Fair	Fair	*
	Good	*	Excellent	*	*
	Excellent	Excellent	Excellent	*	*
	Fair	Fair	Good	*	*

[3]Meets FDA CFR 21.177.2600.

[4]Meets FDA CFR 21.177.2600 and FDA CFR 21.175.105.

[5]Refer to the "Performance Profiles for Silastic® *brand Silicone and Fluorosilicone Rubber and* XIAMETER® *brand Silicone Rubber" guide, Form No. 45-0113, for assistance in determining fluid resistance capabilities of selected sealant types.*

TABLE III. ALKOXY (NEUTRAL-CURE) SEALANTS

	Dow Corning® 739 Plastic Adhesive	*Dow Corning*® 748 Noncorrosive Sealant	*Dow Corning*® 3145 RTV MIL-A-46146 Adhesive Sealant	*Dow Corning*® 7091 Adhesive Sealant
Special Features	Plastic adhesive	FDA- and NSF-approved	Nonflowing; high tensile/tear strength and elongation; faster in-line processing with optional heat acceleration; can be considered for uses with Mil Spec requirements	Non-sag; paste consistency; easy to apply; cures to a tough, flexible rubber; excellent adhesion to many substrates
Primary Uses	Adhering, bonding and sealing plastic and metal; making formed-in-place gaskets	Electrical sealing applications; food-processing and transportation applications	Sealing and assembly in applications requiring Mil Spec standards	Applications that demand a strong but flexible bond, such as when bonding materials with differing thermal expansion rates (e.g., glass to metal or glass to plastic)
Applications[1]	Adhering auto trim, appliance trim and parts; assembling plastic toys; bonding gaskets in refrigeration units, signs and sign letters; caulking cement and masonry; making formed-in-place gaskets for compressors, gearboxes and pumps; sealing flashing, vents, gutters, marine cabins and windows; waterproofing leakproof tractor cabs	Bonding and sealing electrical equipment, power and control connections, motors, cover plates, instrument lenses, regulators, junction boxes and control panels; sealing refrigerator and freezer liners	Sealing openings in modules and housings; assembly of components on printed wiring boards (PWBs); sealing in and around wired and electrical leads	Adhering commonly used materials, including enameled and painted steel, aluminum, ceramic and glass, as well as to certain plastics used in engineering applications; formed-in-place gasket (FIPG) applications
Temperature Range[2], °C, continuous (intermittent)	-54 to 149 (177)	-55 to 177 (204)	-45 to 200	-40 to 180
Skin-Over Time, min	25	15	—	15
Tack-Free Time, min	45	30	63.8	41
Extrusion Rate, g/min	110	150	78.6	185
Durometer, Shore A	37	25	45.6	32
Tensile, MPa	1.6	1.9	0.95	2.5
Elongation	640	350	626	680
Specific Gravity	1.52	1.33	1.10	1.4
Listings/Specs	UL 94 HB	FDA 21[3], NSF 51, NSF 61, UL 94 HB	MIL-A-46146 Group II, TY I, UL 94 HB	—
Color	Black, gray, white	Off-white	Clear translucent	Black, white, gray
Sealant Type for Fluid Resistance Table[4]	MQ	MQ	MQ	MQ
Primerless Adhesion				
Acrylic	Good	*	*	Excellent
Acrylonitrile Butadiene Styrene (ABS)	Excellent	*	*	Excellent
Low Density Polyethylene (LDPE)	*	*	*	*
Nylon 6/6	Excellent	Good	Fair	Excellent
Polycarbonate	*	*	*	*
Polypropylene (PP)	*	*	*	*
Glass	Excellent	Excellent	Good	Excellent
Aluminum, Mill Finish	Excellent	Excellent	*	Excellent
Copper	Good	*	*	Excellent
Steel, Galvanized	Excellent	Excellent	*	Excellent
Steel, Low Carbon	Fair	Excellent	*	Excellent
Steel, Stainless	*	Fair	*	Good

**Consult your local Dow Corning representative for further advice on adhesion properties.*

[1]Most paints will not adhere to sealant; not for underwater structural or adhesive applications; requires atmospheric moisture to cure. May stress-crack some plastics; test before use.

[2]Estimated service temperatures based on product formulation and laboratory testing. Actual service temperature range is dependent on other factors, including the specific application environment.

Dow Corning® 7092 High Green Strength Adhesive and Sealant	*Dow Corning®* 7093 Adhesive Sealant	*Dow Corning®* 7094 Flowable Sealant	*Dow Corning®* AS 7096 N Sealant	*Dow Corning®* 3559 Neutral Silicone Adhesive Sealant	*Dow Corning®* 1080 Oxime Sealant
Instant green strength; easy to use; excellent adhesion to a wide range of substrates, such as glass, metals and plastics; non-sag; paste consistency; fast strength buildup supports productivity enhancements due to fast handling of bonded units; saves time, as no buffer for strength buildup required	Non-sag, paste consistency; low modulus for high movement capability	Flowable and self-leveling	Non-sag, paste consistency; contains fungicide; low modulus for high movement capability	Non-sag, paste consistency	Non-sag, paste consistency
Applications that require immediate handling and processing of the units	General industrial sealing and bonding applications where a non-corrosive cure is required	Sealing and bonding applications where low viscosity and self-leveling properties in combination with non-corrosive cure is required	Sealing and bonding applications where translucent and non-corrosive cure is required	Designed to provide flexible yet structurally strong bonding in applications where a neutral cure and a fast build up of mechanical properties is required	As a formed-in-place gasket for general industrial sealing and bonding applications; for sealing dissimilar metals and corrosion sensitive surfaces like chrome, copper, steel
Adhering commonly used materials, including certain steels, aluminum and glass, as well as certain plastics used in engineering applications	Good adhesion to many substrates	Good adhesion to many substrates		Excellent unprimed adhesion to many substrates	Good adhesion to many substrates
-50 to 150	-50 to 180	-50 to 180	-50 to 180	-40 to 180	-40 to 150
15-25	15	25	5-10	7-8	10-11
—	28	50	15-30	25	15
217	210	Viscosity* 28,000 Mpa.s	190	140	420
55	30	19	13	40	30
2	1.7	1.2	1.0	1.6	1.8
435	700	400	500	400	400
1.55	1.5	1.3	1.01	1.3	1.03
UL 94 HB	—	—	—	—	—
Black, white	White, black, gray	Black	Translucent	Black	White, black, translucent
MQ	VMQ	VMQ	VMQ	VMQ	VMQ
*	Good	Excellent	Good	*	*
*	Fair	Excellent	Fair	*	*
*	*	*	*	*	*
*	Excellent	Excellent	*	*	Excellent
*	Excellent	Excellent	Excellent	Excellent	Excellent
*	*	*	*	*	*
*	Excellent	Excellent	Fair	Excellent	Excellent
*	Excellent	Excellent	Good	Excellent	Excellent
*	Good	Excellent	Good	Excellent	Fair
*	Excellent	Excellent	Excellent	Excellent	Excellent
*	*	Excellent	Excellent	Excellent	Excellent
*	Excellent	Excellent	Excellent	Excellent	Excellent

[3]*Meets FDA CFR 21.177.2600 and FDA CFR 21.175.105.*

[4]*Refer to the "Performance Profiles for* Silastic® *brand Silicone and Fluorosilicone Rubber and* XIAMETER® *brand Silicone Rubber" guide, Form No. 45-0113, for assistance in determining fluid resistance capabilities of selected sealant types.*

TABLE IV. TWO-PART ALKOXY AND ONE-PART OXIME (NEUTRAL-CURE) SEALANTS

	Dow Corning® EA-2626 Adhesive Sealant
Special Features	Two-component adhesive/sealant; fast cure at room temperature; neutral alkoxy cure; non-self-leveling, paste consistency; good, durable adhesion; excellent weathering, UV and heat resistance to 190°C; fast cure allows rapid handling of bonded components; fast cure in-depth, and not outside-inward cure like typical moisture-cure adhesives
Primary Uses	
Applications[1]	A perfect solution in appliances manufacturing, especially for oven and ceramic hob asembly; for bonding glass to metal, glass to painted metal or glass to plastic
Temperature Range[2], °C, continuous (intermittent)	-50 to 190
Skin-Over Time, min	6-9
Tack-Free Time, min	11-18
Extrusion Rate, g/min	—
Flow Rate, mm	Flow <2 mm
Durometer, Shore A	43-45
Tensile, MPa	>1.9
Elongation, %	>200
Specific Gravity	1.32-1.33
Listings/Specs	—
Color	Gray, black, special black
Sealant Type for Fluid Resistance Table[3]	VMQ
Primerless Adhesion	
Acrylic	*
Acrylonitrile Butadiene Styrene (ABS)	*
Low Density Polyethylene (LDPE)	*
Nylon 6/6	Excellent
Polycarbonate	Excellent
Polypropylene (PP)	*
Glass	Excellent
Aluminum, Mill Finish	Excellent
Copper	Excellent
Steel, Galvanized	Excellent
Steel, Low Carbon	Excellent
Steel, Stainless	Excellent

**Consult your local Dow Corning representative for further advice on adhesion properties.*

[1]Most paints will not adhere to sealant; not for underwater structural or adhesive applications; requires atmospheric moisture to cure. May stress-crack some plastics; test before use.

[2]Estimated service temperatures based on product formulation and laboratory testing. Actual service temperature range is dependent on other factors, including the specific application environment.

[3]Refer to the "Performance Profiles for Silastic® *brand Silicone and Fluorosilicone Rubber and* XIAMETER® *brand Silicone Rubber" guide, Form No. 45-0113, for assistance in determining fluid resistance capabilities of selected sealant types.*

Neutral, Two-Component	
Dow Corning® Q3-3526 Base and Catalyst Adhesive	*Dow Corning*® Q3-3636 Adhesive
Fast curing, non-slump, two-part silicone adhesive/sealant	Fast cure at room temperature; good, durable adhesion; reduced weight loss (fogging) at high operating temperatures; fast assembly process; adhesion to a wide variety of substrates; through cure and not an outside-inward cure like typical moisture-cure adhesives; not humidity-cure-sensitive
	Durable adhesive sealing of components that must perform in difficult environments
Assembly of automotive headlights and auxiliary lights, body panels and body components; assembly of oven door windows and other appliance components	Bonding of polycarbonate or glass lenses to the reflector housing of headlamps and fog lamps; in appliance manufacturing, especially for oven and ceramic hob assembly or for bonding glass to metal, glass to painted metal or glass to plastic
-50 to 190	—
8	2.5-10 min working time
20	5-20
—	—
Flow <2 mm	Flow <2 mm
38-40	32-35
2	>1.8
270-280	>300
1.36-1.32	1.31 (base)/1.00-1.04 (catalyst)
—	—
Gray, black	Gray, black, special black
VMQ	MQ
*	Excellent
*	Fair
*	*
Excellent	*
Excellent	Excellent
*	*
Excellent	Fair
Excellent	Fair
Excellent	Excellent
Excellent	Excellent
Excellent	Excellent
Excellent	Fair

TABLE V. HOT-MELT (NEUTRAL-CURE) SEALANTS

Hot-melt, neutral-cure sealants are intended for assembly, bonding, sealing, gasketing and other OEM applications that require instant adhesion and high green strength.[1]

These sealants feature:

- Excellent adhesion to most substrates without the need for a primer
- Instant adhesion, enabling parts to be shipped out quickly
- Long open time
- Long pot life
- Low VOC
- Safe handling with nonhazardous composition and by-products
- Long life once cured

	Dow Corning® HM-2500 Assembly Sealant	
Special Features	Offers the fastest build of green strength; 100% silicone sealant; high viscosity at room temperature resists flow of material, which reduces material squeeze-out; excellent clarity	
Specific Gravity	1.08	
Viscosity at 120°C, Pa·s	200	
15-Min Green Strength, MPa	0.06	
Durometer, Shore A	49	
Ultimate Tensile Strength, MPa	4.8	
Ultimate Elongation, %	1,900	
Tear Strength – Type B, pli	80	
Peel Strength[2], pli	>45	
SAFT[3], °C	250	
NSF/ANSI Standard 51 and 61	Yes	
FDA 21 CFR 177.2600[3]	Yes	
UL 94 (Relative Thermal Index)	HB (105)	
Color	Clear	
Primerless Adhesion		
Acrylic	Excellent	
Acrylonitrile Butadiene Styrene (ABS)	Excellent	
Low Density Polyethylene (LDPE)	Excellent	
Nylon 6/6	Excellent	
Polycarbonate	Excellent	
Polypropylene (PP)	Excellent	
Glass	Excellent	
Aluminum, Mill Finish	Excellent	
Copper	Excellent	
Steel, Galvanized	Excellent	
Steel, Low Carbon	Excellent	
Steel, Stainless	Excellent	
Duranar®, Black	Excellent	
Fluropon®, White	Excellent	
Polyethylene Powder Coatings (PEPC), Black	Excellent	

**Consult your local Dow Corning office for further advice on adhesion properties.*
[1]Most paints will not adhere to sealant; not for underwater structural or adhesive applications; requires atmospheric moisture to cure. May stress-crack some plastics; test before use.
[2]180° peel from various substrates based on ASTM C794: 21-day cure (24 ±2°C; 50 ±5% RH) + 7-day H_2O immersion.
[3]Shear adhesion failure temperature based on ASTM 4498.
[4]Not available; has not been submitted for testing and certification.
[5]Qualified only under electronics or lighting industry label.

	Dow Corning® HM-2510 Assembly Sealant	*Dow Corning*® HM-2515 Assembly Sealant	*Dow Corning*® HM-2520 Assembly Sealant	*Dow Corning*® HM-2600 Assembly Sealant
	Offers high robustness; multipurpose 100% silicone sealant; high viscosity at room temperature resists flow of material, which reduces material squeeze-out; excellent clarity	Lowest viscosity; 100% silicone sealant; can be used in assembly and lamination; dispensed in fine beads, fibers or spiral patterns; low durometer	Offers highest mechanical properties; 100% silicone; high viscosity at room temperature resists flow of material, which reduces material squeeze-out; translucent clear	Offers highest degree of mechanical adhesion and overall performance; 100% silicone; high durometer; excellent clarity
	1.08	1.07	1.11	1.08
	110	27	110	70
	0.04	0.004	0.03	0.03
	38	14	31	60
	4.6	2.3	6	4.4
	1,900	1,500	1,500	1,300
	78	67	89	70
	>41	>33	>30	>30
	250	248	280	310
	Yes	Yes	Yes	NA[4]
	Yes	Yes	Yes	NA[4]
	HB (105)	HB (105)[5]	NA	HB (105)[5]
	Clear	Clear	Clear	Clear
	Excellent	*	Fair	Excellent
	Excellent	*	Fair	Excellent
	Excellent	*	Fair	Excellent
	Good	*	Good	Excellent
	Good	*	Fair	Excellent
	Excellent	*	Good	Excellent
	Excellent	*	Excellent	Excellent
	Excellent	*	Excellent	Good
	Excellent	*	Good	Good
	Excellent	*	Excellent	Excellent
	Excellent	*	Good	Excellent
	Excellent	*	Excellent	Excellent
	Excellent	*	Excellent	Excellent
	Excellent	*	Excellent	Good
	Excellent	*	Excellent	Excellent

TABLE VI. SILICONE FOAMS (TWO-PART, ADDITION-CURE)

Two-part, addition-cure silicone foams designed to be dispensed and cured directly on parts to form an integrated compression gasket. They typically are used in automotive parts, including seals for vibration and noise damping, housings for electronic devices, exterior lighting and domestic appliance components.

These sealants feature:

- Room temperature cure (RTV)
- 1:1 mix ratio
- CFC-free content
- Low post-cure compression set
- Stability and flexibility across a wide range of temperatures

	Dow Corning® 8257 Silicone Foam		*Dow Corning*® 3-8209 Silicone Foam	*Dow Corning*® 3-8219 RF Silicone Foam	*Dow Corning*® 3-8259 RF Silicone Foam	
	White	Black			Gray	Dark Gray
Special Features	Low hardness (Shore 00); available in white and black; low density		Low to medium hardness (Shore 00); medium density	Medium hardness (Shore 00); medium to high density; reduced flow aids application to vertical surfaces	Medium hardness (Shore 00); available in gray and dark gray; high density; reduced flow aids application to vertical surfaces	
Viscosity, mPas	A: 21,000 B: 12,000	A: 20,000 B: 12,000	A: 14,000 B: 15,000	A: 21,000 B: 40,000	A: 68,000 B: 63,000	A: 64,000 B: 62,000
Snap Time, sec	230	240	220	200	200	200
Tack-Free Time, min	8	8	7	6	7	6
Density, kg/m^3	140	150	250	300	330	330
Flowability, cm	Flowable	Flowable	Flowable	17	15	16
Cell Structure, Zellen/3 cm	35	30	Fine	Fine	Fine	Fine
Hardness, Shore 00	25	25	45	45	50	50

Surface Preparation

Although *Dow Corning* silicone sealants possess excellent bond strength, maximum adhesion is only attained on surfaces that are clean and dry. Contaminants – such as dirt, grease, water, tar or rust – act as release agents and prevent the formation of durable bonds. Use of a primer does not negate the necessity for proper surface cleaning.

Wet or dirty surfaces should be properly prepared before sealants are applied.

- Wipe contaminated surface with a clean, oil-free cloth.
- Rewipe surface with a suitable cleaner or industrial solvent, such as isopropyl alcohol (IPA), mineral spirits, naphtha or ketones. Note: Do not clean surface with detergent or soap. (Soap residue may act as release agent.)
- Rough rubber surfaces with sandpaper. Make a spot check to determine the adhesion of sealants for each application. Bond strength will increase as the sealant cures.

The active ingredients must thoroughly wet-out and coat the bonding surfaces. Mild abrasion, solvent cleaning, plasma, corona discharge and other pretreatments have been used to clean and enhance surface reactivity to bonding. In general, light surface abrasion is recommended whenever possible, because it promotes good cleaning and increases the surface area for bonding. Clean and/or degrease surfaces with *Dow Corning*® brand OS Fluids, naphtha, mineral spirits, methyl ethyl ketone (MEK), or other suitable solvents that will remove oils and other contaminants that may be present. A final surface wipe with acetone or IPA also may be helpful.

Some cleaning techniques may give better results than others; determine the best technique for your application. For especially difficult-to-bond-to surfaces, it may be necessary to increase the surface reactivity by using chemical etchants or oxidizers or by exposing the surface to UV, corona, plasma or flame sources. Allow solvents to completely evaporate before applying the primer.

Primers and Adhesion Promoters

For maximum adhesion, *Dow Corning*® brand primer is recommended. After solvent-cleaning, apply a thin coat of *Dow Corning* primer in a very light, even coat by wiping, dipping or spraying. Wipe off excess material to avoid overapplication, which generally appears as a white, chalky surface. When dip- or spray-coating, diluting by a factor of 2 to 4 with additional solvent may avoid excessive buildup.

TABLE VII. CLEANERS AND PRIMERS

	Cleaners			
	Dow Corning® DS-1000 Aqueous Silicone Cleaner	*Dow Corning*® DS-2025 Silicone Cleaning Solvent	*Dow Corning*® R-41 Cleaner Plus	
Special Features	Cleaner for use on uncured silicone; effectively emulsifies silicone oils, greases and uncured elastomers; effective degreaser on a wide range of applications; aqueous solution; complies with EU detergent regulation on biodegradability of surfactants; nonflammable	Cleaner for use on cured silicone; rapid digestion of cured silicone; leaves silicone-free surface; nonflammable; high flash point; does not contain aromatic solvent; nonhalogenated solvent; low viscosity; multiple use and recyclable	Specially formulated solvent containing a special *Dow Corning*® catalyst substance designed to clean and additionally prepare a large variety of substrates for the bonding with *Dow Corning*® sealants	
Applications	Cleaning surfaces, equipment and manufacturing units contaminated with nonsubstantive uncured silicone residues	Cleaning surfaces, equipment and manufacturing units contaminated with substantive cured silicone residues	Cleaning and preparation of the most common surfaces such as glass, metal profiles, plastics and other non porous substrates	

Primer Cure

At normal room temperatures and 50% relative humidity conditions, allow the primer to air-dry from five to 30 minutes. Low-humidity and/or low-temperature conditions require longer cure times. Mild heat acceleration of the cure rate may be possible, but temperatures above 60°C are not recommended. During application, the carrier solvent typically evaporates quickly, allowing the active ingredients to begin to react with atmospheric moisture and bonding surfaces. For optimal bonding, different cure times may be required for different temperature and humidity conditions; determine the best cure schedule and conditions for your application. Apply the desired silicone sealant after the primer, prime coat or adhesion promoter has fully cured.

	Primers			
	Dow Corning® PR-1200 RTV Prime Coat	*Dow Corning*® 1200 OS Primer Clear	*Dow Corning*® 1203 3 in1 Primer	*Dow Corning*® PR-2260 Prime Coat
	Significantly improves the adhesion of silicone sealants to a wide variety of challenging substrates; available in clear and red	Useful for both moisture-curing-RTV and heat-curing silicones; diluted in low-molecular-weight silicone fluid; meets many international regulations for low VOC content (including European Union); similar to *Dow Corning*® P5200 Adhesion Promoter	Cleaning and priming with only one material; traceability through UV lamp; optimizes adhesion of sealant to surface; more rapid development of adhesion to surface	Dilute solution of silane coupling agents and other active ingredients
	Improves the adhesion of silicone sealants, coatings and rubber to masonry, wood, granite, metals, glass, ceramics, plastics, rubbers and coatings	Enhances bonding/adhesion of RTV and heat-cure silicones to ceramics, glass, wood, masonry, structural plastics (including FR-4) and many metals	UV-traceable cleaner and primer for silicone adhesives and sealants	Enhances bonding/adhesion of RTV and heat-cure silicones to many metals, ceramics and some plastics

Sealant Application

Apply *Dow Corning*® brand adhesives/sealants to one of the prepared surfaces, then quickly cover with the other substrate to be bonded. On exposure to moisture, the freshly applied material will “skin over” in about 5 to 10 minutes (depending on the product) at room temperature and 50% relative humidity.

Tool the sealant to coat or wet the substrate surface for maximum bonding. This typically is done by properly filling the joint first and then dry-tooling the sealant by pressing and pulling a round-tipped spatula or similar tool across the sealant surface. This step forces sealant into joint surfaces and helps remove air pockets or voids at the bond line. Tooling should be completed before the skin forms.

Keeping the primed surface clean may allow application of the silicone elastomer to be delayed – but in some cases, if too much time elapses, lower adhesion can result. Users are encouraged to determine the optimal cure conditions for their specific applications and the effects of any hold times imposed between applications of the primer and sealant. In some cases, it may be recommended to reprime surfaces if 8 to 24 hours elapse before the silicone sealant can be applied.

Cure Time

After skin formation, cure continues inward from the surface. In 24 hours (at room temperature and 50% relative humidity), *Dow Corning* adhesive/sealant will cure to a depth of about 1/8". Very deep sections, especially when access to atmospheric moisture is restricted, will take longer to cure completely. Cure time is extended at lower humidity levels.

Because the sealants cure by reaction with moisture in the air, keep the container tightly sealed when not in use. A plug of used material may form in the tip of a tube or cartridge during storage. This is easily removed and does not affect the remaining contents.

Compatibility

Some *Dow Corning* adhesives/sealants release a small amount of acetic acid during cure. This may cause corrosion on some metallic parts or substrates, especially in direct contact or when the cure is carried out in a totally enclosed environment that does not allow cure by-products to escape.

Platinum catalysts used in addition-cure silicone sealants – including silicone foams – are sensitive to contamination by certain compounds that have the power to stop or inhibit cure. For more information, refer to "Guarding against potential inhibitors/poisons of platinum-catalyzed addition-cure release coatings," Form No. 30-1053-01, available in the Technical Library on **dowcorning.com** or upon request from Dow Corning customer service.

Cleanup/Sealant Removal

Cured silicone can be removed from a surface with a sharp blade if the cured silicone material is accessible. If it is difficult to cut through, solvents – such as IPA, toluene, xylene, naphtha or mineral spirits – may be used to soften the cured sealant. *Dow Corning* OS Fluids also can be used to help soften cured silicone and/or remove silicone residue after it has been removed mechanically from a surface. *Dow Corning* OS Fluids will generally be a lower-VOC alternative to standard solvents.

Limitations

Refer to individual product data sheets for use limitations.

Health and Environmental Information

To support customers in their product safety needs, Dow Corning has an extensive Product Stewardship organization and a team of Product Safety and Regulatory Compliance (PS&RC) specialists available in each area.

For more information, please see our website, **dowcorning.com**, or consult your local Dow Corning representative.

CONTACT US

For more than 60 years, OEM designers and maintenance and materials engineers around the world have trusted the *Dow Corning*® brand for performance and expertise to solve or prevent sealant challenges. Dow Corning has sales offices, manufacturing sites, and science and technology laboratories – and a network of more than 3,000 distributors – around the world.

To learn more about our extensive product and service offerings, order samples, or find a local distributor, visit **dowcorning.com/IAM**, email **eutech.info@dowcorning.com** or call European Technical Customer Service at +49 611237512.

Images: Cover - AV25030, AV18647, AV25027, AV25028, AV25031, AV16029, AV25029; Page 2 - AV15217; Page 3 - AV25032, AV08170, AV14174; Page 4 - AV12315; Page 12 - AV23389; Page 15 - AV18647; Page 16 - AV13896; Page 18 - AV25202; Page 20 – AV18278

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AMPM128-16

Form No. 80-8283-01

DOW CORNING

Automotive and Transportation
Solutions

DRIVING THE FUTURE—TOGETHER

SMART SCIENCE DRIVES MOBILITY INNOVATION™

AUTOMOTIVE ADVANCEMENT. ACCELERATED.

The race is on to meet tomorrow's consumer demands and take automotive technology to a new level—and Dow Corning can help you get there first. Discover our range of innovative material solutions that can help you make more reliable, comfortable, fuel-efficient and environmentally sustainable automobiles:

- **Silicone engineered elastomers** that reduce noise, vibration and harshness (NVH), provide durable protection, and improve performance in harsh operating conditions
- **Silicone adhesives and sealants** to eliminate squeaks and rattles, strengthen bonds, and enable use of advanced materials for weight and cost reduction
- **Specialty lubricants** offering long-lasting protection, reduced process hazards and enhanced green design
- **Engineered thermoplastics** that combine strength with softness for weight and cost reductions, while retaining performance throughout the product life cycle
- **Electronic solutions** to dissipate damaging heat, provide long-lasting protection of sensitive components, relieve assembly process and cost, and help you design smaller and more reliable systems to boost electrification, safety and connectivity
- **Lighting solutions** that expand design options for brighter and more energy-efficient lighting systems

For today's demanding consumers, these solutions translate into a wide variety of benefits:

- Improved performance and fuel efficiency
- Reliable automobiles that require less maintenance
- Improved safety without compromising comfort or design
- Stylish and convenient new body and interior designs
- Lowered cabin noise and vibration for a smoother, more comfortable ride

YOUR ENGINE FOR GROWTH

At Dow Corning, nothing drives us like finding new ways to collaborate with you and help your business succeed. It's why we go the extra mile to bring you more of what you need to stand apart in your markets:

MORE SOLUTIONS from ready-to-use materials to customized services that meet your project requirements

MORE OPTIONS for production efficiencies and variety of manufacturing processes

MORE BENEFITS like advanced design, sustainability and global expertise

A HIGHER GEAR OF GLOBAL EXPERTISE

Dow Corning has decades of experience as a trusted collaborator to automotive manufacturers around the world. Our global team of experts supports you in key areas from start-up to final production:

INNOVATION
Collaborating with you to find effective solutions for your biggest technology and manufacturing challenges

PROBLEM-SOLVING
Turning your obstacles into opportunities to differentiate and grow your business

GLOBAL PRESENCE
Delivering fast access to high-quality products and expertise at a local level, no matter where you are

COLLABORATE WITH A LEADER

The future of the automotive industry belongs to those with experience and drive. At Dow Corning, we can offer you both.

With over 70 years in the automotive industry, we have a long track record of exceeding customer expectations for innovative, top-quality products and services. It's no wonder so many global automotive leaders trust us to help them boost the reliability, efficiency, comfort and safety of their automobiles—plus continuously meet stringent quality standards and environmental regulations.

LET'S GET STARTED

Find out how we can help you drive mobility innovation at ***dowcorning.com/auto***

Images: AV22096, AV25544, AV25980, AV25982, AV21745, AV25767, AV25773, AV25780, AV25981, AV25983, AV25568, AV25984

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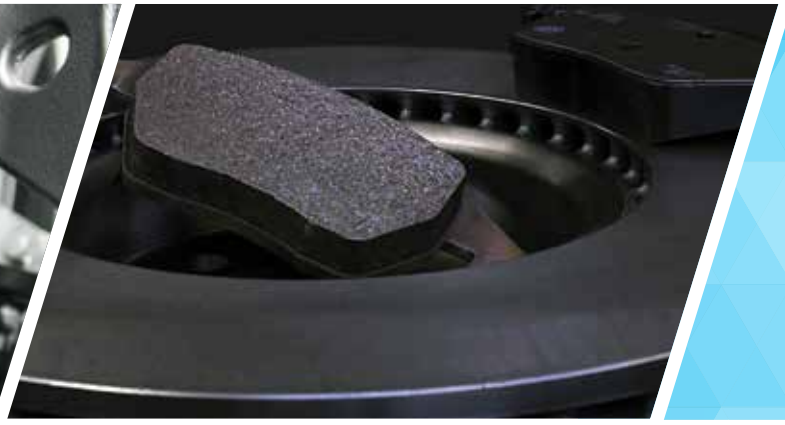
DOW CORNING

Automotive and Transportation
Solutions



ENHANCE PERFORMANCE, RIDE AND HANDLING

Smart science drives chassis and brake innovation

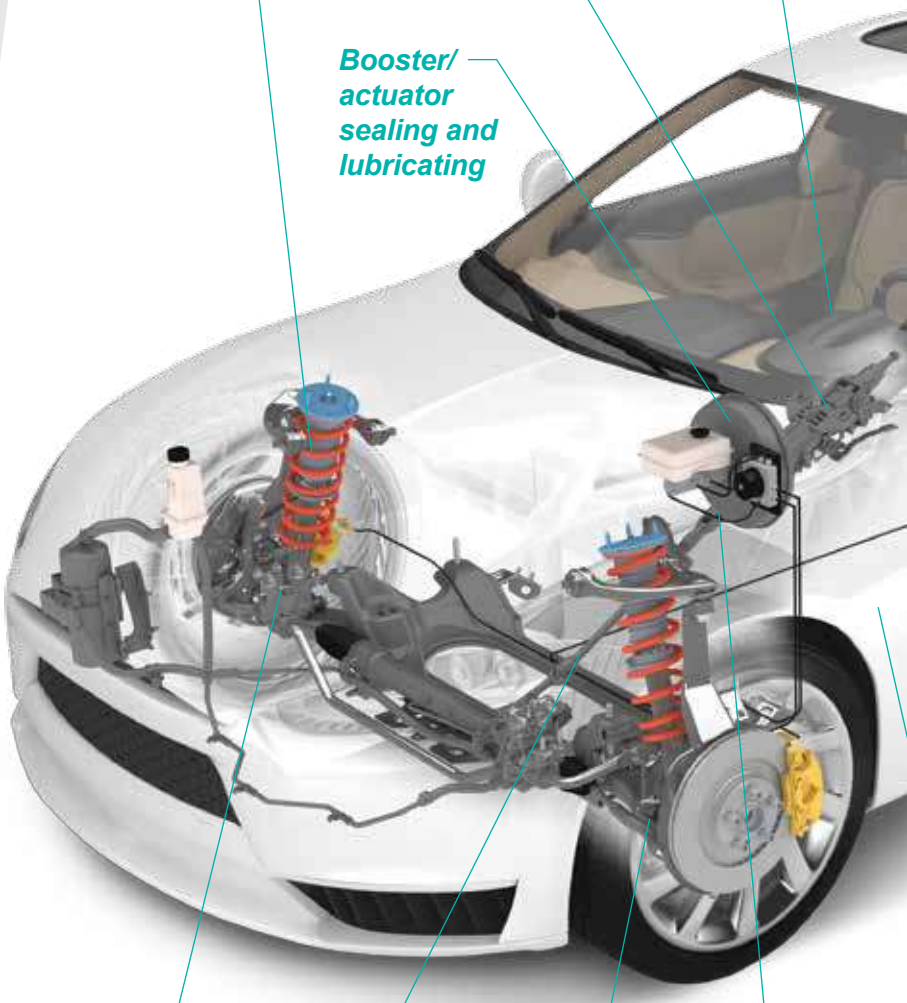
SMART SCIENCE CHASSIS AND BR

MEET CHASSIS AND BRAKE NEEDS WITH SMART SCIENCE SOLUTIONS

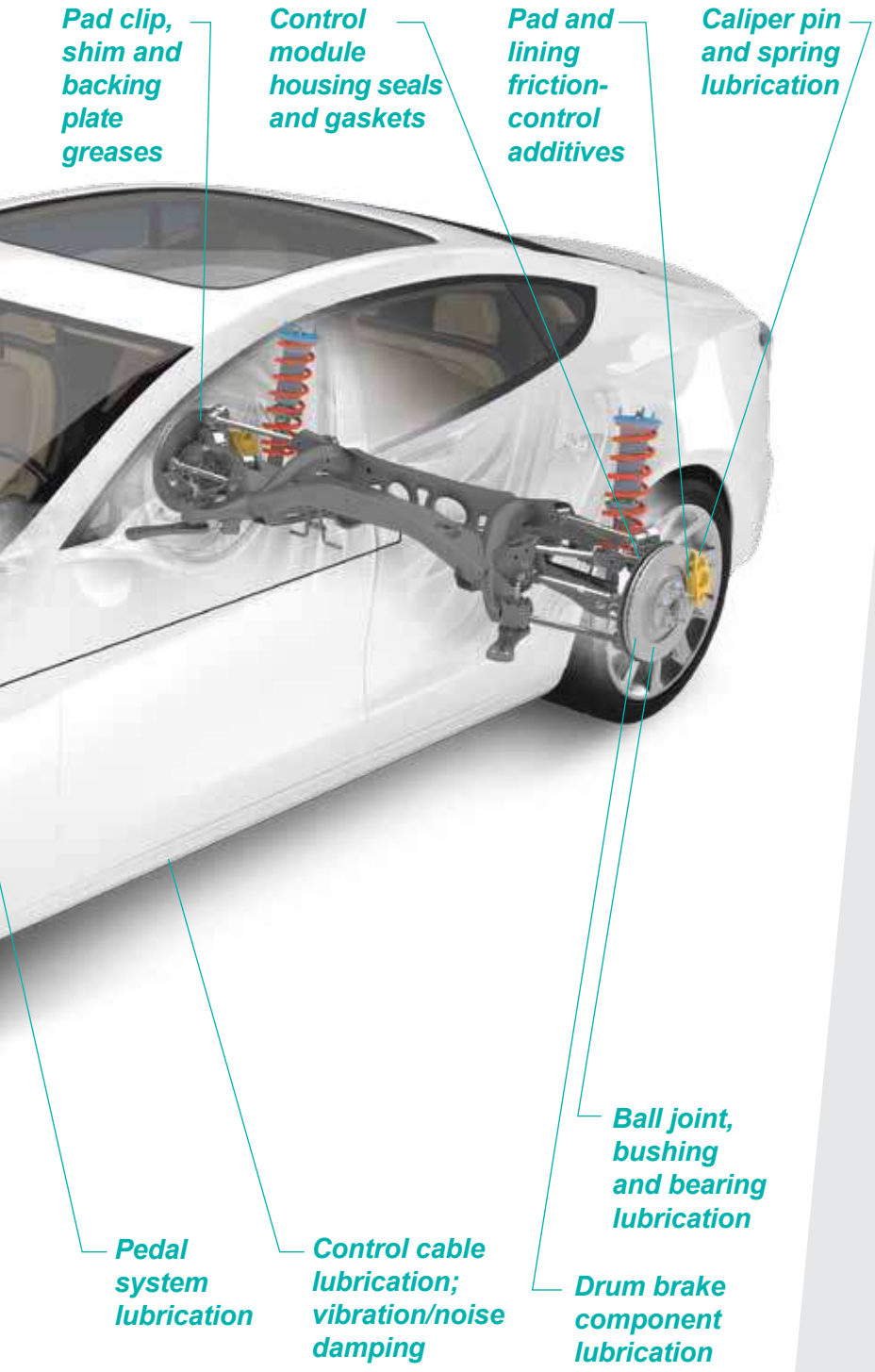
Key design trends for steering, suspension and braking on driven and increasingly autonomous vehicles focus on enhanced performance, ride and handling. Safety, fuel efficiency, occupant comfort and reduced service are critical goals.

Dow Corning has proven, effective solutions for meeting your chassis and brake design needs. Our smart science can help:

- Improve braking performance with less noise, drag and rolling resistance
- Maintain steering response, precision and quiet smoothness for safer operation
- Reduce suspension noise, vibrations and harshness (NVH) to increase comfort
- Strengthen component assembly bonding, sealing and gasketing
- Optimize friction and wear control to extend component service life



DRIVES
AKE INNOVATION



PROVEN, EFFECTIVE SOLUTIONS

Dow Corning – a global leader in silicones, silicon-based innovation and complementary chemistries – can help you achieve vehicle chassis and brake design goals with our *Smart Science* solutions:

MOLYKOTE® *BRAND SPECIALTY LUBRICANTS*

- Anti-friction coatings, anti-seize pastes, greases, oils and dispersions, silicone compounds, and Lubolid friction-control additives
- Enhanced tactile quality with excellent lubricity; reduced, controlled or tailored friction; reduced wear and noise

SILASTIC® *BRAND ENGINEERED ELASTOMERS*

- Silicone (HCR and LSR) and fluorosilicone (FSR and F-LSR) elastomers can provide protective seals and gaskets for steering, suspension and brake components
- Offer durable sealing flexibility and resist aging, cracking or softening in growing pressure, aggressive fluids, or exposure to extreme heat and cold

DOW CORNING® *BRAND ADHESIVES AND SEALANTS*

- Room-temperature-curing, heat cure and hot-melt adhesives and sealants secure system seals and bonds with advanced productivity

THERMOPLASTIC ELASTOMERS (TPEs) FROM MULTIBASE

- Advanced technical polymers balance cost, performance, visual and tactile appeal with processing ease and recyclability
- Less stick-slip, low odor, less fogging, high mechanical strength, reduced energy use

SMART SCIENCE DRIVES MOBILITY INNOVATION™

SOLUTIONS FOR A FULL RANGE OF VEHICLE SYSTEMS

In addition to the offerings for vehicle chassis and brakes showcased in this brochure, Dow Corning also provides proven, effective solutions for the following systems:

- Interior
- Exterior
- Electrical
- Powertrain
- Safety
- Cooling and climate control
- Lighting

MORE DOW CORNING SMART SCIENCE

ELECTRONICS SOLUTIONS

- Silicone innovations for increased connectivity, safety, energy efficiency and added comfort
- Thermal management materials, adhesives, potting materials and conformal coatings

LED LIGHTING SOLUTIONS

- Advanced technologies for high-brightness LED interior and exterior lighting
- Adhesives and sealants, conformal coatings, pottants, thermal interface and optical materials

APPEARANCE AND CLEANING SOLUTIONS

- Silicones for exterior wash and rinse aids, waxes, conditioners, vinyl protectants, and tire care
- Performance-enhancing silicone ingredients for interior leather, upholstery, trim and glass care

LEARN MORE: CONTACT US

Learn more about meeting today's trend-driven design needs with proven, effective solutions. See how *Smart Science Drives Chassis and Brake Innovation*. Contact your Dow Corning Technical Representative, visit **dowcorning.com/auto** or send an email via **dowcorning.com/ContactUs**.

Images: Cover - AV26063, AV26050, AV14706, AV23273; Page 2 - AV26058, AV25989, AV23571; Page 4 - AV26061, AV26128

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Form No. 80-8162A-01

INNOVATIVE SOLUTIONS FOR LED LIGHTING

DGE GROUP

DISTRIBUTORS GROUP EUROPE B.V.

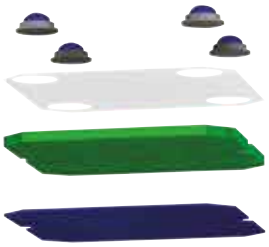
www.dge-europe.com

DGE GROUP

Who We Are

Distributors Group Europe (DGE) was established in 1996 by several European based specialty chemical distributors. Our market is Europe. For our members we provide central marketing and sales support for the introduction of new products while also functioning as a knowledge reference center for the group. For our suppliers, we provide a single platform whereby suppliers can market their products through a network of dedicated specialty chemical distributors.

DGE's members are independently owned technically oriented distributors. Each local member is focused on making specialty chemical products simple to use and understood in their home market while meeting their customer's, ever changing product performance needs. On average our members have been addressing their customer's needs for more than 50 years.



Our support

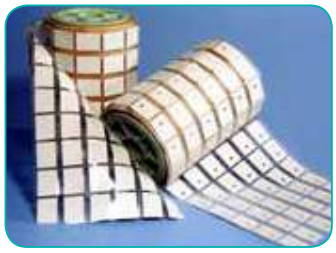
Due to the broad range of technologies each DGE member has in house our specialists can offer the optimal solution for your LED fixtures. These technologies are accompanied with solutions for the optimal manufacturing process and equipment. Our specialists can support in finding the right equipment for manufacturing making the transfer of your design from R&D to production as easy as possible.
With the experience our specialists have in the lighting market they can recommend solutions which are compatible with LEDs . With the support our specialists can offer we can shorten your development time. Our specialists are continuously trained by our suppliers and therefore always up to date with the state of the art technology and information on new products. Also due to their extensive network within DGE our specialists are up to date with latest knowledge in the lighting market, since they exchange experiences on applications and technologies. In this way DGE is always able to find the right solution for the lighting customer.

Challenges in LED lighting design

Lighting designers need to shape their light, cool for long lifetime, protect from stringent environmental conditions for high reliability and at the same time make creative designs which are easy to manufacture. With the various technologies DGE can offer, all these requirements can be fulfilled. DGE offers a wide range of specialty chemicals and components which can be used in LED lighting.


Cool for life

DGE offers a range of products to cool your LEDs and electronic components to provide a long lifetime of the lamp or luminaire. Depending if you want to seal your LED strip for life or be able to replace the LED strip thermal interface materials can be offered, ranging from greases, thermal pads, screen printable thermal pads and thermal adhesives.

Protect for high reliability

A broad range of technologies can be offered to seal your luminaires and protect the LEDs and electronic components from dust and moisture. Depending if you want to seal your luminaire for life or be able to replace the LED strip DGE can offer various solutions from pre-formed gaskets to adhesives.
Alternatively the individual LEDs and electronic components can be protected with conformal coatings, encapsulants or pottants. All depending on the required IP rating of the LED lamp or luminaire as well as the type of LED, i.e. low power, mid power or high power used in the luminaire.


Shape your light

To shape the light of your LEDs in your lamp or luminaire we offer a new breakthrough technology which can lead to innovative designs which were not possible before.

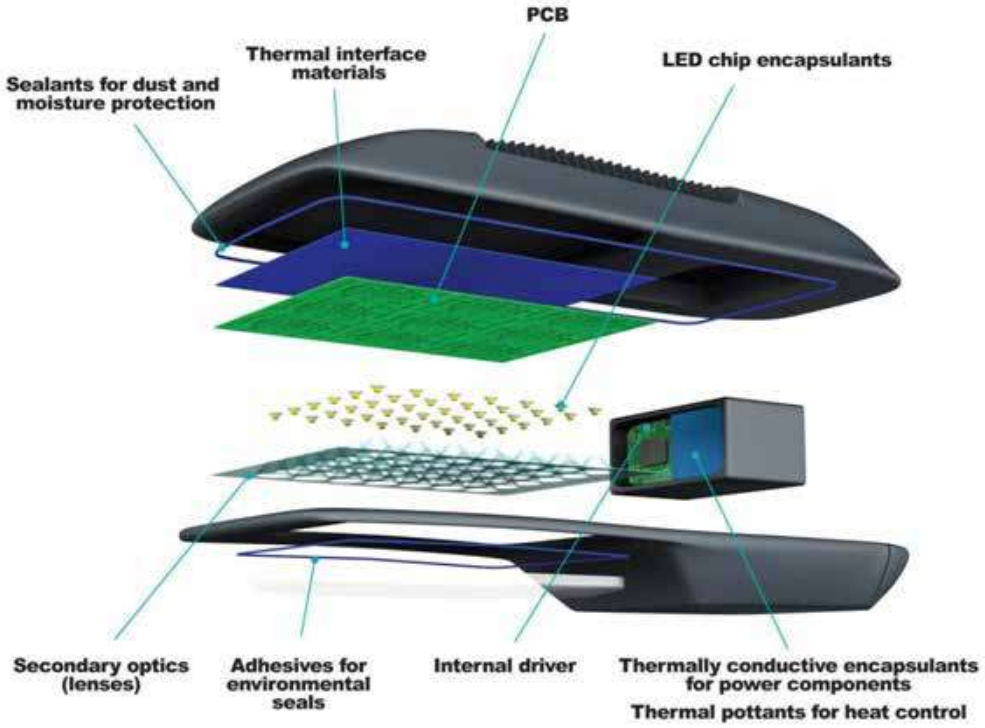

Lighting Solutions

DOW CORNING

Advanced silicone and silicon-based materials for next-generation LED lighting

As a premier global supplier of silicones and a world leader in silicon-based technology, Dow Corning solutions span the entire lighting value chain - from wafer and chip-level applications to LED packaging to lamp and luminaire design and lamp assembly. Dow Corning materials add proven reliability and efficiency for sealing, protecting, adhering, cooling and shaping light across all lighting applications.

The future is looking bright for LED lighting designers and manufacturers. From offices to street lamps to automotive to architectural installations, when using silicones for next-generation LED designs this brings new possibilities in efficiency, light output, energy savings, and expressive design while giving customers an entirely new experience.



Silicone benefits for the entire LED lighting value chain include:

- Greater photo stability allowing for higher lumen density for optical materials
- Improved thermal stability maintaining lumen and color quality over the lifetime of the LED
- Expanded design latitudes allowing detailed features and challenging designs such as undercuts
- Enhanced UV stability boosting reliability over time for outdoor applications
- High transparency enabling higher efficiency
- Easy processability lowering total cost of ownership
- Powerful thermal and moisture resistance enhancing reliability and protection of sensitive electronic components

CREE
LED Solution Provider

Chemical Compatibility to LEDs

The challenge for lighting designers is to design unique luminaires and at the same time to avoid failure or degradation of LEDs when using chemical components in the system. Most often LED failure or degradation can occur when components are used which are chemical incompatible with the LED.
Dow Corning's unique advantage is the expertise in developing silicone solutions for the complete LED lighting value chain, from the packaging materials for the manufacturing of LEDs, moldable optical silicones for secondary optics applications, to the final assembly and protection of LED Lighting. Cree has recognized the quality, performance and innovation of these materials through all of these stages.

As a result Dow Corning is now part of the Cree® Solution Provider Program. The Cree Solution Provider Program (CSP) helps lighting manufacturers to find complementary components from third-party manufacturers who work with Cree LED products. This helps lighting manufacturers with their LED lighting needs and enables a shorter design cycle to get products to market faster.

In this brochure materials that are already tested with Cree LEDs and which can be found on the Cree chemical compatibility list are marked. This can help lighting designers in making the right choice for the material used and shorten development time, leading to a faster time to market.

Lighting Solutions

DOW CORNING

Conformal Coatings

Dow Corning™ silicone conformal coatings protect delicate LEDs and electronics from humidity, moisture and thermal stress, and deliver excellent insulation against high voltages and short circuits.

Dow Corning™ conformal coatings are available in a variety of viscosities and cure chemistries.
They provide excellent unprimed adhesion to many common LED materials.

All Dow Corning™ conformal coatings contain an UV indicator for inspection under black light.

Conformal Coatings

Materials	Properties	Viscosity (mPa.s)	Durometer	Tack free time	Polymerization	Dielectric strength (kV/mm)	Packaging
RTV Elastoplastic							
Dow Corning® **CC-2571**	1 part • **without UV dye** UL 94 V-0 Diluent OS-20 fluid	**75**	80 Shore A	15 min	RTV	40.1	Pail : 3.6 kg • 18.1 kg
Dow Corning® **1-2620**	Silicone • 1 part • UL 94 V-0 • Mil Spec • Diluent OS-20 fluid	**150**	80 Shore A	5 min	RTV	22	Bot : 454 g Pail : 3.6 kg • 18.1 kg Drum 199.5 kg
Dow Corning® **1-2620 Low VOC**	Silicone • 1 part • UL 94 V-0 • Mil Spec Diluent OS-20 fluid	**350**	80 Shore A	5 min	RTV	16	Pail : 3.6 kg • 15 kg Drum 181.4 kg
Dow Corning® **1-2577***	Silicone • 1 part • UL 94 V-0 • Mil Spec Diluent OS-20 fluid	**950**	80 Shore A	7 min	RTV	16	Bot : 500 g Pail : 5 kg • 20 kg Drum 199.5 kg
Dow Corning® **CC-2570**	1 part • **without UV dye** UL 94 V-0 Diluent OS-20 fluid	**1 000**	76 Shore A	7 min	RTV	27.7	Pail : 3.6 kg • 18.1 kg
Dow Corning® **1-2577 Low VOC***	Silicone • 1 part • UL 94 V-0 • Mil Spec Diluent OS-20 fluid	**1050**	25 Shore D	6 min	RTV	13	Bot : 500 g Pail : 5 kg •15 kg Drum 181.4 kg
RTV Elastomeric							
Dow Corning® **3-1965**	Silicone • 1 part • UL 94 V-0 • Mil Spec	**115**	33 Shore A	6 min	RTV	17	CRT: 175 ml Pail : 3.6 kg • 18.1 kg
Dow Corning® **3-1953***	Silicone • 1 part • UL 94 V-0 • Mil Spec	**350**	34 Shore A	8 min	RTV	17	Pail : 5 kg • 18.1 kg • 20 kg
Dow Corning® **3140**	Silicone • 1 part • UL 94 V-1 • Mil Spec	**34400**	34 Shore A	116 min	RTV	15	Tube: 90 ml CRT : 310 ml Pail : 20 l
Dow Corning® **3-1944***	Silicone • 1 part • UL 94 V-0 • Mil Spec	**63775**	36 Shore A	14 min	RTV	21	CRT : 305 ml Pail : 18.1 kg
Heat cure							
Dow Corning® **1-4105***	Silicone • 1 part • UL 94 V-1	**450**	64 Shore OO	-	10 min @105°C	20	Pail : 18.1 kg • 20 kg Drum : 199.5 kg

*Product is part of CREE® chemical compatibility list.

Lighting Solutions

DOW CORNING

Thermal Encapsulants

Dow Corning's high-flow thermal silicone pottants protect LED drivers from moisture and dust, while dissipating damaging heat and absorbing component noise. With high thermal conductivity and RTI reaching as high as 150°C, these materials help ensure long-term reliability and lower lifetime costs for your LED lamp and Luminaire design. Their room-temperature cure process can be accelerated with mild heat to expand manufacturing flexibility and reduce processing cost.

Thermal Pottants

Materials	Properties	Color	Viscosity (mPa.s)	Durometer	Thermal conductivity (W/m.K)	Working Time/ pot life	Cure time	Dielectric strength (kV/mm)	Elongation (%)	Packaging
Room temperature & Heat accelerable cure										
Dow Corning® **CN-8760 G**	2-Part, 1:1, UL 94 V-0	Gray	3200	45 Shore A	**0.67**	100 min	24h @25°C	24	85	Kits : 30 kg 50 kg
Dow Corning® **CN 8760**	2-Part, 1:1, UL 94 V-0	Dark gray	2850	52 Shore A	**0.66**	120 min	40 min @50°C	33	95	Kits : 30 kg 50 kg
Dow Corning® **Sylgard 164**	2-Part, 1:1, UL 94 V-0	Gray	12000	61 Shore A	**0.64**	14 min	0,6h @25°C	19	105	Kits : 210 ml 49.8 kg 453.4 kg
Dow Corning® **Sylgard 160**	2-Part, 1:1, UL 94 V-0	Dark gray	4865	56 Shore A	**0.62**	20 min	24h @25°C 4 min @100°C	19	105	Kits : 210 ml 10,8 kg 49,8 kg 453.4 kg
Dow Corning® **Sylgard 170**	2-Part, 1:1, UL 94 V-0, Mil Spec	Dark gray	2135	50 Shore A	**0.48**	15 min	24h @25°C 25 min @ 70C 10 min @100°C	18	165	Kits: 210 ml 2 kg 10 kg 40 kg 400 kg
Dow Corning® **Sylgard 170 FastCure**	2-Part, 1:1, UL 94 V-0	Black	2361	43 Shore A	**0.40**	4 min	12 min @25°C	14	125	Kits: 210 ml 40 kg 400 kg
Dow Corning® **Sylgard 186**	2-Part, 10:1, UL 94 V-1	Translucent	66700	24 Shore A	-	1.65h	48h @ 25°C 25 min @ 100°C 15 min @150°C	17.7	255	Kits: 0.5 kg 1.1 kg 5.5 kg 224.5 kg
Heat cure only										
Dow Corning® **Q3-3600**	2-Part, 1:1, UL 94 V-1, Mil Spec Primerless	Gray	3200	89 Shore A	**0.8**	24h	60 min @150°C	26	55	Kits : 4 kg 20 kg
Dow Corning® **Sylgard 567**	2-Part, 1:1, UL 94 V-0, Mil Spec Primerless	Black	1500	40 Shore A	**0.29**	-	180 min @70°C 120 min @100°C	16	95	Kits: 210 ml 2 kg 10 kg 40 kg

Primer

Materials	Color	Solvent	Flash point (°C)	VOC (g/l)	Compatible Silicones
Dow Corning® **92-023**	clear	Heptane	-13	681	Non-pigmented two-part addition-cure silicones
Dow Corning® **1200OS**	clear/red	Volatile siloxane	27	76	All
Dow Corning® **PR-1200**	clear/red	Naphta	13	719	All

Lighting Solutions

DOW CORNING

Thermal Interface Materials

Dow Corning's broad portfolio of thermal interface materials offers versatile heat management options for virtually every LED lamp and Luminaire design.

The material is applied between heat source, for example PCB or Chip On Board LED, and heat sink to dissipate the heat from the lighting source and reduce junction temperature.

Depending if the LED printed circuit board or Chip On Board LED needs to be sealed or able to be replaced, silicone technology is able to offer both type of solutions and at the same time offering a very low thermal resistance between LED PCB or COB LED and heatsink.

Thermal management

Dispensable Thermal Pads enable quick and precise screen printing of thermally conductive silicone pads in controllable thicknesses on complex substrate shapes. They can enhance thermal performance, accelerate production and reduce system costs compared to fabricated pads.
Thermal Greases, compounds, enable very thin bond lines and fill tight gaps to ensure durable thermal management and long-term reliability of LED devices.

Printable Pads

Materials	Properties	Thermal conductivity (W/m.K)	Viscosity (mPa.s)	Durometer	Cure time	Dielectric strength (kV/mm)	Packaging
Dow Corning® **TC-4026**	Silicone • 2-Part • 1:1• Blue • UL 94 V-0 • **Glass beads***	**2.5**	70,000	50 Shore OO	24h @25°C 48 min @75°C 16 min @100°C	18	Kits : 2 kg 10 kg 40 kg
Dow Corning® **TC-4025****	Silicone, 2-Part • 1:1 • Blue • UL 94 V-0	**2.5**	70,000	50 Shore OO	24h @25°C 48 min @75°C 16 min @100°C"	18	Kits : 2 kg 10 kg 40 kg
Dow Corning® **TC-4016**	Silicone • 2-Part • 1:1 • Blue • UL 94 V-0 **Glass beads***	**1.7**	103,000	50 Shore OO	24h @25°C 48 min @75°C 16 min @100°C	18	Kits : 2 kg 10 kg 40 kg
Dow Corning® **TC-4015****	Silicone • 2-Part • 1:1 • Blue • UL 94 V-0	**1.7**	103,000	50 Shore OO	24h @25°C 40 min @75°C 15 min @100°C	18	Kits : 2 kg 10 kg 40 kg

*Glass beads : Added to help control the thickness
**Product is part of CREE® chemical compatibility list.

Compounds

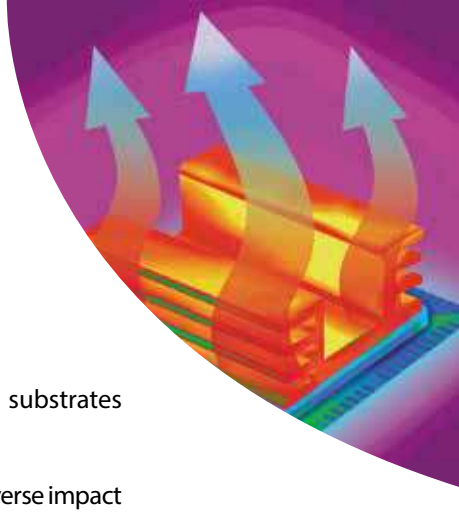
Materials	Properties	Thermal conductivity (W/m.K)	Thermal Resistance at 40psi (°C.cm²/W)	Viscosity (mPa.s)	Dielectric strength (kV/mm)	Packaging
Dow Corning® **TC-5351**	Silicone • gray • grease	**3.3**	0.25	300,000	6.3	CRT 1 kg Pail : 20 kg
Dow Corning® **TC-5121C****	Silicone • greenish-yellow • grease	**2.8**	0.09	79,000	1.9	Pail : 1 kg
Dow Corning® **SE 4490CV**	Silicone • white • grease	**1.9**	0.77	52,0000	35	Pail : 1 kg
Dow Corning® **TC-5080**	Silicone • white • grease	**1**	0.2	836,000	8.7	Pail : 1 kg Drum: 250 kg
Dow Corning® **SC102**	Silicone • white • grease	**0.9**	0.62	29,000	2	Pail : 1 kg Pail: 20 kg
Dow Corning® **340**	Silicone • white • grease	**0.68**	0.16	542,000	8	Tub : 100 g Pail : 10 kg • 60 kg

**Product is part of CREE® chemical compatibility list.

Lighting Solutions

DOW CORNING

Thermal Interface Materials



Thermal management and fixation

Thermally conductive adhesives form strong stable bonds to most LED printed circuit board substrates (e.g. Ceramic, MCPCB and FR4), and deliver excellent thermal conductivity.

The materials cure at room temperature or at elevated temperature. Their low volatility means no adverse impact to light output.

Thermally Conductive Adhesive

Materials	Properties	Thermal conductivity (W/m.K)	Tensile strength (Mpa)	Viscosity (mPa.s)	Durometer	Elongation	Cure time	Dielectric strength (kV/mm)	Packaging
RTV									
Dow Corning® **SE 4485**	Silicone • 1 Part • White • **UL 94 V-0**	**2,8**	3,4	230 000	90 Shore A	99,2	RTV	19	CRT : 330 ml
Dow Corning® **SE 4485 L**	Silicone • 1 Part • White	**2,2**	5,1	100 000	90 Shore A	20	RTV	38	CRT : 330 ml
Dow Corning® **SE 4486***	Silicone • 1 Part • White	**1,59**	3,8	20 000	80 Shore A	45	RTV	13	Tube : 250 g CRT : 330 ml
Dow Corning® **SE 4420**	Silicone • 1 Part • White	**0,9**	4,4	108 000	77 Shore A	65	RTV	14,6	Tube : 200 g CRT : 330 ml
Dow Corning® **EA 9189 H**	Silicone • 1 Part • White • **UL 94 V-0**	**0,88**	3,9	-	80 Shore A	32	RTV	28	CRT : 330 ml 2.6 l
Heat cure									
Dow Corning® **TC-2035**	Silicone • 2-Part • 1:1• red	**3,3**	3,6	130 000	95 Shore A	43	30 min @125°C 10 min @150°C	21	Kit: 2x450 g 2 kg 3.2 kg 50 kg
Dow Corning® **TC-2030**	Silicone • 2-Part • 1:1• Gray	**2,7**	4,7	220 000	92 Shore A	50	60 min @130°C	21	Kit: 2x610 ml 2 kg 50 kg
Dow Corning® **SE 4450**	Silicone • 1 Part • Gray	**1,92**	7,3	66,000	94 Shore A	45	30 min @150°C	22	Pail : 1 kg 20 kg
Dow Corning® **1-4173**	Silicone • 1 Part • Gray • **UL 94 V-0**	**1,78**	6,2	61,000	92 Shore A	20	90 min @100°C	16,7	CRT : 75 ml 1.5 kg Pail : 10 kg

*Product is part of CREE® chemical compatibility list.

Lighting Solutions

DOW CORNING

Adhesives & Sealants

Silicone adhesives & sealants from Dow Corning form excellent bonds and seals with a variety of common LED lamp and Luminaire materials, and ensure reliable long-term performance at temperatures exceeding 120°C. These solventless materials cure at room temperature to greatly simplify processing, and their low volatility (<300 ppm) helps maintain lumen output over the lifetime of your device.

The adhesives and sealants can be used to seal PC/PMMA covers to the heatsink. Also the sealants are excellent for gluing PC/PMMA and silicone lenses to PCBs.

Adhesives & Sealants

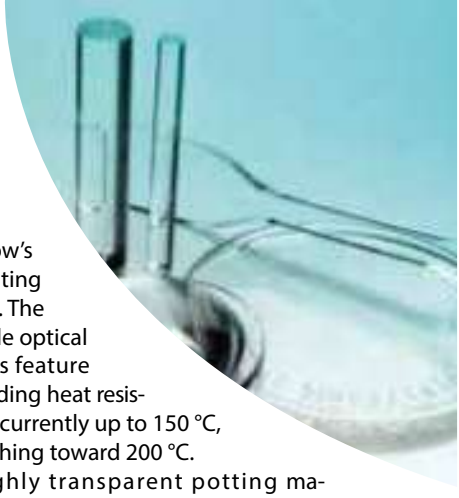
Materials	Properties	Color	Tack free time (min)	Durometer	Elongation (%)	Tensile strength (Mpa)	Dielectric strength (kV/mm)	Packaging
RTV								
Dow Corning® **3145***	Silicone • RTV • 1 Part • **MIL-A-46146**	Gray • Clear	78	51 Shore A	650	**7,1**	20	Tube 90 ml CRT 310 ml Pail 19 kg
Dow Corning® **3140**	Silicone • RTV • 1 Part • **Flowable (34,400 mPa.s) •UL 94-HB, Mil Spec**	Clear	105	34 Shore A	425	**3**	17.5	Tube 90 ml CRT 310 ml Pail 20 l
Dow Corning® **744**	Silicone • RTV • 1 Part • **UL 94-HB**	White	55	37 Shore A	590	**2,7**	16	Tube 90 ml CRT 310 ml Pail 20 l
Dow Corning® **7091***	Silicone • RTV • 1 Part	White • Gray • Black	28	37 Shore A	680	**2,5**	DK	CRT 310 ml Pail 20 l
Dow Corning® **SE 9186**	Silicone • RTV • 1 Part	White • Clear	9	19 Shore A	555	**2,3**	23	Tube 100 g CRT 330 ml Pail 18 kg
Dow Corning® **EA 2900**	Silicone • RTV • 1 Part • **UL 94 V-1**	White	20	50 Shore A	400	**2,1**	17.1	CRT 310 ml Pail 20 l
Dow Corning® **SE 9120**	Silicone • RTV • 1 Part • **Flowable (8 125 mPa.s)**	Clear • White	9	24 Shore A	375	**1,5**	23	Tube 95 g CRT 330 ml
Dow Corning® **AS7096N***	Silicone • RTV • 1 Part	Clear	15 - 30	13 Shore A	500	**1**	DK	CRT 310 ml Pail 20 l
Dow Corning® **3165**	Silicone • RTV • 1 Part • **UL 94 V-0**	Gray	5	35 Shore A	185	**0,9**	DK	CRT 310 ml Pail 21.9 kg
Dow Corning® **SE 9187 L**	Silicone • RTV • 1 Part • **UL94-HB (Black only)**	White • Clear • Black	8	18 Shore A	155	**0,5**	20	Tube 95 g CRT 330 ml Pail 18 kg
Heat cure								
Dow Corning® **SE 1700**	Silicone, Heat Cure (30min 150°C) • 2-Part, non-flowing (542 000 mPa.s) • ratio 10:1	White • Clear	-	48 Shore A	355	**6,8**	22	Kit 1.1 kg kit 22 kg
Hotmelt								
Dow Corning® **EA-4600 HM**	Hot melt silicone •1 Part	Black	15	56 Shore A	1 000	**4.6**	20	CRT 30 ml • 330 ml
Dow Corning® **HM-2510**	Hot melt silicone • 1 Part	Clear	15	47 Shore A	760	**2,7**	DK	Pail 22 kg

*Product is part of CREE® chemical compatibility list.

Lighting Solutions

DOW CORNING

Optical silicones



Moldable silicones are suitable for a range of applications, such as secondary lenses, light pipes, light guides and other optical components. These transparent, lighter-than-glass materials are soft enough to allow your innovative design combined with integrated functionality of the optical parts. They deliver good ultraviolet (UV) resistance, minimize yellowing and resist scratching, especially in comparison to PC and PMMA plastics. They also mix easily with additives to meet your specific design needs and performance goal.

A low viscosity before cure makes injection molding into complex shapes easier than with either organic polymers or glass. This may help reduce manufacturing costs and cycle times in injection molding and potentially reduce system costs for LED-illuminated lamps and luminaires.

Innovative designs, not currently feasible with other known commercial products, are now possible. Meaning that optical and mechanical designers can be more creative than ever.

Compared to many organic materials, the chemical backbone of silicones makes them particularly well-suited to manage the increasingly high temperatures of today's and tomorrow's LED lighting systems. The moldable optical silicones feature outstanding heat resistance—currently up to 150 °C, and pushing toward 200 °C.

The highly transparent potting material can be used to encapsulate LEDs and protect them from moisture and dust. The elasticity of the material can absorb mechanical stresses to ensure a long lifetime of the LEDs.

Transparent secondary optics

Materials	Properties	Refractive index	Transmission (% @450nm, 3.2mm)	CTE (ppm/°C)	Viscosity	Durometer	Dielectric strength (kV/mm)	Tensile strength (Mpa)	Elongation (%)	Packaging
Dow Corning® **MS-1001**	Silicone • 2-Part • 1:1 • transparent	1.41	93	250	14,000	**87 Shore A**	29	12	50	Kits : 1 kg • 36 kg
Dow Corning® **MS-1002**	Silicone • 2-Part • 1:1• transparent	1.41	91	275	26,250	**74 Shore A**	19	11.2	80	Kits : 1 kg • 36 kg
Dow Corning® **MS-1003**	Silicone • 2-Part • 1:1• transparent	1.41	92	325	42,250	**52 Shore A**	20	5.5	325	Kits : 1 kg • 36 kg

Translucent secondary optics

Materials	Properties	Refractive index	Transmission (% @450nm, 3.2mm)	CTE (ppm/°C)	Viscosity	Durometer	Dielectric strength (kV/mm)	Tensile strength (Mpa)	Elongation (%)	Packaging
Dow Corning® **MS-0002**	Silicone • 2-Part • 1:1• translucent	1.41	75,1	280	147,000	65 Shore A	19,7	9,03	270	Kits : 40 kg • 410 kg

Reflector

Materials	Properties	Reflectance (% @450nm)	CTE (ppm/°C)	Viscosity	Durometer	Dielectric strength (kV/mm)	Tensile strength (Mpa)	Elongation (%)	Packaging
Dow Corning® **MS-2002**	Silicone • 2-Part • 1:1• White Reflector	97	210	650,000	84 Shore A	20.7	8.6	65	Kits : 1 kg • 44 kg

White reflective coating

Materials	Properties	Reflectance (% @127µm)	Viscosity	Durometer	Tack free time	Polymerization	Dielectric strength (kV/mm)	Temperature Range	Packaging
Dow Corning® **CI-2001**	Silicone • 1 part • UL 94 V-0	96	1 500	80 Shore A	10 min	RTV	25	-45 to +200°C	Can : 0.5 kg Pails : 3.4 kg • 15 kg

Encapsulants

Materials	Properties	Color	Viscosity (mPa.s)	Durometer	Refractive index @ 633 nm	Working Time/ pot life	Cure time	Dielectric strength (kV/mm)	Elongation (%)	Packaging
Dow Corning® **EI-1184**	Silicone • 2-Part• 1:1• UL 94-V1 • Mil Spec• RTI150	Transparent	5 300	61 Shore A	1.42	**24 min**	4 h @25°C 70 min @50°C < 5 min @100°C	19	55	Kits : 1 kg • 36 kg • 360 kg
Dow Corning® **Sylgard 182**	Silicone • 2-Part • 10:1• UL 94 V-1• RTI150	Transparent	4 575	51 Shore A	1.41	**8h**	336h @25°C 75 min @100°C 20 min @150°C	19	105	Kits: 0.5 kg • 1.1 kg • 5.5 kg •19.9 kg • 204.1 kg
Dow Corning® **Sylgard 184**	Silicone • 2-Part • 10:1 • UL 94V-0 • Mil Spec • RTI150	Transparent	3 500	43 Shore A	1.42	**1.5h**	48h @25°C 35 min @100°C 10 min @150°C	19	120	Kits: 0.5 kg • 1.1 kg • 5.5 kg • 22 kg • 224.5 kg

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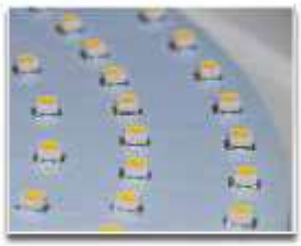


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ENDÜSTRİ TEKNİK

Silicones Selection Guide

DOW CORNING

XIAMETER
from DOW CORNING

Partner of Dow Corning™
Adhesives and sealants in Europe

ENDUSTRI TEKNIK LTD. STI. isthe Dow Corning Distributor in TURKEY ENDUSTRI TEKNIK is part of DGE Group

Who we are.

We are experts in adhesives and sealants. We work with number 1 Brands. We translate the needs of the different stakeholder partners to co-design products and processes for today and tomorrow.

History expertise

Antala have worked for more than 15 years with its clients in defining assembly solutions.
This close collaboration, involving different partners, allows us to meet the specifications for t[illegible]plicati[illegible]

Our people are involved in production site audits to streamline products and processes to optimize your production and industrial applications.

Comprehensive solution

Our collaboration with manufacturers of dispensing equipment enables our teams to provide you with comprehensive solutions that take all the worries out of implementing lubrication or bonding solutions, from their design to YOUR production.

Selector guide

Antala regularly publishes Selector Guides for various industries, chemistries and technologies. This Silicones Selector Guide is designed to help you find industry-proven solutions.
We know that every application is not the same. If you are ever in doubt, do not hesitate to contact our technical experts for assistance in finding the right solution for your specific applications.
On the following pages you will find information on the basics of sealing and silicone technology as well as a partial list of products categorized by type of sealing and cure chemistry (one-part or two-part). The list also gives the properties and typical applications for each product.





Definition

The purpose of sealing is to prevent or limit the ingress of liquids, solids or gases between environments. Sealants are applied to prevent leaks of fluids or the entry of unwanted solid or liquid bodies.
Sealing is a recurring challenge that is increasingly important in most sectors of industry, including automobile manufacturing, construction, electronics, transportation, household appliances, lighting, and energy.

Sealing solutions come in many types and forms, including welds, paper gaskets, rubber O-rings and adhesive sealants. Generally speaking, these solutions are used to create barriers that prevent liquids, solids or gases from leaking from or into joined objects.

Product index

Contents

Gasketing method

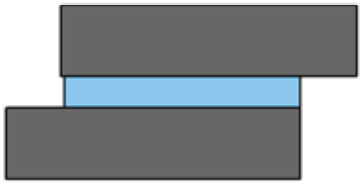
There are essentially two main methods for forming tight seals with silicone-based products. Each has its own advantages and disadvantages. The first thing one must ask is whether the assembly will have to be regularly opened and closed (such as for servicing) or if it can be bonded with an adhesive sealant.

Adhesive gasketing

An adhesive sealant is needed in this case. The gasket is achieved by the adhesive forces between the sealant and the two parts to be assembled. The sealant creates a barrier that achieves the desired seal.

We carry a wide range of adhesive sealants (one-part, two-part, hot melt, heat cure or room-temperature cure, etc).

This gasketing method is also known as **FIPG** (Formed-In-Place Gasketing).



Application examples: bonding and sealing of oven doors, vehicle headlights, sealing of electronic housings and lighting fixtures, etc.

Compression gasketing

The seal is achieved by the mechanical forces exerted on the assembly, which compress the gasket. This method is particularly recommended for assemblies that can be disassembled and reassembled regularly. Typical sealing products are silicone elastomers and silicone foams.

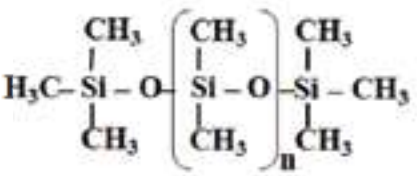
This gasketing method is also known as CIPG (Cured-In-Place Gasketing).

Application examples: gasketing of electrical cabinets, automotive radiator end tanks, etc.

Advantages and disadvantages of both methods

Adhesion (FIPG)		Compression (CIPG)	
			
✗	Permanent assembly	✓	Non-permanent assembly
✓	Sealing and bonding	✗	Requires mechanical fastening
✓	No compression rate control	✗	Compression rate control required
✓	Manual or robotic dispensing	✗	Robotic dispensing only
✗	Not suitable for large joint thicknesses	✓	Large joint thicknesses possible
✓	Withstands differential thermal expansion	✗	Differential thermal expansion must be monitored
✓	Suitable for rough surfaces/uneven gaps	✗	Not suitable for rough surfaces/uneven gaps

Silicone technology



Silicones, or polysiloxanes, are inorganic polymers formed by a silicon-oxygen chain with organic groups attached to the chain atoms.

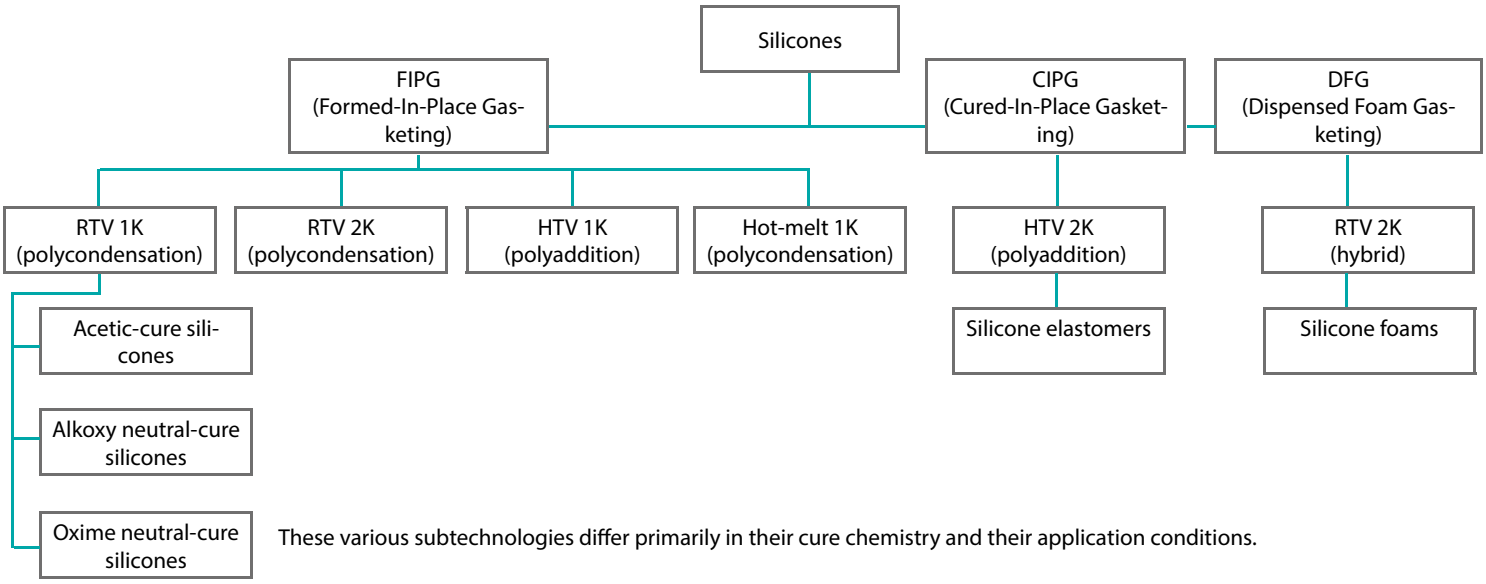
The chemical nature of silicone gives it many advantages over elastomers and organic sealants. The main chemical characteristic of silicone is the presence of a high number of Si-O bonds with a bonding energy that is much greater than that of the C-O and C-C bonds in organic polymers. This gives silicones a number of specific properties:

- High degradation temperature
- Excellent UV resistance
- Excellent resistance to low and high temperatures
- Low flammability materials
- Excellent resistance to chemical attack

However, if a silicone is to come into contact with extremely harsh chemicals (solvents, oils, concentrated acidic solutions, etc.), it is advised to first conduct compatibility tests. DGE can use its experience and that of Dow Corning to guide you in finding the right chemically resistant product for your application.

Silicone elastomers and adhesive sealants

Silicone elastomers and adhesive sealants designed for sealing applications are divided into several technologies depending on their application method (CIPG or FIPG), their cure chemistry (one part [1K] or two part [2K], polycondensation or polyaddition) and their application temperature (room-temperature or heat cure).



These various subtechnologies differ primarily in their cure chemistry and their application conditions.

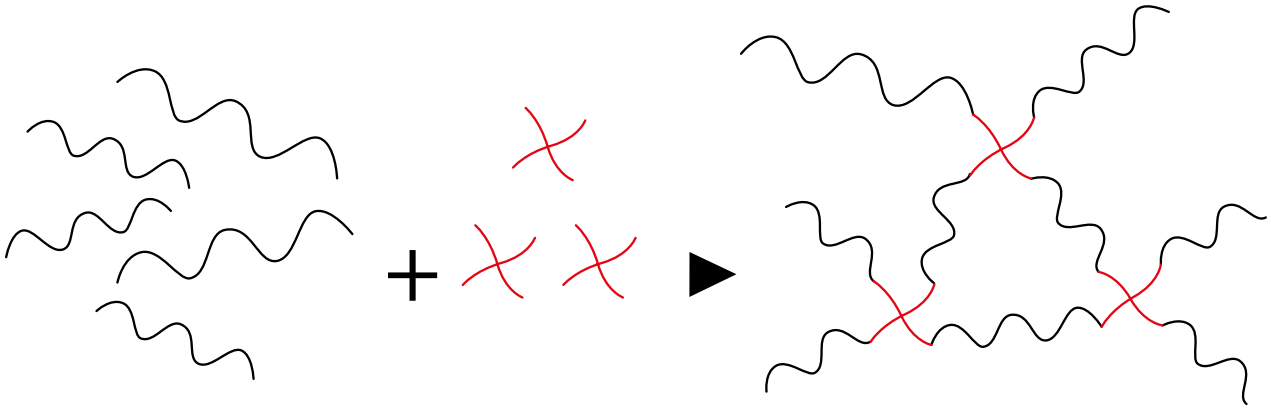
Heat resistance

		Adhesive gaskets				Compression gaskets	
	RTV 1K Acetoxy	Alkoxy RTV 1K	Oxime RTV 1K	HTV 1K	RTV 2K	Silicone elastomers	Foam gaskets
Dry heat < 150°C/302°F	✓	✓	✓	✓	✓	✓	✓
Dry heat < 180°C/356°F	✓	✓	✓	✓	✓	✓	✓
Dry heat < 220°C/428°F	High-temperature SKUs	✗	✓	✓	✗	✓	-
Dry heat < 275°C/527°F	High-temperature SKUs	✗	✓	✓	✗	✗	✗
Wet heat <90°C (194°F)	✓	✓	✓	✓	✓	✓	✓
Wet heat <140°C (284°F)	✓	✓	✓	✓	✓	✓	✓
Wet heat < 180°C (356°F)	High-temperature SKUs	✗	✗	✓	✓	✓	✗
Engine fluids <90°C (194°F)	✓	✓	✓	✓	✗	✓	✗
Engine fluids <150°C (302°F)	High-temperature SKUs	✗	✗	✓	✗	✓	✗
Spirits, nonpolar solvents, hydrocarbons	Fluorosilicones only	✗	✗	✗	✗	✗	✗

*Special engine oil SKUs only

Crosslinking

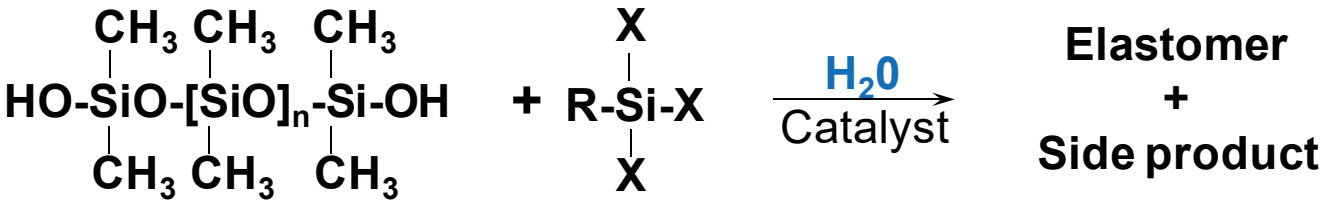
Silicone elastomers, foams and sealants share the same basic principle of crosslinking. In their initial state, these materials are made up of PDMS polymer chains and crosslinking agents (or crosslinkers). The PDMS chains are terminated by reactive groups that react with the crosslinkers to form three-dimensional networks. It is the three-dimensional network that gives silicone its flexibility and elasticity.



Depending on the chemical nature of the crosslinkers and the PDMS reactive groups, crosslinking occurs under different conditions and methods known as polyaddition and polycondensation.

Polycondensation

In the case of polycondensation silicones, the reactive group at the end of the PDMS chain is an alcohol group and the crosslinkers are organosilanes. When water and a catalyst (tin salt) are present, the crosslinkers bond with the PDMS chains to form an elastomer by releasing a reaction by-product that evaporates.

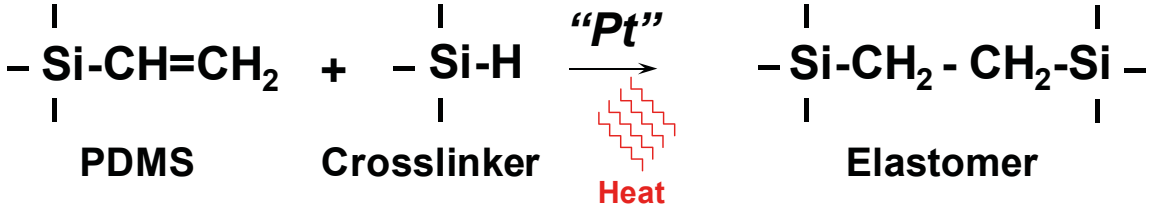


The nature of this by-product depends on the crosslinkers present in the formulation of the material. Depending on the crosslinker used, acetic-cure silicones, oxime neutral-cure silicones or alkoxy neutral-cure silicones are obtained.

Acetoxy	X =	(O-CO-CH3)	▸ Acetic acid
Oxime	X =	(O-N=CMeEt)	▸ Methyl ethyl ketoxime
Alkoxy	X =	(O-CH3)	▸ Methanol

Polyaddition

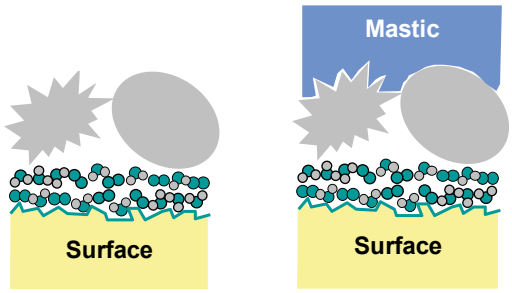
In the case of polyaddition silicones, the PDMS chains are terminated by C=C insaturations and the crosslinkers are silanes. When a platinum-based catalyst is present, the crosslinking agents react with the PDMS chains to form a three-dimensional network. Unlike with polycondensation, no by-products are released and thus no shrinkage occurs. Another advantage of this crosslinking method is that there is no possibility of reversion.



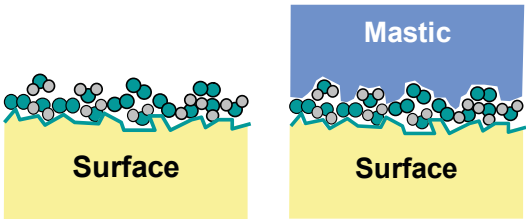
Surface preparation

Whether a compression gasket or an adhesive gasket is needed, good bonding practices must be followed before applying a material.

Among the good bonding practices, preparation of the host substrates is essential. Unprepared substrates may be covered with contaminants such as dust, lipids, metal oxides, release agents or plasticizers. These contaminants form a barrier that prevents silicone from adhering to unprepared substrates. It is therefore essential that substrates be **clean** , **free of grease and dry**.



Unprepared surface: surface contaminants prevent silicone from adhering



Prepared surface: improved silicone adhesion

Furthermore, some plastics – primarily polyethylene, polypropylene, Teflon and silicone – are known to be difficult to bond. There are a number of surface treatments that improve the adhesion of adhesives and sealants on these types of plastic:

• Plasma treatment: Surfaces are exposed to an inert gas (such as argon, helium, hydrogen or oxygen) at low pressure to increase their porosity and energy and create reactive sites that improve adhesion.

• Flame treatment: Surfaces are exposed to flame to oxidize them and burn away any contaminants from them.

• Corona treatment: (or, corona discharge) Substrates are exposed to a stream of charged particles to increase their surface roughness.
This treatment also oxidizes surfaces and increases the number of sites able to react with the silicone sealant (formation of hydrogen bonds).

• Primer: A coating with a strong affinity with substrates and adhesives and which forms a chemical bridge. Primers typically consist of silane-based compounds in a solvent solution. They must be applied in very thin coats and allowed to dry so that the solvent can evaporate and the silanes can react (always follow the drying times recommended by the primer manufacturer)

Primers for silicone adhesives and sealants

SKUs	Color	Solvent	Flash point (°C/°F)	VOC (g/l)	For use with	Surfaces	Packaging* & SKUs
Dow Corning® **1200OS**	Colorless/ Red	Volatile siloxanes	27/80.6	110	All condensation- or addition-cure silicones	Wide range of surfaces, including FR-4	500 ml 5 L
Dow Corning® **PR-1200**	Colorless/ Red	Naphta	13/55.4	719	Most condensation- or addition-cure silicones	Glass, ceramic, FR-4, most metals and some plastics	500 ml
Dow Corning® **92-023**	Colorless	Heptane	-13/+8.6	681	Non-pigmented two-part addition-cure silicones	FR-4, most metals and ceramics	500 ml
Dow Corning® **PR-2260**	Colorless	Heptane	9/48.2	729	Most condensation- and addition-cure silicones	Ceramics, several types of metals, a few types of plastics	340 g 2.7 kg 13.6 kg

Adhesive gasketing

Basic principle

Adhesive gaskets are generally made by dispensing sealant (either manually or robotically) on the surface of one of two parts. When the parts are mated, the sealant spreads across the mating surfaces and fills in any gaps, voids, scratches and surface irregularities.
The sealant then cures to form a flexible, elastic gasket that acts as a barrier and provides a long-lasting seal and a permanent bond without the need for any mechanical fastening.

Non-structural adhesive sealants are generally used to create adhesive seals. Their excellent elasticity makes them flexible enough to withstand differential thermal expansion, which occurs when dissimilar materials are bonded together.

Generally speaking, good bonding practices must be followed when making an adhesive gasket, i.e., parts to be bonded must be clean, dry and free of grease. Some materials – primarily polyethylene, polypropylene, Teflon and silicone – are known to be difficult to bond and must be applied to host surfaces that have been specially treated (plasma, corona, flame, priming, etc.).

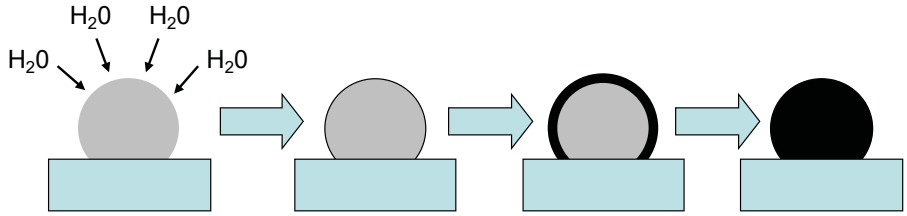
This assembly method creates tight bonds that last throughout the useful service life of parts. However, separating the bonded parts will destroy the gasket. As a result, it is intended only to form seals on systems that do not need to be disassembled.
This method is also known as FIPG (Formed-In-Place Gasketing).

DGE carries Dow Corning's entire range of products, including every type of silicone technology used in industry for this assembly method.

One-part RTV silicones

One-part RTV silicones cure by polycondensation at room temperature. They absorb moisture from ambient air, form a skin, then cure from the surface of the bead inward, releasing by-products in the process.

They cure slowly under normal conditions of temperature and humidity (to a depth of 3 mm in 24 hours at 25°C [77°F] and 50% relative humidity). It is therefore recommended to avoid using one-part RTV silicones with gaps greater than 10 mm. Curing can be accelerated by increasing the relative humidity and/or the temperature.



Once the sealant is dispensed, it absorbs moisture from the air and starts to cure

Skin formation

Cure from the outside inward

Fully cured sealant

One-part RTV silicones can be applied manually or robotically. Parts to be bonded together must be mated before the skin forms and the resulting assembly must not be exposed to mechanical strain during cure.

Manual or robotic dispensing

Assembly

Removal of excess material, or smoothing (optional)

Curing ▶ Typically requires approx. 24 h

Full cure

There are two main types of RTV silicones. The difference in these types is the nature of the by-product produced during cure:

• Acetic-cure silicones release a small amount of acetic acid (characteristic vinegar odor) as they cure. This can create problems on corrosion-sensitive metals (crude steel, aluminum, copper, etc.). They are therefore not recommended for use on these metals and should never be used near PCBs or electronic components.
• Fluorosilicone sealants are a subset of acetic-cure sealants. Replacing the polymer's methyl groups by fluoromethyl groups makes these sealants highly resistant to hydrocarbons and polar solvents.
• Alkoxy neutral-cure silicones release methanol as they cure. Unlike acetic-cure silicones, alkoxy neutral-cure silicones are suitable for use on all types of metal without any risk of corrosion. There are also oxime neutral-cure silicones, which release methyl ethyl ketoxime (MEKO). Although oxime neutral-cure silicones withstand temperatures better than alkoxy neutral-cure silicones, they are known to induce stress-cracking in some plastics (polycarbonate and acrylic plastics).

	Acetic-cure silicones	**Alkoxy neutral-cure silicones**	**Oxime neutral-cure silicones**
Maximum temperature	+200°C/+392°F (+275°C/+527°F for high-temperature SKUs)	+180°C (+356°F)	+220°C (+428°F)
Odor	Strong (vinegar)	Slight	Slight
Unsuitable substrates	Corrosion-sensitive metals (copper, crude steel, crude aluminum, iron, zinc, lead, etc.)	None	Polycarbonate and PMMA (stress cracking) • copper (discoloration)
Smoothing agent	Soapy water/Silicone liquids	Silicone liquids	Silicone liquids

ACETIC-CURE SILICONE ADHESIVES SEALANTS

Product name	**Temperatures (°C/°F) (peak)**	Skin-over time	Tensile strength / Elongation	Color	Shore hard-ness	Features	Packaging* & SKUs
ACETIC							
Dow Corning® **AP**	-50°C +180°C (-58°F) (+356°F)	11 min	2.2 MPa/540%	Clear White/Black	A25	Multi-purpose • PMUC version for silicone AP available on request clear (PMUC No.: 16-089/17-285)	310 ml
Dow Corning® **752**	-50°C +200°C (-58°F) (+392°F)	10-15 min	2.4 MPa/490%	Clear White/Black	A24	Multi-purpose	90 ml, 300 ml
Dow Corning® **732**	-60°C +180°C (-76°F) (+356°F)	7 min	2.3 MPa/540%	Clear/ White/Black	A25	NSF Multi-purpose with FDA, NSF 51, NSF 61 & UL 94-HB approv-als • **MIL-A-46106**	90 ml, 310 ml
Dow Corning® **734**	-65°C +180°C (-85°F) (+356°F)	7 min	1.5 MPa/315%	Clear White	A27	NSF **Self-leveling with FDA, UL 94-HB, NSF 51 approvals • MIL-A-46106**	90 ml, 310 ml
Dow Corning® **736**	-60°C +260°C (-76°F) (+500°F)	10 min	2.4 MPa/600%	Red	A26	NSF High temperature with FDA, UL 94-HB, NSF 51 approvals • **MIL-A-46106**	90 ml, 300 ml
Dow Corning® **Q3-1566**	-50°C +275°C (-58°F) (+527°F)	5 min	3.6 MPa/340%	Black	A43	**Ultra-high temperatures**	310 ml
Xiameter® **SLT-3445**	-50°C +260°C (-58°F) (+500°F)	10 min	1.5 MPa/300%	Red	A25	Self-leveling • High temperatures • FDA food grade	25 kg
Dow Corning® **Q3-3463**	-65°C +200°C (-85°F) (+392°F)	10 min	1.9 MPa/400%	Blue	A29	**Blue housing sealant**	90 ml, 310 ml
ACETIC/FLUOROSILICONE							
Dow Corning® **730 FS**	-65°C +260°C (-85°F) (+500°F)	12 min	3 MPa/195%	White	A40	Good resistance to hydrocarbons, solvents, and chemical attack	90 ml
Dow Corning® **Q4-2817**	-55°C +260°C (-67°F) (+500°F)	11 min	4.5 MPa/375%	Red	A43	Good resistance to hydrocarbons, polar solvents, chemical attack • Non-flowing	5.4 oz Semco cartridge

NEUTRAL SILICONE ADHESIVE SEALANTS

Product name	Temperatures (°C/°F) (peak)	Skin-over time	Tensile strength / Elongation	Color	Shore hard-ness	Features	Packaging* & SKUs
Dow Corning® **AS7096N**	-50°C (-58°F) +150°C (+302°F)	10 min	1 MPa/500%	Clear	A13	**Clear** • Excellent wettability on PMMA • Alkoxy group	310 ml
Dow Corning® **7091**	-55°C (-67°F) +180°C (+356°F)	15 min	2.5 MPa/680%	White/Black/ Gray	A37	**Good mechanical strength** • Alkoxy group	310 ml
Dow Corning® **7092**	-50°C (-58°F) +150°C (+302°F)	20 min	2 MPa/435%	White/Black	A55	**High tack - instant bond** • Alkoxy group • UL94 HB	310 ml 20 l
Dow Corning® **7093**	-55°C (-67°F) +180°C (+356°F)	15 min	1.7 MPa/700%	White/Black/ Gray	A30	Multi-purpose, low modulus • Alkoxy group • PMUC version available on request (PMUC No.: 7093 white: 16-090/17-296)	310 ml
Dow Corning® **7094**	-55°C (-67°F) +180°C (+356°F)	25 min	1.1 MPa/220%	Black	A19	**Self-leveling** • Alkoxy group	310 ml
Dow Corning® **748**	-55°C (-67°F) +177°C (+350.6°F)	15 min	1.9 MPa/350%	White	A35	NSF Alkoxy group • Approvals: NSF 51/61 • FDA, UL94-HB	90 ml 300 ml
Dow Corning® **3140**	-50°C (-58°F) +180°C (+356°F)	15 min	3.1 MPa/425%	Clear	A34	Alkoxy group • **Self-leveling** UL94-V1 approval • FDA • **MIL-A-46146**	90 ml 310 ml
Dow Corning® **3145**	-55°C (-67°F) +180°C (+356°F)	15 min	7.1 MPa/650%	Clear/Gray	A51	**High mechanical strength** • Alkoxy group • **MIL-A-46146**	90 ml 310 ml
Dow Corning® **3559**	-40°C (-40°F) +220°C (+428°F)	25 min	1.6 MPa/400%	Black	A40	**High temperature** • Oxime group	310 ml
Dow Corning® **3-0100**	-55°C (-67°F) +180°C (+356°F)	24 min	2.2 MPa/455%	Black	A37	**Designed for engine block main seals** • Withstands new engine oils and their additives • Alkoxy group	305 ml 22.8 kg
Dow Corning® **3-0110J**	-55°C (-67°F) +180°C (+356°F)	7 min	2.7 MPa/375%	Gray	A47	**Designed for engine block main seals.** Withstands new engine oils and their additives • Blowout resistance • **Rapid cure** • Alkoxy group	305 ml 21.9 kg
Dow Corning® **3-0115**	-55°C (-67°F) +180°C (+356°F)	10 min	2.8 MPa/375%	Gray	A50	**Designed for engine block main seals** • Withstands new engine oils and their additives • Blowout resistance • Alkoxy group	305 ml 22 kg
Dow Corning® **FIRESTOP SEALANT 700**	-55°C (-67°F) +180°C (+356°F)	15 min	0.4 MPa/430%	White/Gray/ Black	A27	**Fire-resistant sealant for expansion joints** • Approvals: SNJF/Euroclass B as per EN 13501-1 • Fire rating of 2-4 hours as per EN-1366-4	310 ml
Dow Corning® **FIRESTOP SEALANT 800**	-55°C (-67°F) +180°C (+356°F)	15 min	0.6 MPa/1000%	White/Gray/ Black	A15	**Fire-resistant sealant for expansion joints** • Self-leveling • Approvals: SNJF/Euroclass B as per EN 13501-1 • Fire rating of 2-4 hours as per EN-1366-4	310 ml

One-part hot-melt silicones

Dow Corning also manufactures hot-melt silicone sealants (application temperature: 120°C/248°F).
These alkoxy neutral-cure silicones have high tack upon application to create instant bonds and significantly increase production rates.

ONE-PART HOT-MELT SILICONE ADHESIVE SEALANTS

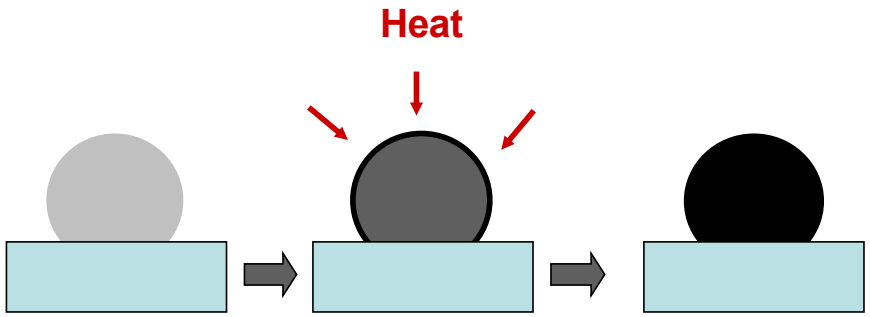
Product name	Temperatures (°C/°F) (peak)	Skin-over time	Tensile strength / Elongation	Color	Shore hard-ness	Features	Packaging* & SKUs
Dow Corning® **HM-2500**	-45°C (-49°F) +150°C (+302°F)	15 min	2.4 MPa/1000%	Clear	A60	Reactive hot-melt silicone / Instant green strength / Viscosity: 210,000 mPa·s at 120°C (248°F)	22 kg 205 kg
Dow Corning® **HM-2510**	-45°C (-49°F) +150°C (+302°F)	15 min	2.7 MPa/760%	Clear	A47	Reactive hot-melt silicone / Instant green strength / Viscosity: 105,000 mPa·s at 120°C (248°F) /	22 kg 205 kg
Dow Corning® **HM-2520**	-45°C (-49°F) +150°C (+302°F)	15 min	4.8 MPa/1000%	Clear	A33	Reactive hot-melt silicone / Instant green strength / High mechanical strength / Viscosity: 110,000 mPa·s at 120°C (248°F)	22 kg 205 kg

One-part HTV silicones

One-part HTV silicones cure by polyaddition when exposed to high temperatures of around 150°C (302°F).

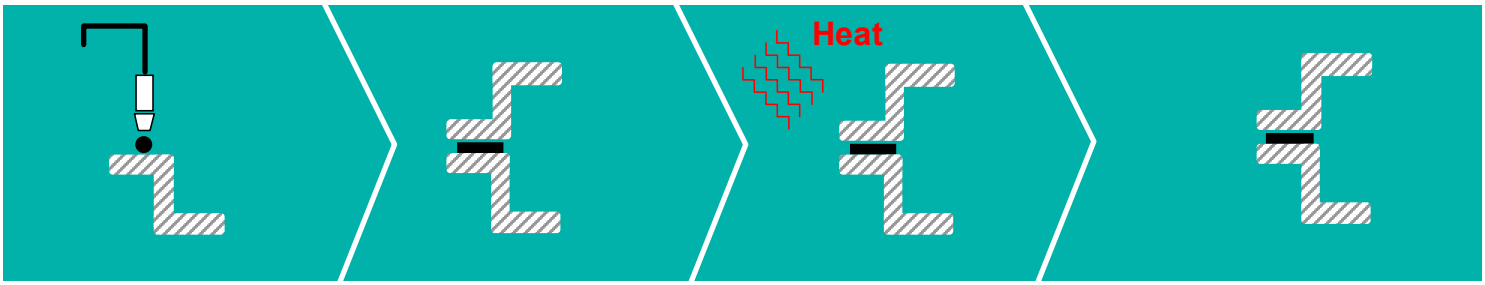
Unlike one-part RTV silicones, one-part HTV silicones do not require ambient moisture to cure and produce beads that homogeneously cure throughout (this is known as bulk polymerization).

As a result, they are suitable for use in areas with little air and can be used to form very thick gaskets. In addition, their fast cure time speeds up and production rates.



The sealant is deposited | Bulk polymerization occurs when the sealant is exposed to a heat source | Fully cured sealant

One-part HTV silicones can be applied manually or robotically. Parts to be bonded together must be mated prior to heat cure and the resulting assembly must not be exposed to mechanical strain during cure in the oven.



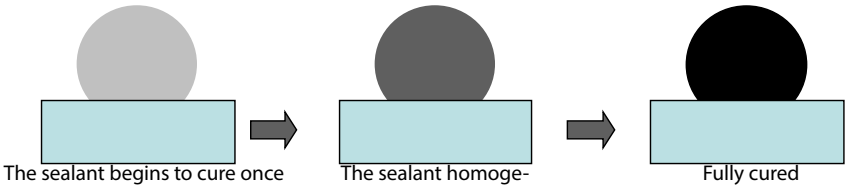
Manual or robotic dispensing | Assembly | Exposure to a high temperature | Complete cure

ONE-PART HTV SILICONE ADHESIVE SEALANTS

Product name	Temperatures (°C/°F) (peak)	Viscosity	Tensile strength / Elongation	Cure time	Color	Shore hard-ness	Features	Packaging* & SKUs
Xiameter® **ADH-6066**	-55°C (-67°F) +200°C (+392°F)	33,000 MPa·s	2.5 MPa/210%	20 min at 180°C (356°F) 30 min at 150°C (+302°F) 60 min at 120°C (+248°F)	Red	A38	Self-leveling • High temperature	310 ml
Dow Corning® **3-6096**	-40°C (-40°F) +250°C (+482°F)	Non-flow-ing	3.7 MPa/215%	5 min at 180°C (+356°F) 15 min at 150°C (+302°F) 60 min at 120°C (+248°F)	Black	A45	Non-flowing • Very high temperature • Rapid cure	310 ml
Dow Corning® **866**	-45°C (-49°F) +200°C (+392°F)	50,000 MPa·s	6.4 MPa/300	30 min at 150°C (+302°F) 60 min at 125°C (+257°F)	Gray	A57	Self-leveling • High tensile strength	1 kg 25 kg

Two-part RTV silicones

Two-part RTV silicones cure after their two parts are mixed.
The main advantage of these silicones is their fast cure time, which both shortens process times and increases production rates.
Unlike one-part RTV silicones, two-part RTV silicones are suitable for use in confined spaces (no access to ambient moisture) and may be used on large thicknesses.
They homogeneously cure throughout when dispensed.



The sealant begins to cure once it is mixed and dispensed | The sealant homogeneously cures throughout | Fully cured sealant

In general, two-part RTV silicones are intimately mixed then dispensed by robotic systems.
Parts to be bonded must be mated quickly before the sealant has time to harden and the resulting assembly must not be exposed to mechanical strain during cure.

Automatic mixing and dispensing of both parts | Assembly | Removal of excess material, or smoothing (optional) | Ambient-temperature cure ▸ Fast (less than one hour) | Complete cure

TWO-PART RTV SILICONE ADHESIVE SEALANTS

Product name	Temperatures (°C/°F) (peak)	Viscosity	Tensile strength / Elongation	Mix color	Shore hardness	Features
Dow Corning® **Q3-3526**	-40°C (-40°F) +190°C (+374°F)	200,000 MPa·s	2.0 MPa/280%	Gray/Black	A40	Polycondensation / Mix ratio: 100 parts: 10 w/w / Non-flowing
Dow Corning® **Q3-3636**	-40°C (-40°F) +175°C (+347°F)	200,000 MPa·s	1.8 MPa/300%	Gray/Black/ Special Black	A35	Polycondensation / Mix ratio 100 parts: 13 w/w / Non-flowing / Fast cure / Low fogging
Dow Corning® **EA-2626**	-40°C (-40°F) +190°C (+374°F)	205,000 MPa·s	1.9 MPa/200%	Gray/Black/ Special Black	A43/A45	Polycondensation / Mix ratio: 100 parts 13 w/w / Non-flowing / Fast cure / Good high-temperature resistance
Dow Corning® **EA-4747**	-40°C (-40°F) +150°C (+302°F)	50,000 MPa·s	1.0 MPa/190%	Gray/Black	A26	Polycondensation / Mix ratio: 100 parts 14 w/w / Low viscosity / Fast cure

Part

	Name	Property	Color	Packaging* & SKUs
BASE	Dow Corning® **Q3-3526 BASE**	For use with Dow Corning® **Q3-3526 catalyst**	Base color: white	25 kg 250 kg
BASE	Dow Corning® **Q3-3636 BASE**	For use with Dow Corning® **Q3-3636 catalyst**	Base color: white	25 kg 250 kg
BASE	Dow Corning® **EA-2626 BASE**	For use with Dow Corning® **Q3-3636 catalyst**	Base color: white	25 kg 250 kg
BASE	Dow Corning® **EA-4747 BASE**	For use with Dow Corning® **Q3-3636 catalyst**	Base color: white	25 kg 250 kg
CATALYST	Dow Corning® **Q3-3526 CATALYST GREY**	For use with Dow Corning® **Q3-3526 base**	Mix color RAL 7000 Gray	25 kg
CATALYST	Dow Corning® **Q3-3526 CATALYST BLACK**	For use with Dow Corning® **Q3-3526 base**	Mix color RAL 7016 Anth. Gray	25 kg
CATALYST	Dow Corning® **Q3-3636 CATALYST GREY**	For use with Dow Corning **Q3-3636**, **EA-2626** or **EA-4747 bases**	Mix color RAL 7000 Gray	25 kg
CATALYST	Dow Corning® **Q3-3636 CATALYST BLACK**	For use with Dow Corning **Q3-3636**, **EA-2626** or **EA-4747 bases**	Mix color RAL 7016 Anth. Gray	25 kg
CATALYST	Dow Corning® **Q3-3636 CATALYST SPECIAL BLACK**	For use with Dow Corning **Q3-3636**, **EA-2626** or **EA-4747 bases**	Mix color RAL 7021 Black Gray	25 kg
CATALYST	Dow Corning® **Q3-3636 CATALYST SPECIAL BLACK FAST CURE**	For use with Dow Corning **Q3-3636**, **EA-2626** or **EA-4747bases**• Fast-curing mixture for fast rates	Mix color RAL 7021 Black Gray	25 kg

Compression gasketing

Basic principle

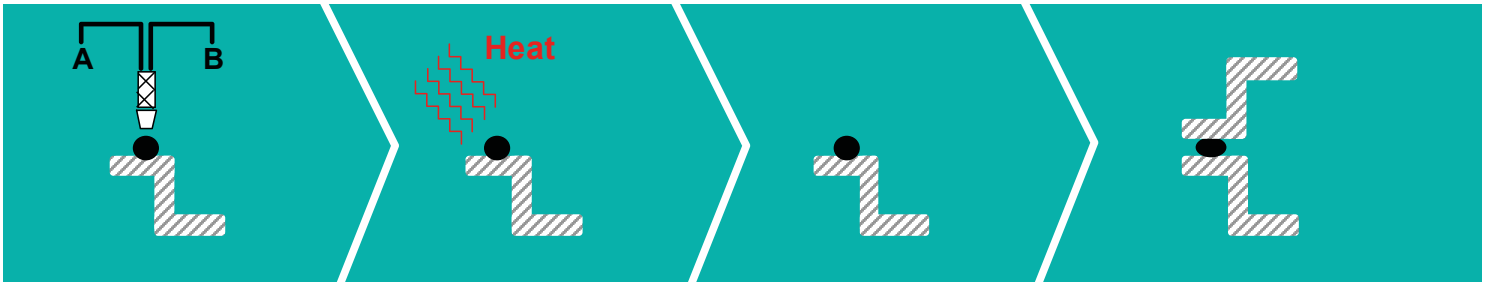
Compression gaskets are generally made by dispensing a material on the surface of one part and allowing it to cure to a flexible, elastic product that deforms under load. The part is then fastened (with clips, screws, etc.) to a second part, compressing the gasket and causing it to fill and seal the gap between both parts.

This gasketing method is also known as CIPG (Cured-In-Place Gasketing).
CIPG is particularly used to make assemblies that have to be regularly opened and closed (such as for servicing). When such assemblies are reopened, the compressed gasket returns to its original shape (this ability is known as recovery) and can be recompressed.

Dow Corning and DGE offer the two silicone technologies typically used for CIPG: silicone elastomers and silicone foams.

Silicone elastomers

Silicone elastomers are highly viscous two-part materials. Once both parts are mixed and dispensed (most often robotically), the materials must be subjected to high temperature (for a few minutes at 150°C/302°F, for example) to allow them to cure by polyaddition and harden.



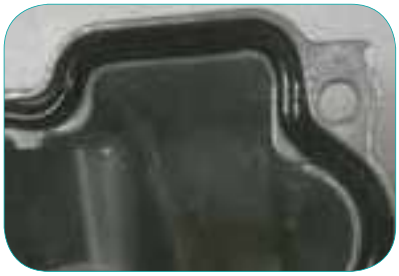
Automatic mixing and dispensing of both parts

High-temperature treatment

The cured elastomer is ready to be compressed

Assembly and compression of the elastomer

Cured silicone elastomers have a hardness ranging between 20 and 50 Shore A and must be compressed at a rate of 25 to 35% to ensure a tight seal. This hardness is particularly suitable for assemblies subjected to high clamping forces.

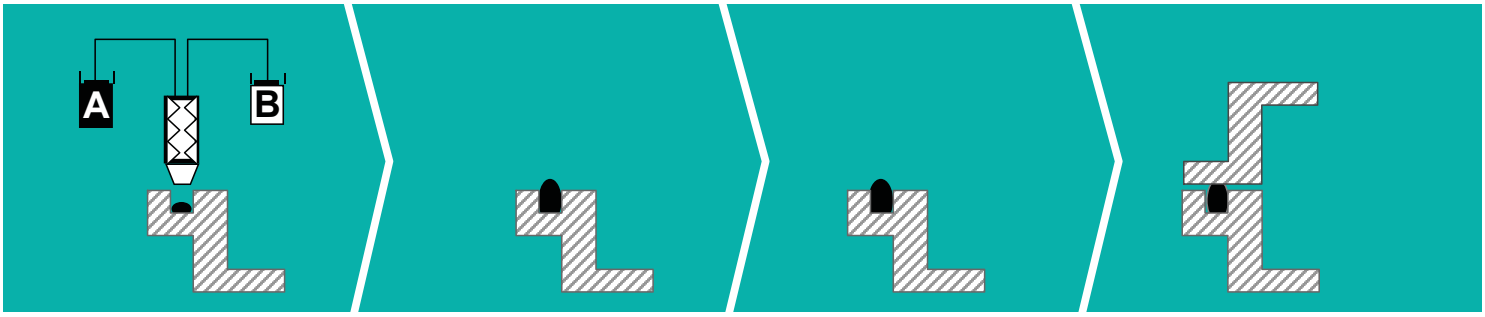


SILICONE ELASTOMERS

Product name	Temperatures (°C/°F) (peak)	Cure time	Viscosity	Tensile strength / Elongation	Color	Shore hardness	Features	Packaging* & SKUs
Xiameter® **RBL-9496-20P**	-50°C (-58°F) +200°C (+392°F)	5 min at 150°C (+302°F)	Non flowing	5.3 MPa/925%	Black	A21	Ratio: 1:1 w/w - Best when used on plastics	Inquire for details
Xiameter® **RBL-9496-30P**	-50°C (-58°F) +200°C (+392°F)	5 min at 150°C (+302°F)	Non flowing	7.2 MPa/820%	Gray	A32	Ratio: 1:1 w/w - Best when used on plastics	Inquire for details
Xiameter® **RBL-9496-45M**	-50°C (-58°F) +200°C (+392°F)	5 min at 150°C (+302°F)	Non flowing	7.3 MPa/600%	Black	A45	Ratio: 1:1 w/w - Best when used on metals	Inquire for details

Silicone foams

Silicone foams are flowable two-part liquids. Once both components are robotically mixed and dispensed into a groove, the foam quickly cures by polyaddition at ambient temperature. As the mixture cures, it evolves dihydrogen, which allows the silicone to swell and form a cellular foam (consisting of around 70% open cells).



Automatic mixing and dispensing of both components

Room-temperature cure, evolution of H2 and swelling of the silicone to form a cellular foam

The cured silicone foam is ready to be compressed

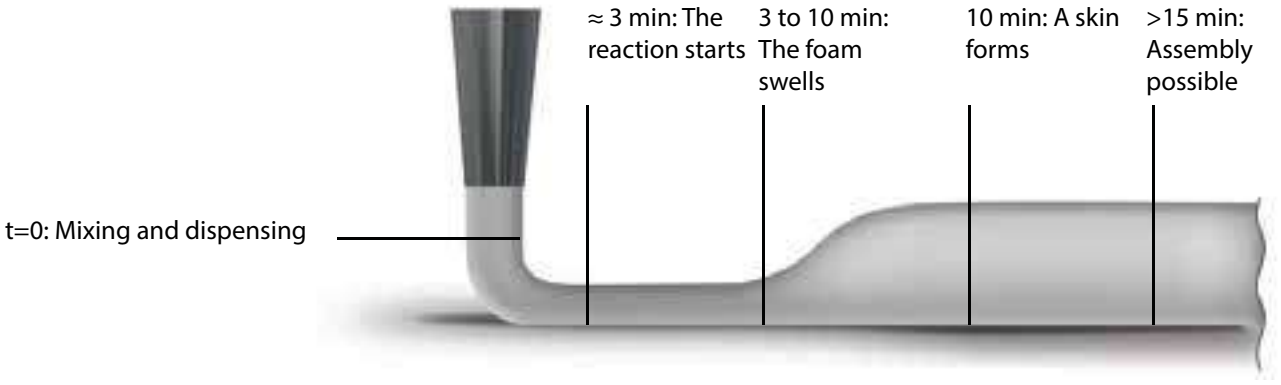
Assembly and compression of the foam

Cured silicone foams have a hardness ranging between approx. 30-70 Shore 00, making them easily compressible products that require only moderate clamping forces. Their optimum compression rate for proper sealing is between 45% and 55%.

SILICONE FOAMS

Product name	Temperatures (°C/°F) (peak)	Viscosity	Foam density	Color	Shore hardness	Features	Packaging* & SKUs
Dow Corning® **3-8209**	-60°C (-76°F) +200°C (+392°F)	15,000 MPa·s	0.2 to 0.28 g/cm3	Light gray	45 to 50 Shore 00	Ratio: 1:1 w/w • Self-leveling	Inquire for details
Dow Corning® **3-8219 RF**	-55°C (-67°F) +180°C (+356°F)	30,000 MPa·s	0.2 to 0.28 g/cm3	Gray	30 to 35 Shore 00	Ratio: 1:1 w/w • Flowing	Inquire for details
Dow Corning® **3-8259 RF**	-55°C (-67°F) +180°C (+356°F)	55,000 MPa·s	0.3 to 0.36 g/cm3	Dark gray	65 to 70 Shore 00	Ratio: 1:1 w/w • Flowing	Inquire for details
Dow Corning® **3-8257 Black**	-55°C (-67°F) +180°C (+356°F)	20,000 MPa·s	0.15 to 0.20 g/cm3	Black	NG	Ratio: 1:1 w/w • Self-leveling	Inquire for details
Dow Corning® **3-6548**	-55°C (-67°F) +180°C (+356°F)	60,000 MPa·s	0.22 to 0.32 g/cm3	Black	NG	Ratio: 1:1 w/w • Low viscosity • High fire resistance	SEMCO 6 oz

Explanatory diagram of the cure times of silicone foam sealants



Compression rate control

The main parameter that must be controlled is the compression rate:
• an insufficiently compressed gasket will not completely fill the gap between parts and will leave voids for liquids to fill.
• overcompression will, upon opening, cause gaskets to lose their ability to return to their original shape, which can lead to leakage issue during reassembly.

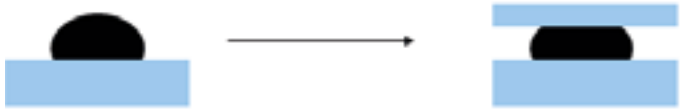
Inhomogeneous distribution of mechanical loads ▶ Risk of leakage

Homogeneous distribution of mechanical loads ▶ Limited risk of leakage

Generally speaking, silicone gaskets should be compressed at between 25% and 35% and foam gaskets at between 45% and 55%.

Joint designs

Joint design is a crucial factor in ensuring proper gap and compression rate control.
A few examples:



Flat surface: Although the easiest to use, this design does not allow proper control of the compression rate or gasket deformation.

Grooved surface: Facilitates gasket dispensing and use and allows better control of gasket deformation.

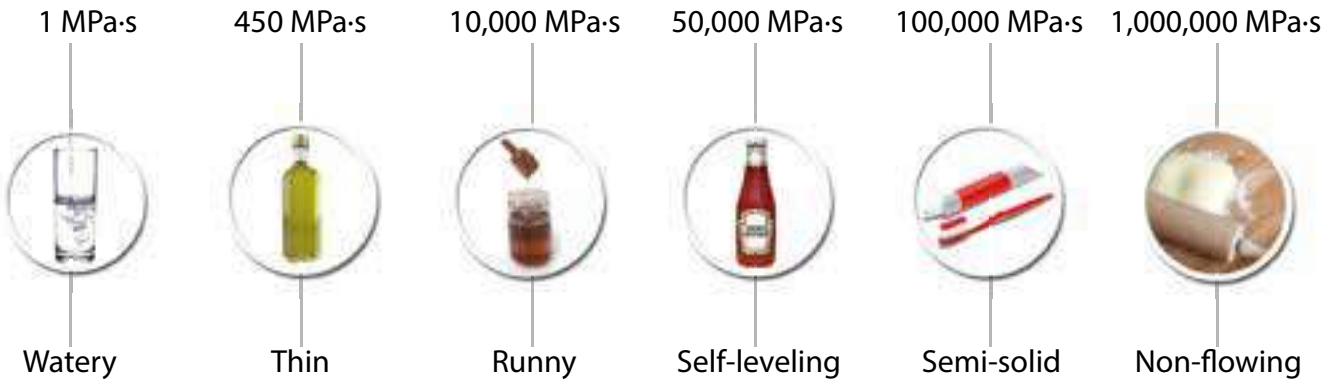
Flat surface with compression limiter: The raised area helps to control the thickness of the compressed gasket and, indirectly, the compression rate.

Void-volume: Likewise, the compression limiters help to control the thickness of the compressed gasket and, indirectly, the compression rate. Furthermore, the second compression limiter provides better control of gasket deformation This type of joint design is particularly suited to silicone foams.

Tongue-in-groove: This joint design allows the best adjustment of the gap between parts and the compression rate. This type of joint design is particularly suited to silicone foams.

ANTALA can guide you in designing your parts so that they best meet your needs.

Viscosity comparison chart



ESTIMATED CONSUMPTION LEVELS

Bead lengths, in meters, by packaging type and diameter of extrusion

Packaging		Bead diameter, in mm									
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Tube	90 ml	113.1	28.71	12.47	7.25	4.5	2.9	2.6	1.8	1.4	1.1
Cartridge	310 ml	390	99	43	25	15.5	10.3	7.8	6.2	4.9	4
Bulk	20 l	25200	6400	2800	1600	1000	680	520	400	316	256
	200 l	252000	64000	28000	16000	10000	6800	5200	4000	3160	2560
	Gap (in mm)	Width of compressed bead, in mm (FIPG only)									
	0.5	1.6	6.3	14.1	25.1	39.3	56.5	77.0	100.5	127.2	157.1
	1	0.8	3.1	7.1	12.6	19.6	28.3	38.5	50.3	63.6	78.5
	1.5	0.5	2.1	4.7	8.4	13.1	18.8	25.7	33.5	42.4	52.4
	2	0.4	1.6	3.5	6.3	9.8	14.1	19.2	25.1	31.8	39.3
	2.5	0.3	1.3	2.8	5.0	7.9	11.3	15.4	20.1	25.4	31.4
	3	0.3	1.0	2.4	4.2	6.5	9.4	12.8	16.8	21.2	26.2

DISPENSING EQUIPMENT

Antala guides you in finding the best dispensing equipment for your applications, such as PC Cox applicators, which are compatible with Dow Corning™ cartridges.

310 ml

POWERFLOW COMBI CARTRIDGE MANUAL APPLICATOR

310 ml CARTRIDGE
Trigger ratio: 18:1
Antala Item No. 10700003

600 ml

POWERFLOW COMBI SACHET MANUAL APPLICATOR

600 ml SACHET
Trigger ratio: 12:1
Antala Item No. 10700015

310 ml

AIRFLOW-1 CARTRIDGE PNEUMATIC APPLICATOR

310 ml CARTRIDGE
6,8 bar 1,35 kN
Antala Item No. 10700009

310 ml

ELECTRAFLOW PLUS COMBI ELECTRICAL APPLICATOR

310 ml CARTRIDGE
18V, 1.5Ah Li-Ion
2 battery-charger
Antala Item No. 10700158

Smoothing agents

Product name	Flash point	Features	Properties	Packaging* & SKUs
Xiameter® **PMX-200 100 cSt**	>120°C (+248°F)	Silicone fluid with very low evaporation rate	Flammable • May be used as a smoothing agent	500 ml, 4 kg
Dow Corning® **OS-20**	34°C (+93.2°F)	Very fast evaporating methylsiloxane	Highly flammable • May be used to clean surfaces prior to bonding or as a smoothing agent	500 ml, 3.1 kg
Dow Corning® **OS-30**	57°C (+134.6°F)	Medium fast evaporating methylsiloxane	Flammable • May be used to clean surfaces prior to bonding or as a smoothing agent	500 ml, 15 kg

Sealant cleaners

Product name	Flash point	Features	Properties	Packaging* & SKUs
Pt Technologies® **PF AquaForte**	-	**Water-based surface preparation wipes• Removes uncured elastomers**	Wipe-on/wipe-off cleaning• Non-toxic, nonflammable • No logistics issues: classified as "non-hazardous", no storage or transportation requirements	24 units, 150 units
Pt Technologies® **PF-SR** *(Sealant Remover)*	56°C (+132.8°F)	Solvent-impregnated cleaning wipes, for surface preparation • **Removes semi-cured sealant**	High-resistance, low-linting fabric • 100% volatile solvent, no residue • Low toxicity • Reduces VOC emissions • No logistic issues: no storage or transport requirements	24 units, 250 units
Dow Corning® **DS-2025**	>90°C (+194°F)	Digests silicone deposits through depolymerisation• Removes fully cured silicone residues (4 hrs of immersion required)	Nonflammable • Free of aromatic and halogenated solvents • Dissolves all cured silicone residues in 4 hours • Reusable	25 kg
Dow Corning® **DS-1000**	-	Water-based surfactant blend • Removes uncured elastomers	Aqueous solvent, non-flammable • To be diluted in water (10%) water • Emulsifies silicone oils, greases, and uncured elastomers	25 kg

SMOOTHING SPATULA

Used to smooth and make variable-radius fillet joints.

REPLACEMENT NOZZLES

Replacement nozzles for sealant cartridges.