

Imagine optimized reliability and protection in consumer and communications electronics

Product selection guide

DOW

®





High-performance solutions for communications and consumer electronics

Dow delivers a complete portfolio of silicone solutions and other high-performance materials for communications and consumer electronics. In just two decades, these devices have evolved rapidly, from fitting on a desktop, to a laptop inside of a backpack, to a smartphone in the back pocket.

That evolution is only accelerating with each new generation of device that integrates seamlessly with our increasingly productive and connected lifestyles. But these emerging technologies present new challenges for designers – over and above the challenges they’re already facing.

Dow offers proven, innovative solutions for assembly, bonding, sealing, potting, thermal management, electromagnetic compatibility (EMC) and many other challenging uses across the industry’s supply chain. Many of our materials have been UL recognized, and all of our efforts are informed by Dow’s sustainability goals.

To maximize economic, environmental and societal value, Dow is redefining the role of business in society. Our materials enhance durability and extend the life cycle of parts. We’re also reducing energy consumption by designing materials that cure at room temperature instead of using ovens.

From factory tablets to smartwatches to connected kitchen appliances, Dow is helping to optimize the reliability, protection, safety, and aesthetics of next-generation communications and consumer electronics.

Innovative solutions for today's technologies and tomorrow's challenges

Today we rely on all kinds of electronics to be more productive, smarter and increasingly connected to each other – as well as to the Internet. So, we expect these products to be more functional, user-friendly, stylish and dependable. Increasingly, we also need these devices to support advanced technologies like 5G networks.

For more than 70 years, Dow's versatile materials and hands-on approach to customer collaborations have helped designers bridge the gap between cutting-edge innovation and proven performance. As a total solutions provider, we're the innovative partner you can count on to deliver today's technologies that address tomorrow's challenges.

Our versatile silicone adhesives, encapsulants and coatings simplify manufacturing and assembly. They also protect against moisture, vibration, and shock to enable more reliable, high-functioning portable electronics and more durable home appliances.

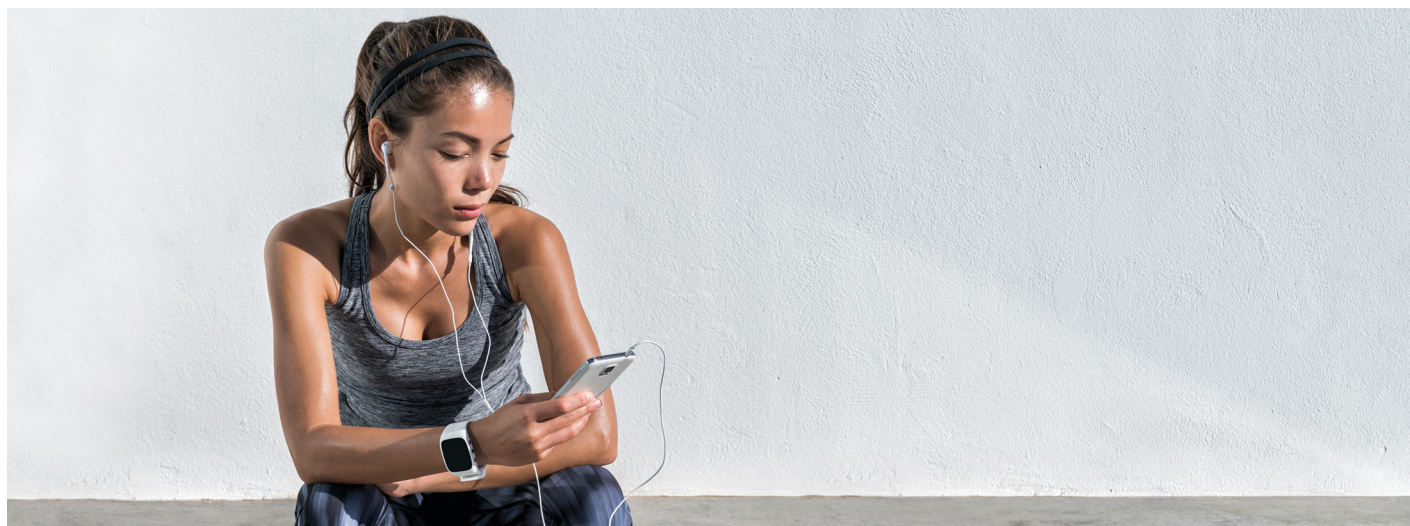
Thermal interface materials from Dow deliver critical protection against damaging heat, to enhancing product reliability and supporting higher-performing telecommunications networks. Dow also supplies advanced silicone solutions that combine electrical conductivity with protection against electromagnetic interference (EMI) – a growing challenge in our increasingly connected world.

With our expertise in silicone-based technologies, we can help make your device designs look and feel as smart on the outside as they are on the inside. The benefits don't end there.

Dow provides reliable and consistent supply and support along the entire value chain. We can help you with product selection, processing, and application design and development. As the global leader in silicone technologies, we can even connect you with expert molders, while providing the world-class technical support you need.

We'd love to help your next design raise the bar for smartphones and tablets, wearable devices, smart home devices, telecommunications, and other important areas – including digital printing and electronics components and accessories.

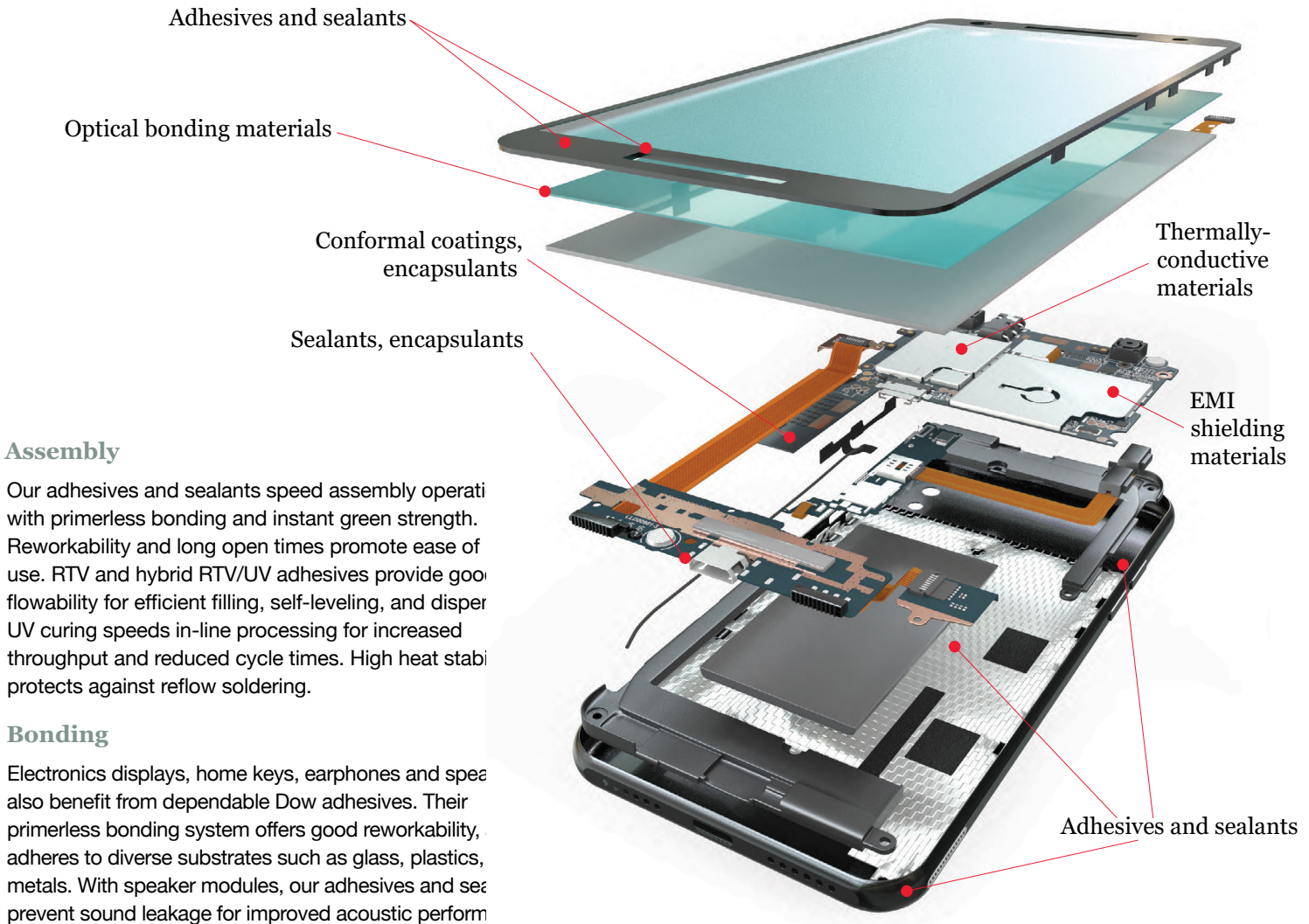
Specification writers: Values presented in this guide are not intended for use in preparing specifications. Please contact your local Dow sales office before writing specifications on these products.



Smartphones and tablets

Smartphones and tablets combine ease of use and performance with dependability – under real-world conditions. To meet the needs of manufacturers, these electronics need to speed assembly, support rework, reduce energy usage and promote production efficiency. They also need to withstand high temperatures and provide EMC.

Dow's material solutions for smartphones and tablets meet both business and technical requirements. Importantly, they also enhance the aesthetics and performance of your designs. For device assembly, bonding and protection, Dow has designed the adhesives, conformal coatings, potting compounds, and EMI shielding you've been looking for.



Assembly

Our adhesives and sealants speed assembly operations with primerless bonding and instant green strength. Reworkability and long open times promote ease of use. RTV and hybrid RTV/UV adhesives provide good flowability for efficient filling, self-leveling, and dispersion. UV curing speeds in-line processing for increased throughput and reduced cycle times. High heat stability protects against reflow soldering.

Bonding

Electronics displays, home keys, earphones and speakers also benefit from dependable Dow adhesives. Their primerless bonding system offers good reworkability, adheres to diverse substrates such as glass, plastics, and metals. With speaker modules, our adhesives and sealants prevent sound leakage for improved acoustic performance.

Protection

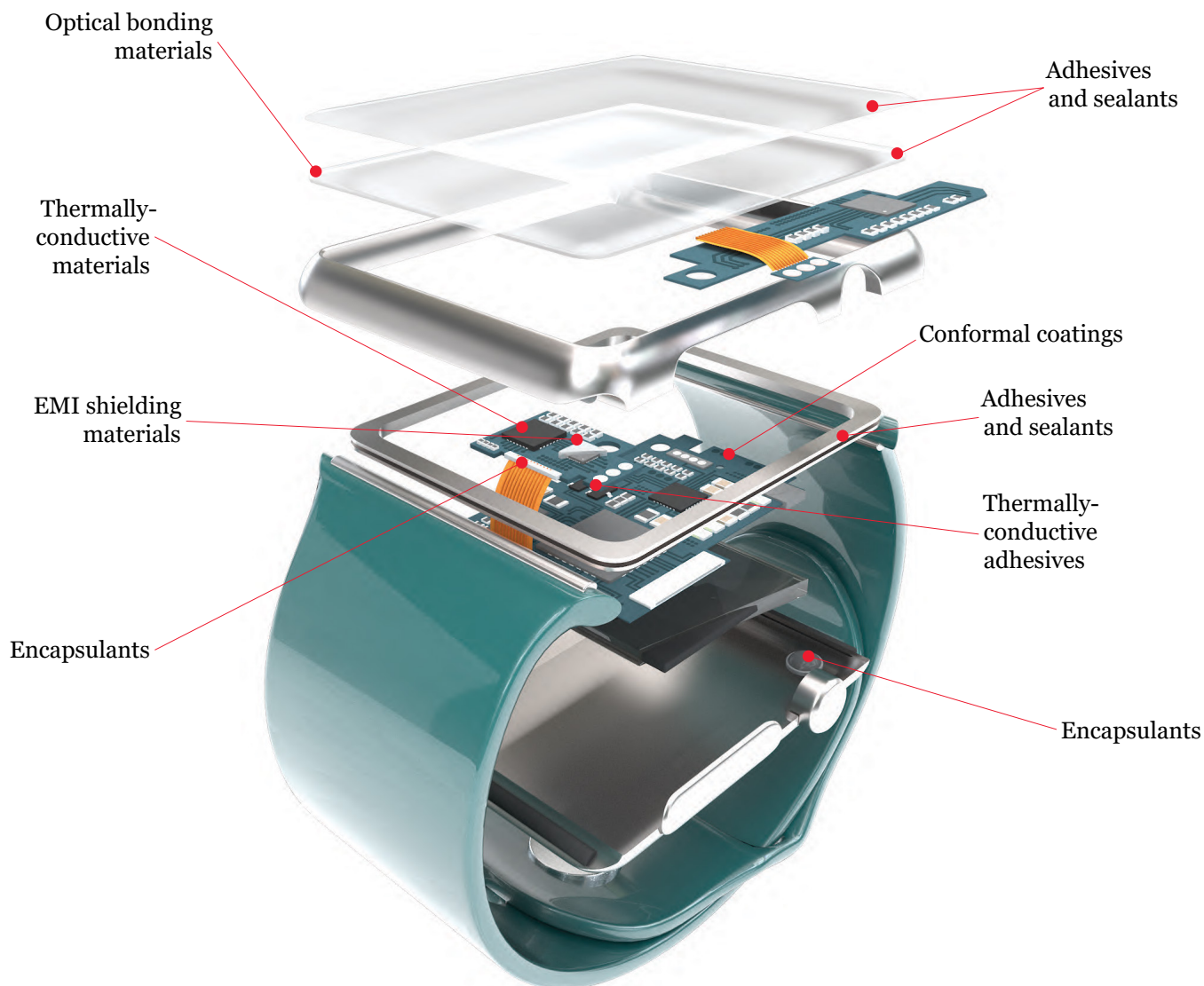
Dow's conformal coatings help protect the sensitive printed circuit boards inside smartphones and tablets. They're easy to apply by spraying, dipping, or brushing. They cure readily at room temperature, and curing can be accelerated with mild heat. To meet the demands of the application environment, our conformal coatings remain stable yet flexible at high temperatures, and provide a stress buffer with insulation resistance.

Many of our other innovative materials also protect electronic devices assemblies. For example, Dow adhesives for smartphones and tablets protect against water (IP67) and dust (IP68) and help prevent stress from drops. Dow's potting compounds help dampen vibrations from the motors in mobile phones, and our EMI shielding materials provide protection against pollution – supporting smartphone and tablet performance.

Wearable devices

Wearable devices don't just pose design challenges to battery life and data security. As wireless power transfers become widespread, wearables need protection against EMI. Thermal safety also is an important consideration. Over a long period of time, elevated temperatures can cause discomfort.

For technologies that come in contact with the human body, our innovative materials provide dependable heat management and electromagnetic compatibility.



Heat sink modules

Dow's adhesives and sealants are used with the heat sink modules in consumer wearables such as smartwatches. These innovative materials speed assembly because no mixing is required, and the cure process is tailorable because it's temperature-controlled. These materials also flow, fill, and self-level after dispensing for improved throughput.

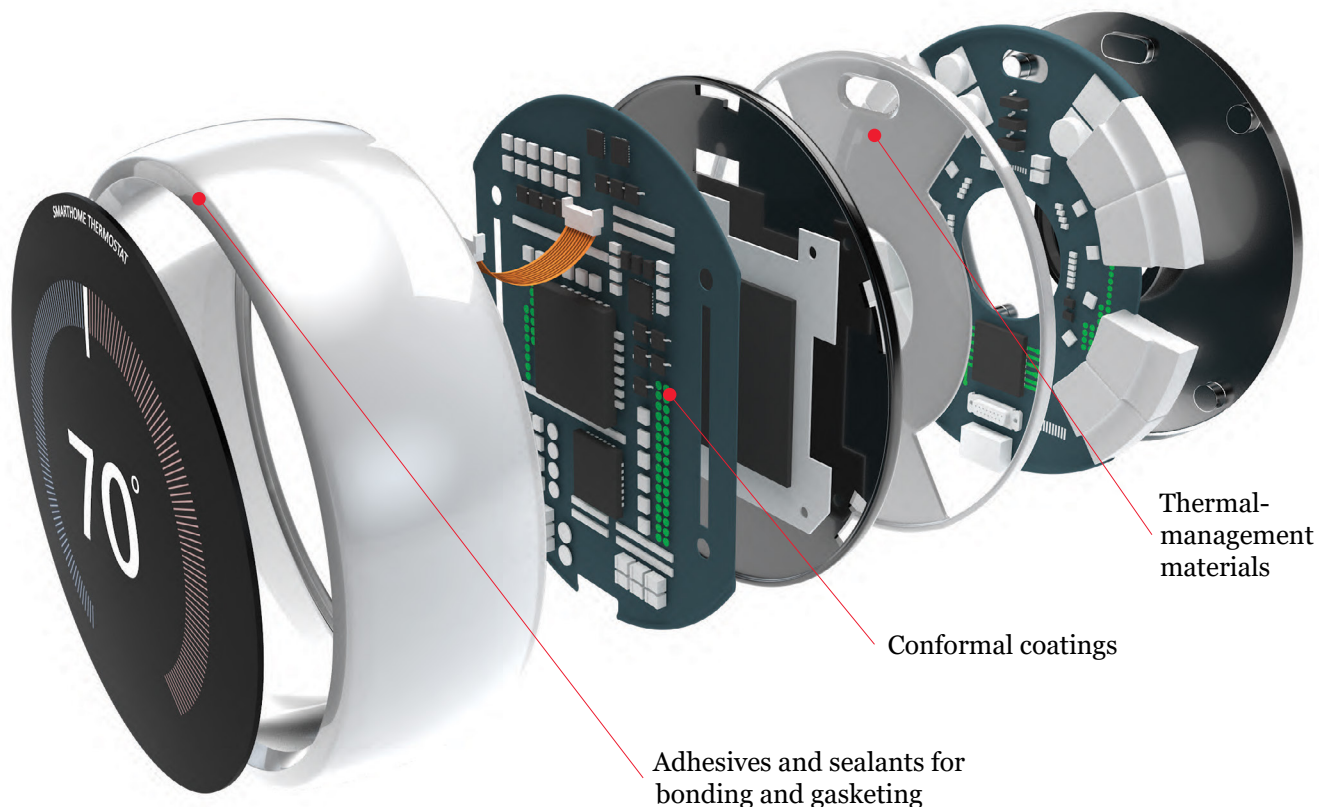
Central processing units (CPUs)

The CPUs that are used in wearable devices need fast, efficient, and reliable cooling. Our thermal-management materials are noncurable, paste-type products that help to remove heat. They also limit energy consumption because no oven curing is required. For optimum performance, these thermally-conductive adhesives provide easy control of thin bond line thickness (BLT).

Smart home devices

As the smart home market continues to grow, consumers are demanding additional capabilities from electronics and appliances such as smart speakers, digital media adapters, lighting, thermostats, connected appliances such as refrigerators and washing machines, and more. Internet of things (IoT)-enabled devices need interference-free communications. And 5G components need to support faster and heavier data transfers.

Dow's material innovations deliver on your design promises through improved performance and cost-effective repairs. They also support greater sustainability.



Light diffusers for backlight modules

Dow has engineered innovative materials for the light diffusers that soften and redirect the emitted light in backlight modules. By providing a good balance between transmittance and haze, these adhesives help optimize light diffusion for sharper visibility and enhanced clarity in smart televisions and appliance displays.

Device repairs

Device repairs that cost less and last longer can keep electronics waste out of landfills. Dow's adhesives for fixing parts – such as assemblies – come in clear or white sealants that complement your sleekest product designs. These materials are also available in a hot-melt RTV formulation, and provide reliable adhesion to substrates.

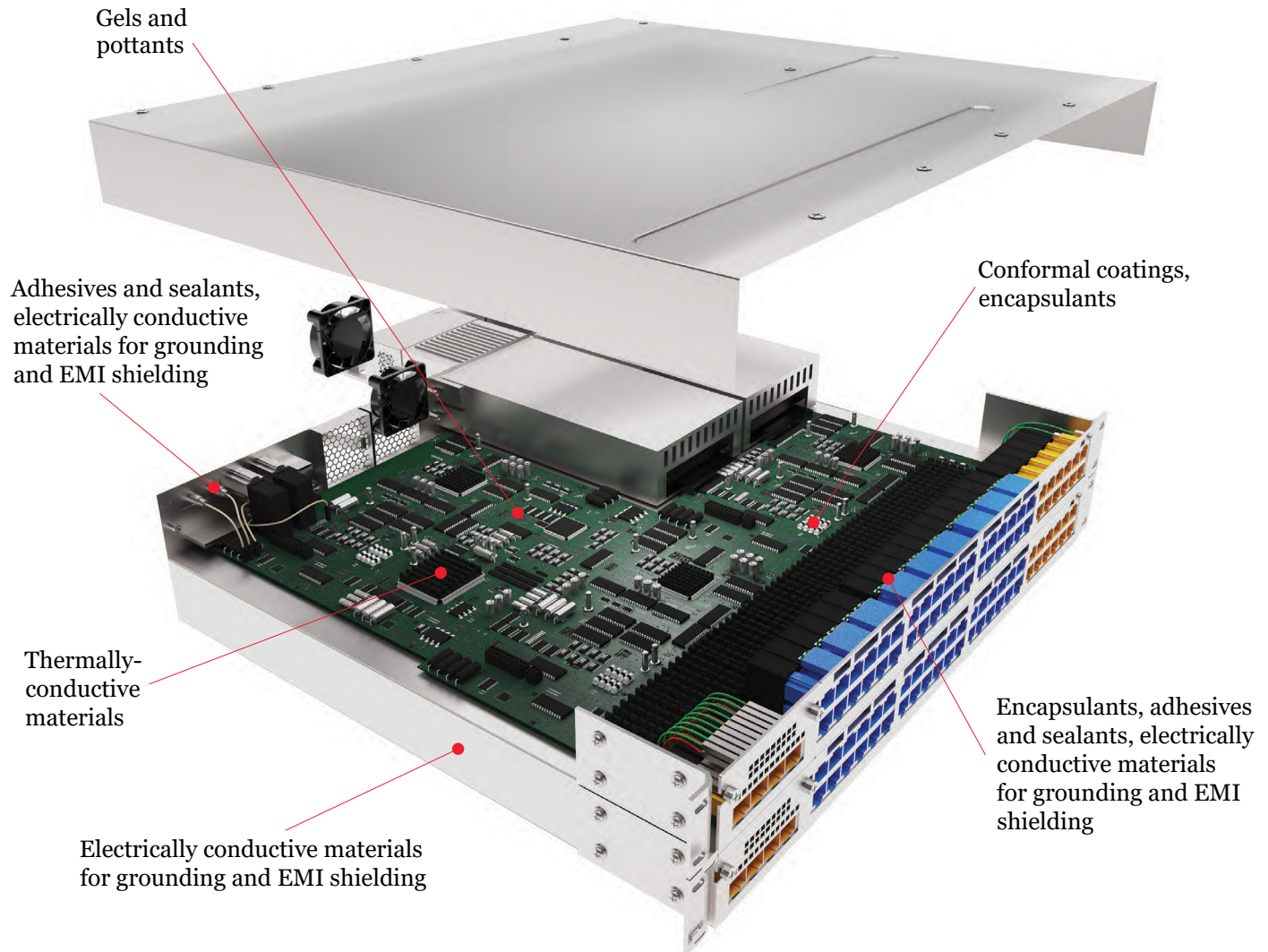
Indium oxide (ITO) protection for small displays

Smart home devices for lighting and security can face challenging outdoor conditions. Indoor appliances also may be exposed to moisture or elevated temperatures. Tin-doped ITO tracks that are beyond the active area of a display need protection from condensation and temperature. Our adhesives and sealants meet these challenges and more in smart home devices.

Telecommunications

Telecommunications equipment such as servers, switches, routers and base stations generate significant amounts of heat that can degrade performance and damage electronic components. Designers don't just need fans, air conditioners and heat exchangers to address this. Rather, they need board-level solutions and, increasingly, materials for optical assembly and EMI shielding.

As telecommunications devices become more compact and have fewer components, higher-density packaging is increasing the risk of crosstalk that can interfere with communications. Telecom base stations that support the spectrum of 5G frequencies also have higher-power densities and, in turn, a growing need for highly effective thermal management.



PCB edge assemblies

In printed circuit board assemblies (PCBAs), heat flows from each component to a heat sink that is under the component, and then to the outer edges of the board. Products in Dow's broad portfolio of thermally-conductive and other thermal-interface materials help to draw heat toward the PCB's edge. Electronic components that are near the board's edges, but surrounded by radiators, also need effective heat dissipation.

Optical interconnect technology

Cloud computing and on-demand mobile connectivity are pushing transfer speeds and densities beyond the functional limits of copper connections. Increasingly, optical interconnect technology is replacing electrons with photons for more robust data transmissions. Unlike optical fibers, polymer waveguide silicones from Dow are making optical assembly as straightforward and low-cost as electronics system assembly.

Adhesives/sealants

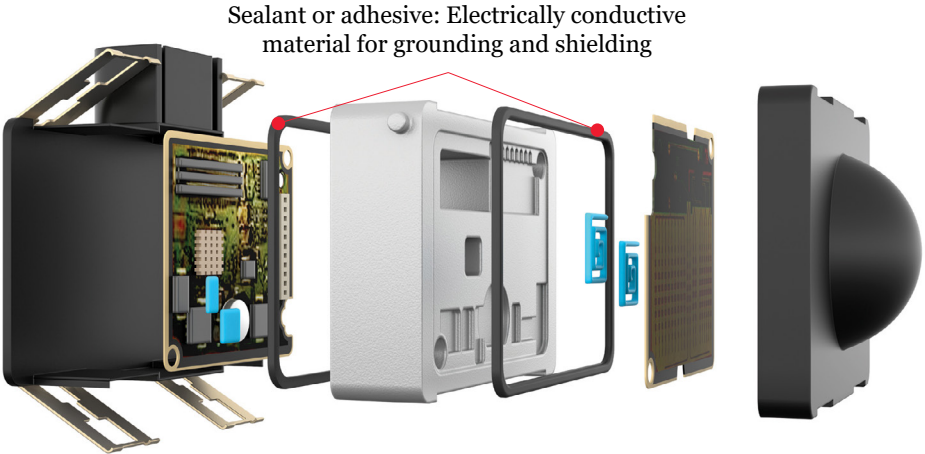
Category	Product name	Features	Flame retardance	Low molecular weight of siloxane control grade	Potential uses	Mixing ratio	Appearance	Viscosity @ 25°C (mPa·S)	Tack-free time @ 25°C (min)	Pot life @ 25°C (hr)	Room-temperature cure time		Density @ 25°C g/cm³	Durometer – JIS Type A	Tensile strength (MPa)	Elongation (%)	Linear CTE expansion (micron/m °C or ppm)	Thermal conductivity (W/m·K)	Low-molecular-weight siloxane content (%)		Lap shear adhesion (N/cm²)		Dielectric strength (kV/mm)	Volume resistivity (Ω·cm)	Dielectric constant @ 1 MHz	Dielectric tangent @ 1 MHz
One part; moisture cure RTV	DOWSIL™ 3140 RTV Coating	MIL-A-46146; noncorrosive	UL 94 V-1		Rigid and flexible circuit boards; improved pin/solder joint coverage	NA	Clear to slightly hazy; smooth, viscous liquid	31,000	70	NA	72 hr @ 25°C/50% RH 3mm		1.03	31 (Shore A)	3.0	419	315	–	–		–		18	2E+14	2.52 @ 100 kHz	1E-03 @ 100 kHz
	DOWSIL™ 3145 RTV Mil-A-46146 Adhesive/Sealant	MIL-A-46146; noncorrosive			Sealing openings in modules and housings; assembly of components on PWB	NA	Translucent/gray	Nonflowing	55	NA	48 hr @ 25°C/50% RH 3mm		1.10	45 (Shore A)	6.5	660	370	–	–		–		20	4E+14	2.83 @ 100 kHz	<2E-04 @ 100 kHz
	DOWSIL™ SE 9100 Black Adhesive	Reworkable; fast tack-free		•	Assembly of mobile modules and display modules; coating of hybrid ICs and PCBs; encapsulation of electrical devices	NA	Black	50,000	9	NA	24 hr @ 25°C/50% RH 3mm		1.02	23	2.31	391	308	–	0.006/0.004		30-40/GL		23	9E+15	4.01	1E-03
	DOWSIL™ SE 9160 Hybrid UV + RTV Adhesive	Reworkable; good through (in-depth: shadow) curing			Assembly of mobile and display electronics; coating of hybrid ICs and PCBs; encapsulation of electrical devices		Blue	20,000	30	NA	72 hr @ 25°C/50% RH after UV dosage (>4,000 mJ/cm² @ UV LED 365, 385, 395, 405 nm)		1.04	38	3.2	240	–	–	–		40		–	–	–	–
	DOWSIL™ SE 9120 Clear Sealant	Noncorrosive; fast tack-free; reworkable		•	LCD modules	NA	Translucent (DOWSIL™ SE 9120 Clear Sealant), white (DOWSIL™ SE 9120 S White Adhesive)	8,000	9	NA	–		1.03	24	1.5	375/400	–	–	0.0055/0.004		29-40/GL		23	7E+15	2.7	4E-04
	DOWSIL™ SE 9186 Sealant	Noncorrosive; fast tack-free		•	Parts fixing on PCBs; sealing of electronics and modules	NA	Translucent, white	64,000	8	NA	24 hr @ 25°C/50% RH 3mm		1.03	20	2.5	550	–	–	0.0035/0.0045		130/GL		23	6E+15	2.7	1E-03
	DOWSIL™ SE 9186 L Sealant	Noncorrosive; fast tack-free		•	Parts fixing on PCBs; LCD modules	NA	Translucent, black	27,000	8	NA	24 hr @ 25°C/50% RH 3mm		1.02	25	1.6	340	–	–	0.0023/0.0029		92/GL		23	6E+15	2.7	1E-03
	DOWSIL™ EA-3342 Terminal Sealant	Controlled flowability; reworkable within one day			Terminal sealing for ITO protection in small-size displays		Black	700	9	NA	–		1.12 (cured)	–	7.4	400	–	–	–				26	5E+15	2.18 @ 100 kHz	–
	DOWSIL™ EA-3342 HV Terminal Sealant					NA	Blue	750	8	NA	–		1.12 (cured)	–	7.1	490	–	–	–				34	1E+15	2.1 @ 100 kHz	–
	DOWSIL™ EA-3342 LV Terminal Sealant						Black	370	10	NA	–		1.13 (cured)	37	6.9	477	–	–	–				28.6	3E+15	2.81 @ 100 kHz	–
	DOWSIL™ SE 9168 RTV Adhesive	Noncorrosive; fast tack-free	UL 94 V-0	•	Parts fixing on PCBs	NA	Gray	Nonflowing	6.5	NA	–		1.32	44	3.69	363	–	–	0.0035		189/GL		26	8E+15	3.2	2E-03
	DOWSIL™ SE 9189 L Gray or White RTV Adhesive	Noncorrosive; fast tack-free	UL 94 V-0 Gray only	•	Parts fixing on PCBs of power supply modules; PDP modules	NA	White, gray	22,000	8	NA	24 hr @ 25°C/ 50% RH		1.19	33	2	220	–	–	0.002		123/GL		25	9E+14	3.1	4E-03
	DOWSIL™ EA-9189 RTV	Noncorrosive; fast tack-free	UL 94 V-0	•	Parts fixing on PCBs of power supplies and CRT, LCD/LED/PDP	NA	White	Paste	3	NA	–		1.78	–	–	–	–	–	0.019		150/GL		28	1E+15	–	–
	DOWSIL™ EA-9189 H White RTV Adhesive	Noncorrosive; fast tack-free	UL 94 V-0			NA	White	Paste	2	NA	–		1.68	80	3.9	32	–	0.88	–		225/AL		28	3.3E+15	2.59 @ 100 kHz	9E-03 @ 100 kHz
	DOWSIL™ EA-4900 White RTV Adhesive	Noncorrosive; fast tack-free	UL 94 V-0			NA	White	Paste	6	NA	–		1.66	81	3.7	30	–	–	<0.003		110/AL		25	1.03E+15	3.71 @ 100 kHz	12E-03 @ 100 kHz
One part; heat cure	DOWSIL™ SE 1714	High tensile strength; high adhesion strength			ECU; power modules	NA	Beige, black	59,000	NA	NA	0.5 hr @ 150°C		1.30	66	7.1	230	–	0.3	–		548/AL		30	5E+15	3.1	3E-03
	DOWSIL™ Q3-6611 Adhesive	High adhesion			ECU	NA	Black, gray	92,400	NA	NA	0.5 hr @ 150°C		1.32	60	–	–	250				586/AL		13/14	1.62E+14	3 @ 100 kHz	3.1E-03 @ 100 kHz
	DOWSIL™ 3-6876 Adhesive	Flowable; heat cure; high tensile strength			Sealing lids and housings; attaching baseplates; sealing for connectors	NA	Gray	39,900	NA	NA	1 hr @ 125°C, 30 min @ 150°C		1.31	54 (Shore A)	3.71	207	238	–	–		384/GL		30	9E+14	4.4	1.6E-03
Two part; addition reaction	SYLGARD™ 577 Primerless Silicone Adhesive		UL 94 V-0		Sealing for connectors	10:1	Gray	98,000	NA	22	1 hr @ 125°C		1.29	60	6.8	224	300	–	–		678/AL		19	1E+15	2.8 @ 100 kHz	<4E-04 @ 100 kHz

NA = Not applicable (not measured due to inappropriate test method). | – = Not available.

Adhesives/sealants

Adhesives/sealants	Category	Product name	Features	Flame retardance	Low molecular weight of siloxane control grade	Potential uses	Mixing ratio	Appearance	Viscosity @ 25°C (mPa·S ⁽¹⁾) mixed	Pot life @ 25°C (hr)	Cure time	Physical properties after cure	Density @ 25°C (g/cm³)	Durometer – JIS Type A	Penetration – JIS K2220, (mm/10)	Tensile strength (MPa)	Elongation (%)	Linear coefficient of thermal expansion (micron/m °C or ppm)	Thermal conductivity (W/m·K)	Low-molecular-weight siloxane content (%)	Adhesion properties after cure	Lap shear adhesion (N/cm²)	Electrical properties after cure	Dielectric strength (kV/mm)	Volume resistivity (Ω·cm)	Dielectric constant @ 1 MHz	Dielectric tangent @ 1 MHz
		SYLGARD™ 160 Silicone Elastomer	Room-temperature cure	UL 94 V-0		General potting applications; power supplies; connectors; sensors; industrial controls; transformers; amplifiers; high-voltage register packs; relays	1:1	Dark gray to black	Part A: 6,000 Part B: 3,730	0.33	24 hr @ 25°C 4 min @ 100°C		Part A: 1.61 Part B: 1.60	56	–	4.2	104	200	0.62	–		NA		19	6E+14	3.45 @ 100 kHz	1E-03 @ 100 kHz
		SYLGARD™ 170 Silicone Elastomer	MIL-PRF-23586F; room-temperature cure	UL 94 V-0			1:1	Black	2,135	0.25	24 hr @ 25°C 10 min @ 100°C		Part A: 1.37 Part B: 1.37	47	–	–	–	275	–	–		NA		18	3E+15	3.16 @ 100 kHz	8E-04 @ 100 kHz
		DOWSIL™ SE 1816 CV Kit	Moderate-temperature cure		•	Flyback transformers; power supply modules	1:1	Black	2,600	>24	1 hr @ 100°C		1.35	35	–	2.9	230	–	0.42	0.05		150/AL		26	2E+15	4.3	1E-03
		SYLGARD™ 184 Silicone Elastomer	Transparent	UL 94 V-0		Sensor potting; PDMS molds	10:1	Transparent	3,500	1.5	0.33 hr @ 125°C		1.03	43	–	–	–	340	–	–		–		19	3E+14	2.7 @ 100 kHz	1E-03 @ 100 kHz
		DOWSIL™ SE 1740	Moderate-temperature cure; transparent	UL 94 V-0		LED modules	1:1	Transparent	925	>24	0.5 hr @ 80°C		1.00	35 (Shore 00)	–	–	–	–	–	–		20/GL		17	1E+15	2.8	1E-05
		SYLGARD™ 567 Primerless Silicone Encapsulant	Flowable; self-priming adhesion; heat cure	UL 94 V-0			1:1	Black	Part A: 2,060 Part B: 570	–	0.25 hr @ 150°C		1.24	40	–	–	–	–	0.29	–		100/AL		21	2.1E+15	2.8 @ 100 kHz	2E-03 @ 100 kHz
	Thermal potting/encapsulants	Two part; heat cure elastomer	DOWSIL™ CN-8760 Thermally Conductive Encapsulant	Low cost; reworkable	UL 94 V-0	NA	LED drivers; parking systems	1:1	Black	2,850	2		40 min @ 50°C	1.6	52	–	1.83	95	300	0.66		–		NA	32	1E+17	2.69
DOWSIL™ CN-8760G Encapsulant			Thermally conductive; low cost; reworkable; higher UL grade than DOWSIL™ CN-8760 Thermally Conductive Encapsulant	UL 94 V-0	NA	LED drivers; parking systems	1:1	Black	3,200	1.67	24 hr @ 25°C 30 min @ 60°C	1.58	45	–	1.8	85	–	0.67	–	NA	24	1E+17	2.66	6E-02			
Electrically conductive adhesives	One part; room temperature cure elastomer	DOWSIL™ EC-6601 Electrically Conductive Adhesive	Stable 85dB shielding effectiveness across a wide range of frequency			Adhesive/sealant or gasket designed for EMC solutions, PCB grounding, connections		Tan	Initial extrusion rate: 2.20 g/min	20	1 mm/day	3.3	80	–	1.6	> 150	140	2.12	–	1.30/AL		2.7E -3					

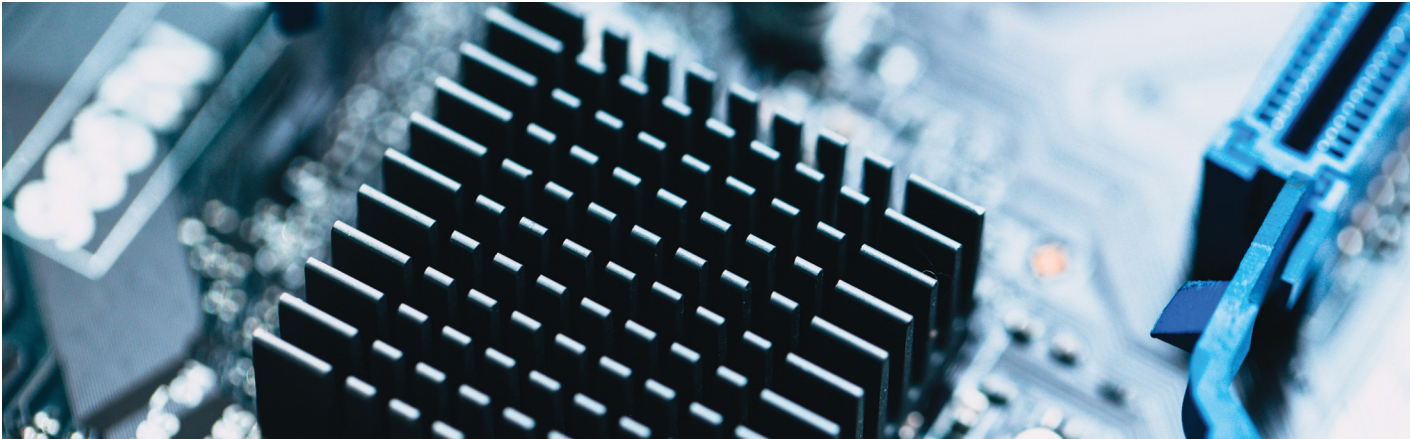
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Thermally-conductive materials

	Category	Product name	Features	Flame retardance	Low molecular weight of siloxane control grade	Potential uses	Mixing ratio	Appearance	Viscosity @ 25°C (mPa•S)	Oil separation – JIS K2220 (%)	Volatile contents (%)	Tack-Free time (min)	Pot life @ 25°C (hr)	Cure time	Thermal interface materials										Thermally-conductive materials				
															Density @ 25 (g/cm³)	Durometer – JIS Type A	Penetration – JIS K2207 (mm/10)	Tensile strength (MPa)	Elongation (%)	Linear coefficient of thermal expansion (micron/m °C or ppm)	Thermal conductivity (W/m•K)	Low-molecular-weight siloxane content (%)	Lap shear adhesion (N/cm²)	Thermal resistance @ 40 psi (°C•cm²/W)	Dielectric strength (kV/mm)	Volume resistivity (Ω•cm)	Dielectric constant @ 1 MHz	Dielectric tangent @ 1 MHz	
Thermal grease compound		DOWSIL™ SE 4490 CV Thermally Conductive Compound			• Thermistors; power IC; power modules; CPU peripherals	NA	White	520	0.00	0.04	NA	NA	NA		2.63	NA	NA	NA	NA	–	1.91	0.025	NA	0.77	–	2E+14	4.8 @ 50 Hz	1E-03 @ 50 Hz	
		DOWSIL™ TC-5026 Thermally Conductive Compound	Low thermal resistance; high thermal conductivity			Thermal interface material for CPUs	NA	Gray	102	–	0.05	NA	NA	NA	3.53	NA	NA	NA	NA	–	2.87	–	NA	0.03	8.94	5.9E+11	7.4 @ 1 kHz	0.0003 @ 1 kHz	
		DOWSIL™ TC-5121C Thermally Conductive Compound	Low thermal resistance; high thermal conductivity			Thermal coupling of medium-voltage devices to heat sinks	NA	Greenish yellow	85.7	–	0.30	NA	NA	NA	4.00	NA	NA	NA	NA	–	2.9	–	NA	0.09	5	–	–	–	
		DOWSIL™ TC-5622 Thermally Conductive Compound	Low thermal resistance; high thermal conductivity			Thermal interface material for CPUs	NA	Gray	95	–	–	NA	NA	NA	2.53	NA	NA	NA	NA	–	4.3	–	NA	0.06	–	–	–		
		DOWSIL™ CN-8880 Thermal Grease		UL 94 V-0		Transistors; diodes; rectifiers	NA	White	836	<0.01	0.14	NA	NA	NA	2.15	NA	NA	NA	NA	–	1	–	NA	–	8.7	3E+15	–	–	
Thermal grease compound		DOWSIL™ SC 102 Compound	Medium thermal conductivity; low oil penetration				NA	White	29,000	0.144 24 hr @ 120°C	0.3	NA	NA	NA	2.45	NA	NA	NA	NA	–	0.9	NA	NA	0.62	2	2E+16	4.0 @ 50 Hz	2E-02 @ 50 Hz	
		DOWSIL™ 340 Heat Sink Compound	Low oil penetration			Thermal coupling of devices to heat sinks	NA	White	542,000	0.35 24 hr @ 120°C	0.27	–	–	NA	2.13	NA	–	NA	NA	–	0.68	–	NA	–	–	–	–		
		DOWSIL™ TC-5888 Thermally Conductive Compound	High thermal conductivity; excellent resistance to pump-out in high-stress MCP architecture; low volatiles content			Computer MPUs; server and power modules	NA	Gray	1,200,000		0.02			NA	2.6						5.2			NA	NA				
Physical properties after cure															Adhesion properties after cure					Electrical properties after cure									

NA = Not applicable (not measured due to inappropriate test method). | – = Not available.



Thermally-conductive materials

Category	Product name	Features	Flame retardance	Low-molecular-weight of siloxane control grade	Potential uses	Mixing ratio	Appearance	Viscosity @ 25°C (mPa•S)	Volatile contents	Tack-free time (min)	Cure time		Density @ 25°C (g/cm³)	Durometer – JIS (Type A)	Penetration – JIS K2207 (mm/10)	Tensile strength (MPa)	Elongation (%)	Thermal conductivity (W/m•K)	Low-molecular-weight sioxane content		Lap shear adhesion (N/cm²)		Dielectric strength (kV/mm)	Volume resistivity (Ω•cm)	Dielectric constant @ 1 MHz	Dielectric tangent @ 1 MHz
One part; moisture cure, thermally-conductive adhesive	DOWSIL™ SE 4420 RTV Sealant				Power supply parts; inkjets; dot printer heads; ECU; adhesion to heat sink of driver IC	NA	White	108,000	NA	8.11	–	Physical properties after cure	2.26	76	NA	4.14	77.5	0.92	–	Adhesion properties after cure	267/AL	Electrical properties after cure	28	1E+15	4.1	2E-03
	DOWSIL™ SE 4486 Thermally Conductive Adhesive	High thermal conductivity		•		NA	White	19,600	NA	4	–		2.59	81	NA	3.94	43	1.59	0.0008		165/GL		20	2E+14	4.8	3E-03
	DOWSIL™ SE 4485 Thermally Conductive Adhesive	High thermal conductivity	UL 94 V-0	•	PDP modules	NA	White	230,000	NA	9.78	–		2.90	90.4	NA	3.39	–	2.8	0.0007		116/GL		19	8E+14	5.6	5E-03
	DOWSIL™ SE 9184 RTV			•	Parts fixing on printed circuit board power supply modules	NA	White	Nonflowing	NA	3	–		2.22	74	NA	3.17	60	0.84	0.0022		170/GL		20	2E+15	3.9	2E-03
One part; noncuring thermally-conductive compound	DOWSIL™ TC-5021 Thermally Conductive Compound				Computer MPUs in servers, desktops and notebooks	NA	Gray	82,650					3.47					3.3					5.0	3.70E+11	8.1	
	DOWSIL™ TC-5351 Thermally Conductive Compound	Vertical holding capability			Power applications	NA	Gray	300,000					3.12					3.3					6.2	3.10E+13	NA	

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Thermal-conductivity unit conversion chart

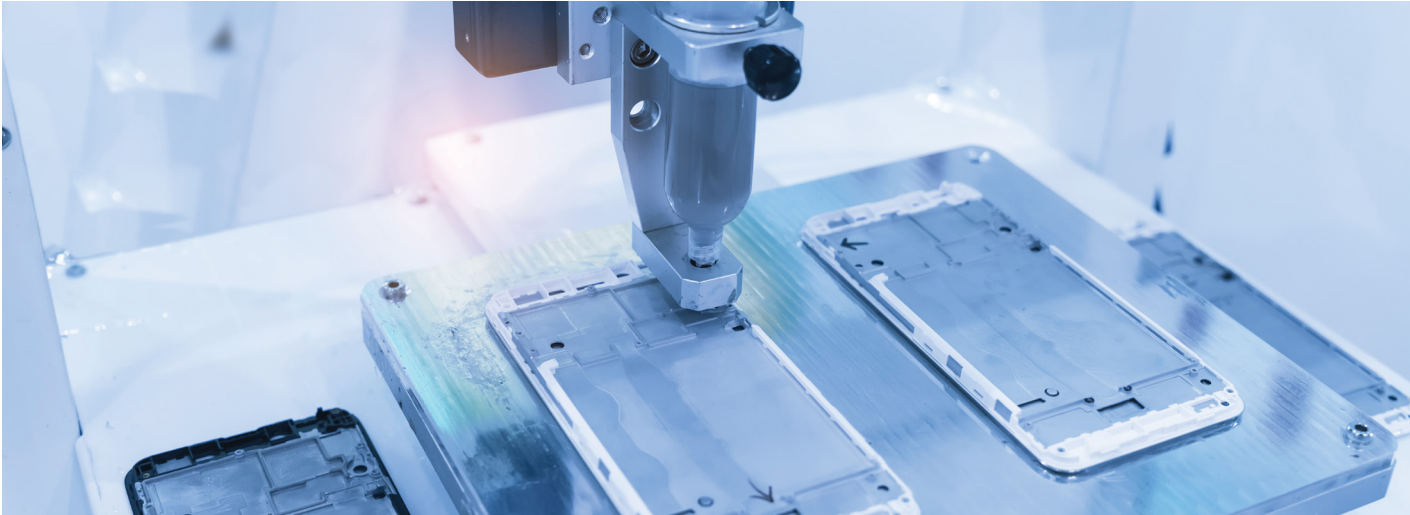
	W/m•K	cal/cm•sec•°C	kcal/m•h•k	Btu/ft•h•°F	Btu/in•h•°F
1 W/m•K	1.0	2.388x10 ⁻³	0.8598	0.5778	6.933
1 cal/cm•sec•°C	418.7	1.0x10 ⁻³	60.0	241.9	2,903
1 kcal/m•h•k	1.163	2.778x10 ⁻³	1.0	0.6720	8.064
1 Btu/ft•h•°F	1.731	4.134x10 ⁻³	1.448	1.0	12.00
1 Btu/in•h•°F	0.1442	3.445x10 ⁻⁴	0.124	8.333x10 ⁻²	1.0



Thermally-conductive materials

Category	Product name	Features	Flame retardance	Potential uses	Mixing ratio	Appearance	Viscosity @ 25°C (mPa•S)	Pot life @ 25°C (hr)	Cure time	Physical properties after cure	Density @ 25°C (g/cm³)	Durometer – JIS Type A	Penetration – JIS K2207 (mm/10)	Tensile strength (MPa)	Elongation (%)	Thermal conductivity (W/m•K)	Adhesion properties after cure	Lap shear adhesion (N/cm²)	Electrical properties after cure	Dielectric strength (kV/mm)	Volume resistivity (Ω•cm)	Dielectric constant @ 1 MHz	Dielectric tangent @ 1 MHz
One part; heat cure, thermally-conductive adhesive	DOWSIL™ SE 4450 Thermally Conductive Adhesive	High thermal conductivity		Power supply parts; inkjets; dot printer heads; ECU; adhesion to heat sink of driver IC	NA	Gray	66,400	NA	0.5 hr @ 150°C		2.73	95	NA	6.65	45.6	1.92		345/AL		22.2	7E+15	5.9	3E-03
	DOWSIL™ 1-4173 Thermally Conductive Adhesive	High thermal conductivity	UL 94 V-0		NA	Gray	61,372	NA	20 min @ 150°C		2.70	92	–	6.2	22	1.81		448/AL		18	2E+14	4.9 @ 100 kHz	<3E-03 @ 100 kHz
	DOWSIL™ 3-1818 Thermally Conductive Adhesive	Primerless adhesion, including 0.178 mm glass bead	UL 94 V-0		NA	Gray	75,854	NA	10 min @ 150°C		2.63	88	–	4.3	20	1.68		386		16	6.85E+13	5.5 @ 100 kHz	<2.2E-04 @ 100 kHz
	DOWSIL™ 3-6752 Thermally Conductive Adhesive	Primerless adhesion; fast cure	UL 94 V-0		NA	Gray	83,300	NA	3 min @ 150°C		2.61	87	–	3.76	15	1.69		357		15.59	7.10E+13	5.5 @ 100 kHz	<1E-04 @ 100 kHz
One part; heat cure, thermally-conductive gel	DOWSIL™ TC-3015 Reworkable Thermal Gel	Reworkable		Smartphones; telecom; transportation assembly	NA	Light pink	220,000		8 hr @ 60°C 60 min @ 100°C		2.6	72		0.3	72	2.0				14.7	5.9E+14		
Two part; moisture cure/heat cure printable or dispensable pad	DOWSIL™ TC-4025 Dispensable Thermal Pad	High thermal conductivity; low stress; reworkable	UL 94 V-0	LED lamps and luminaires; automotive and consumer applications	1:1	Blue	Part A: 72,667 Part B: 73,600	4	24 hr @ 25°C; 145 min @ 40°C; 42 min @ 75°C; 15 min @ 100°C; 11 min @ 125°C		2.83	49 (Shore 00)	NA	0.16	209	2.5		NA		18	3.90E+12	6.4	5E-03

NA = Not applicable (not measured due to inappropriate test method). | – = Not available.



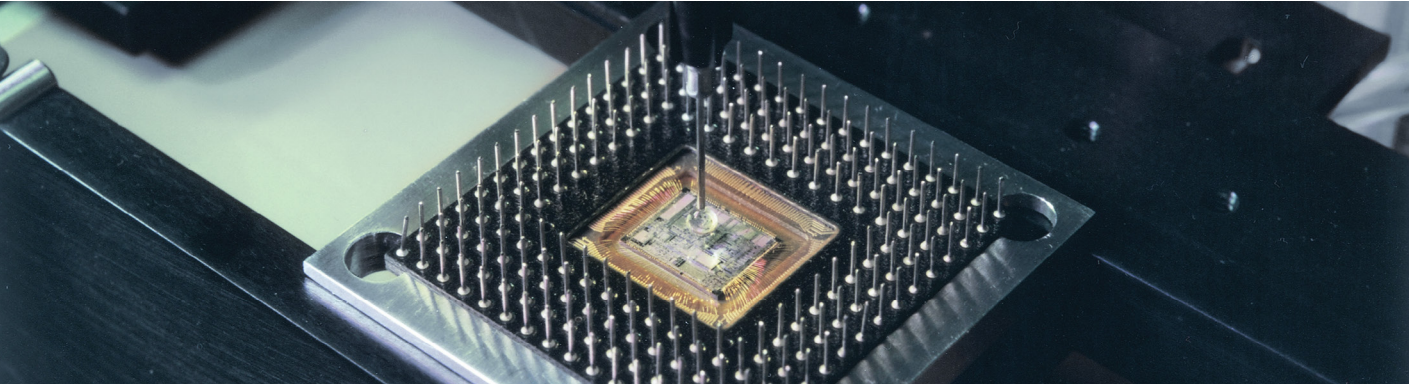
Conformal coatings

Category	Product name	Features	Flame retardance	Low molecular weight of siloxane control grade	Potential uses	Appearance	Viscosity @ 25°C (mPa·S)	Tack-free time (min)	Cure time	Density @ 25°C (g/cm³)	Durometer – JIS Type A	Low-molecular-weight siloxane content (%)	Dielectric strength (kV/mm)	Volume resistivity (Ω·cm)	Dielectric constant @ 1 MHz	Dielectric tangent @ 1 MHz
One part; resin	DOWSIL™ 1-2577 Conformal Coating	MIL-I-46058C; UL746E; fast TFT; solventborne; low viscosity	UL 94 V-0		Coatings for circuit boards and printed circuit boards (PCBs)	Transparent	950	7	RTC: 60 min ⁽¹⁾ ; HC: >2 min @ 60°C/15% RH	1.11	20 (Shore D)	–	16	5E+13	2.7 @ 100 kHz	<2E-04 @ 100 kHz
	DOWSIL™ 1-2620 Dispersion		UL 94 V-0			Transparent	150	5	RTC: 60 min ⁽¹⁾ ; HC: >2 min @ 60°C/15% RH	1.11	25 (Shore D)	–	22	4.6E+13	2.7 @ 100 kHz	3E-04 @ 100 kHz
One part; modified resin	DOWSIL™ 1-2577 Low VOC Conformal Coating	MIL-I-46058C; UL746E; fast TFT; solventborne; low viscosity	UL 94 V-0		Coatings for circuit boards and PCBs	Transparent	1,094	6	RTC: 60 min ⁽¹⁾ ; HC: >2 min @ 60°C/15% RH	1.12	25 (Shore D)	–	13	2E+14	2.3 @ 100 kHz	3E-04 @ 100 kHz
	DOWSIL™ 1-2620 Low VOC Conformal Coating		UL 94 V-0			Transparent	350	5	RTC: 60 min ⁽¹⁾ ; HC: >2 min @ 60°C/15% RH	1.12	25 (Shore D)	–	16	1E+15	2.5 @ 100 kHz	4E-03 @ 100 kHz
One part; resin	DOWSIL™ LDC 2577 D Dispersion Coating	Fast tack-free; low viscosity			Coatings for circuit boards and PCBs	Transparent	104	5	RTC: 10 min ⁽²⁾ ; HC: >2 min @ 60°C/15% RH	1	23 (Shore D)	–	26	6E+13	2.8 @ 100 kHz	2E-03 @ 100 kHz
One part; elastomer	DOWSIL™ SE 9186 L Sealant	Noncorrosive; fast tack-free; high viscosity		•	Coatings for connectors, parts, circuit boards	Translucent, black	27,000	8	RTC: 24 hr @ 25°C/50% RH ⁽³⁾	1.02	25	0.0023/0.0029	23	6E+15	2.7	1E-03
	DOWSIL™ EA-2000 RTV Silicone Adhesive	Noncorrosive; fast tack-free; low viscosity		•		Black	890	8	RTC: 24 hr @ 25°C/50% RH ⁽³⁾	–	24	–	31	4E+16	–	–
	DOWSIL™ EA-3000 RTV Black or White	Noncorrosive; fast tack-free; low viscosity		•		White/black	1,200	8	RTC: 24 hr @ 25°C/50% RH ⁽³⁾	1.01	18	0.0026	19	1E+15	2.8	9E-04
	DOWSIL™ EA-9187LH	Noncorrosive; fast TFT; low viscosity; UL746E	UL 94 V-0		Coatings for circuit boards and PCBs	Colorless	400-700	6-7	RTC: 24 hr @ 25°C/50% RH ⁽³⁾	0.977	21	–	34	1.60E+15	1.73 @ 100 kHz	1E-03
	DOWSIL™ 3-1953 Conformal Coating	Low viscosity; MIL-I-46058C	UL 94 V-0		Rigid and flexible circuit boards; PCBs; sensitive components and fine-pitch designs	Translucent	353	8	RTC: 30 min; HC: 1.5 min @ 60°C/15% RH	0.98	34	–	17	5.5E+15	–	<2E-04 @ 100 kHz
	DOWSIL™ 3-1965 Conformal Coating	Low viscosity; MIL-I-46058C; fast tack-free	UL 94 V-0			Translucent	115	6	RTC: 30 min; HC: 2 min @ 60°C/15% RH	0.99	33	–	17	9E+14	–	<2E-04 @ 100 kHz
	DOWSIL™ 3-1944 RTV Coating	High viscosity	UL 94 V-0		Coatings for connectors, parts and PCBs	Translucent	63,775	14	RTC: 60 min; HC: 5 min @ 60°C/15% RH	1.03	36	–	21	1.6E+15	2.73 @ 100 kHz	<2E-04 @ 100 kHz
	DOWSIL™ HC 2000 Controlled Volatility UV Coating	Noncorrosive; low viscosity		•	Coatings for connectors, parts and PCBs	Translucent	150	18	RTC: 90 min @ 25°C/50% RH ⁽¹⁾	1.01	25	0.0025	33	1E+17	2.7	5E-03
	DOWSIL™ SE 9189 L Gray or White RTV Adhesive	Noncorrosive; fast tack-free; high viscosity	UL 94 V-0 Gray only	•	Coatings for connectors, parts and PCBs	White, gray	22,000	8	RTC: 24 hr @ 25°C/50% RH ⁽³⁾	1.19	33	0.0015	25	9E+14	3.1	4E-03
	DOWSIL™ HC 1000	Noncorrosive; fast tack-free; high viscosity		•	Coatings for connectors, parts and PCBs	Gray	12,000	11	RTC: 300 min @ 25°C/50% RH ⁽⁴⁾	1.07	24	0.005	21	2E+15	3.2	3E-03
One part; heat cure	DOWSIL™ 1-4105 Conformal Coating	Noncorrosive; low viscosity	UL 94 V-1		Rigid and flexible circuit boards; PCBs; sensitive components and fine-pitch designs	Clear	450	–	5 min @ 100°C	0.97	64 (Shore 00)	–	20	2.7E+13	2.6 @ 100 kHz	<2E-04 @ 100 kHz
	DOWSIL™ Q1-4010 Conformal Coating	Noncorrosive; low viscosity	UL 94 V-1			Clear	825	–	10 min @ 100°C	1.00	33	–	23	2E+14	2.6 @ 100 kHz	3E-4 @ 100 kHz

⁽¹⁾1 mm thickness. | ⁽²⁾75 µm thickness. | ⁽³⁾3 mm thickness. | ⁽⁴⁾0.3 mm thickness. | RTC = Room temperature cure. | HC = Heat cure. | – = Not available.

Material	Thermal-conductivity (W/m·K)
Alumina (RT)	21
Soda glass (RT)	0.55-0.75
Nylon (RT)	0.27
Polyethylene (RT)	0.25-0.34
Polystyrene (RT)	0.08-0.12

Material	Thermal conductivity (W/m·K)
Silicon (0°C)	168
Aluminum (0°C)	236
Gold (0°C)	319
Silver (0°C)	428
Iron (0°C)	84
Copper (0°C)	403





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