

IMAGINE: Reliable Bonds that Let Heat Slip Away

Performance, processing and cost considerations steer selection of thermally conductive adhesives for standard automotive applications. Yet, advanced electronics are driving demand for high-performance silicone solutions that can enable greater integration and withstand higher power densities.

With one of the industry's broadest portfolios of thermally conductive silicone adhesives, Dow Corning offers you the versatility to optimize the processing and performance of both standard and advanced automotive electronic modules.

Solutions for Standard Automotive Electronics

Dow Corning understands that reliable, cost-effective performance remains the priority for most automotive electronics applications. With well over half a century of industry expertise, we offer a wide selection of simple-yet-versatile materials ranging from low-viscosity liquids to nonslump formulations. Products in this portfolio encompass one-part moisture-cure grades for simple room-temperature processing, or one- or two-part heat-cure solutions for higher productivity. All form strong-but-flexible bonds to common heat sink materials, such as aluminum and copper, and they deliver low thermal resistivity at different bond line thicknesses.

Our addition-cure, thermally conductive silicones develop no significant by-products during processing, even in complete confinement, and they do not need mechanical fasteners or clamps. After cure, our silicone materials convert into strong-yet-flexible elastomers, and they deliver good unprimed adhesion to a variety of common substrates, including metals, ceramics and filled plastics.

Solutions for Advanced Automotive Electronics

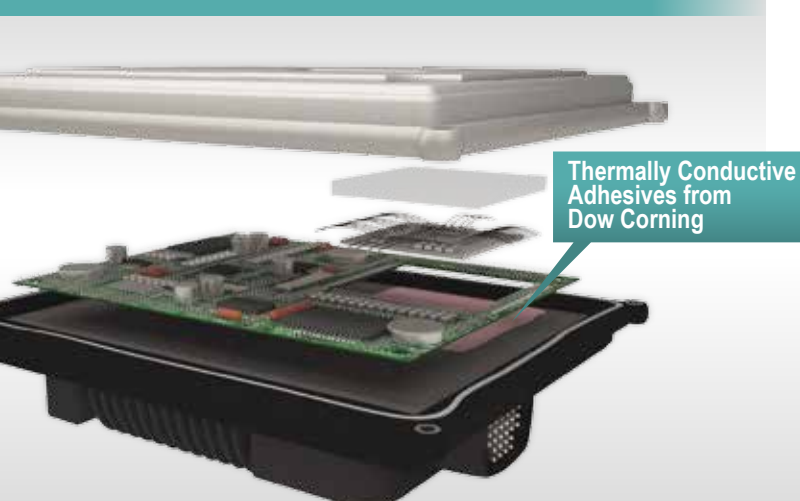
Automobiles are becoming increasingly computer-driven and more reliant on electrical power. As onboard electronics grow more integrated and powerful, they also are generating higher heat. As a proactive innovator and industry collaborator, Dow Corning offers the advanced thermally conductive silicone adhesives that can help you stay ahead of the industry curve.

Our proven materials technology can help ensure the reliability of next-generation automotive electronic modules by combining excellent thermal conductivity and strong dielectric properties. The materials' unique thermal properties are possible through alumina filler, carefully selected to minimize abrasiveness during material processing and optimize long-term performance stability. Our newest thermally conductive silicone adhesives combine good wetting and low bond line thickness before cure with post-cure thermal conductivity of 3.5 W/mK and excellent electrical insulation at temperatures as high as 200°C. Other selections in our portfolio incorporate microscopic spacers to offer higher control over bond line thickness. Still others address flatness tolerance and minor warping of substrates through a combination of high modulus, compressibility and the ability to adhere to multiple substrates.

One Company: Many Automotive Solutions

Dow Corning is your source for collaborative innovation of new thermal management solutions. If you do not see what you need in our expansive product offering, contact us today to discuss your application or processing challenge. Our materials experts often can tailor a solution that will enable your electronics design to meet your goals for performance, processing and cost.

Automotive Transmission Control Unit



Product	Description	Thermal Conductivity (W/mK)	Cure Profile	Adhesion Strength		Rheology Viscosity Thixotropy
				Aluminum (Unprimed)	Copper (Unprimed)	
Dow Corning® 1-4174 Thermally Conductive Adhesive	1-part, gray, flowable thermally conductive adhesive with high tensile strength and 7 mil glass beads	1.77	90 min @ 100°C 30 min @ 125°C 20 min @ 150°C	4.50 MPa 450 N/cm²	NA	Viscosity: 62.3 Pa-sec 62,300 cP Thixotropy: 3.7
Dow Corning® 1-4173 Thermally Conductive Adhesive	1-part, gray, flowable thermally conductive adhesive with high tensile strength	1.78	90 min @ 100°C 30 min @ 125°C 20 min @ 150°C	4.40 MPa 442 N/cm²	NA	Viscosity: 61 Pa-sec 61,000 cP Thixotropy: 3.9
Dow Corning® TC-2030 Adhesive A/B Kit	2-part, 1:1 mix ratio, gray thermally conductive adhesive	3.04	60 min @ 130°C	3.03 MPa 303 N/cm²	NA	Viscosity, mixed: 220 Pa-sec 220,000 cP Thixotropy: 1.8
Dow Corning® TC-2035 Adhesive A/B Kit	2-part, 1:1 mix ratio, reddish-brown thermally conductive adhesive	3.30 ⁽¹⁾	30 min @ 125°C 10 min @ 150°C	3.09 MPa 309 N/cm² 1.26 MPa @ 150°C 1.07 MPa @ 180°C	2.9 MPa 287 N/cm²	Viscosity, mixed: 130 Pa-sec 130,000 cP Thixotropy: 2.8
Dow Corning® 3-1818 Thermally Conductive Adhesive	1-part, gray, flowable thermally conductive adhesive with glass beads	1.68	60 min @ 100°C 45 min @ 125°C 10 min @ 150°C	560 psi	NA	Viscosity: 758.0 Pa-sec 758,000 cP Thixotropy: 3.4

Specification Writers: These values are not intended for use in preparing specifications. Please contact your local Dow Corning sales office or your Global Dow Corning Connection before writing specifications on this product.

⁽¹⁾Preliminary data.

How Can We Help You Today?

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

For more information about our materials and capabilities, visit dowcorning.com.

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

Images: AV21745, AV21088

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