Automotive
Solutions

DOW CORNING

Dow Corning:

Driving the Future of Automotive Technology

Safety

Durability

Innovative

Protection

Cooling

Smooth operation

Global

Comfort

Body

Proven

Quality

Chassis

Environmental stewardship

Solutions

Electronics

Quiet

At Dow Corning, we have a vision of a world made better by silicon science. It's what drives us and our search for sustainable, innovative technologies that will help improve the quality of life for all people everywhere. Perhaps nowhere does silicone technology offer more potential than in the automotive market – an industry with manufacturing and design challenges that range from the mechanical to the aesthetic. Dow Corning offers virtually unlimited options for silicone solutions: whether you want to seal airbags for high-pressure deployment, create electronic systems to improve new engine technologies, or achieve just the right finish on leather seating.

Dow Corning has more than 60 years experience as a trusted business partner and ally to automotive system, module and component manufacturers. Our culture of innovation means we can deliver exactly what you need, when and where you need it. And because our expertise ranges from the global to the local, we can offer significant help on market expansion as well. From start-up through production, Dow Corning delivers materials and technical services that can help you:

- Reduce costs
- Raise productivity
- Boost performance and safety
- Improve customer satisfaction
- Differentiate products
- Create competitive offerings
- Raise quality standards
- Increase market knowledge and expertise

Read the following pages to learn more about the many ways Dow Corning can benefit your operation. Then visit our website, www.dowcorning.com/automotive, or contact us directly to arrange to speak with a technology expert about your specific needs. We believe the amazing versatility of silicone can help take automotive technology into a new, exciting era of innovation and growth. We want to be part of that future with you.

Sincerely,

Stephanie Burns

Stephanie Burns
President and CEO

Did you know … Auto OEMs and tiers worldwide use silicone technologies?

Dow Corning: Silicone Solutions for the Automotive Industry

Today's auto manufacturers and suppliers face a challenging and evolving global market. Consumers expect not only better performance and fuel efficiency from their vehicles, but also improved safety, comfort and reliability. Plus, more stringent quality standards and environmental regulations put additional demands on the industry.

Where can you turn for proactive collaboration, technology innovation and global expertise? ***Dow Corning***. We can help make your vehicles reliable, comfortable, fuel efficient and environmentally sustainable. Our integrated, total solutions approach combines high-quality products and materials with fully integrated application and engineering support, design assistance, manufacturing advice and consulting services to meet your exact project requirements.

What material is so unique and versatile that you can use it in virtually any automotive application? ***Silicone***. It can lubricate or adhere, repel water or absorb it, remain rigid in extreme heat or pliable in freezing cold. It improves products and processes in millions of items and across many industries.

Dow Corning invests in science and technology development in growing economies around the world to support expanding local markets and facilitate global production efficiencies. You can rely on our international expertise to help you expedite technology exchanges, meet regulatory requirements, improve production quality and achieve the design innovation you need for success.

Dow Corning offers materials, technologies and expertise in many auto-related industries.

- Electronics
- Industrial Assembly
- Rubber Fabrication
- Textiles and Leather
- Paints, Finishes and Coatings
- Plastics
- Photonics
- Moldmaking
- Auto Appearance

Reliability

Aesthetics

Flexible

Electrical

Versatile

Interior

Proactive

Brake

Performance

Ally

Responsive

Climate control

Satisfaction

Options

Powertrain

Fuel efficiency

Did you know … Silicone is stable over temperatures from -50°C to +200°C?

Did you know … Silicone can resist moisture, salt, engine fluids and UV light?

Safety

Dow Corning's silicone technologies help improve the performance of EPS (electric power steering), ABS (anti-lock braking) and ESC (electronic stability control) systems, airbag sensors and lighting components (for example, in ballasts for Xenon lighting and in emerging LED lighting and directional lighting). Engineered silicone elastomers have made a new class of inflatable curtains for side impact airbags possible. New technologies like tire pressure monitoring sensors, optical detection systems, "green" tire tread compounds and "intelligent" fabrics for impact protection also help increase safety.

Photograph courtesy of Autoliv. AV06961

NEED: Protect airbag fabric from heat and inflation force to increase the safety of car occupants.

SOLUTION:* Silastic® *Liquid Silicone Rubber from Dow Corning coats airbag cushions, enabling even deployment while protecting the fabric from the heat and force of inflation. Engineered silicone elastomers provide sealing of inflatable curtain airbags to allow for necessary inflation performance.

Our products protect vehicle components in numerous other applications as well. Thanks to silicone's flexibility and resistance to high temperatures, seals made with silicone rubber prevent water from getting into headlamps and help reduce fogging. In addition, our products can help ensure that all vehicle components are secure and resist corrosion from temperature fluctuations, moisture, salt and fuel.

Reliability

Improving vehicle reliability not only increases overall customer satisfaction, but can also help reduce recalls and warranty issues. Silicone rubber has a wide variety of uses. Electrical connector seals provide long-term weatherability, even in extreme heat and cold. Silicone gaskets and seals help prevent leaks in engines operating at very high temperatures. Exhaust pipe hangers made of silicone rubber are tear-resistant and can withstand harsh environments.

AV09491

Dow Corning provides complete material solutions for packaging integrated circuits, including silicone coatings, gels and encapsulants that help enable electronic functioning and significantly lengthen component life. Thermally conductive materials help dissipate heat while silicone adhesives can be used for module assembly. Our *Molykote*® brand products for the

continues ↗

automotive industry include lubricants, anti-friction coatings, greases and oils. Our greases lubricate control cables and electrical mechanisms and our anti-friction materials coat pistons, head gaskets and exhaust manifold gaskets. All these material functions provide greater reliability to a vehicle.

NEED: Protect delicate components like electronic engine control units against moisture, salt spray and other contaminants.

SOLUTION: Dow Corning developed specially formulated silicone gels and conformal coatings to protect electronic applications.

For brake applications, our solid lubricants, greases and pastes help reduce vibration, noise and squeaking. Anti-friction coatings can help prevent squeaking and rattling noises in door panels while silicone rubber collars, hangers and pads are often used for noise damping and to reduce vibration of vehicle components. Injected silicone foams provide excellent sound insulation to vehicle passenger compartments.

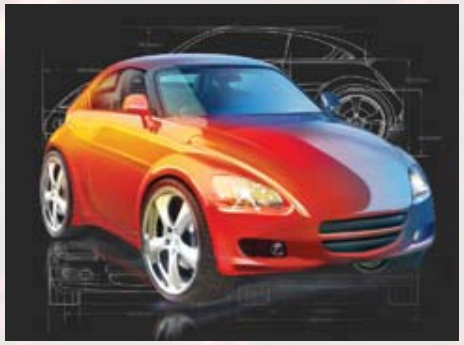
Comfort & Aesthetics

AV08531

With silicon-based coatings from Dow Corning, you can add special touch, appearance and sound-reduction qualities to interior surfaces like leather, textiles and plastic. Silicones can also help protect and improve the appearance of exterior finishes. Manufacturers use silicones from Dow Corning for interior electronics like infotainment/entertainment displays and “luxury” electronics found in seating, automatic infolding external mirrors, electronic steering and automatic gearboxes.

NEED: Acoustic tests done during the development of a luxury performance car showed that the interior noise level was too high.

SOLUTION: The injection of foam-in-place, sound-absorbing silicone from Dow Corning into select points on the automobile’s body helped reduce the noise level significantly.



AV07293

AV08983

AV08572

Performance & Fuel Efficiency

Modern vehicle performance relies heavily and increasingly on electronic monitoring and control systems. Dow Corning's silicone products help protect and improve the functioning of these systems. For example, silicone adhesives are used to assemble electronic modules. Silicone materials from Dow Corning also protect Piezo injectors on high-performance diesel systems and provide reliability and longevity to hybrid vehicle electronic modules, like inverters.

AV09773

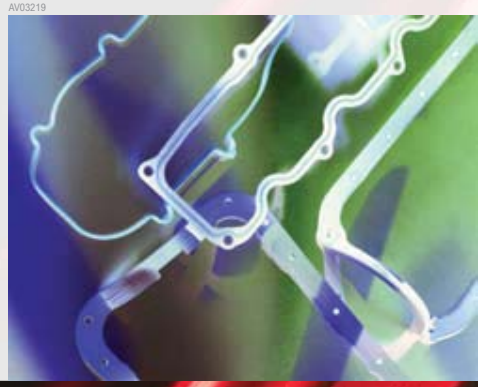
Hoses made of silicone and fluorosilicone rubber compounds help modern turbo aspirated engines withstand extreme temperature, pressure and vacuum during operating conditions. "Green" tires made with silane help decrease tire roll resistance and, therefore, fuel consumption. Silicone adhesives can provide excellent holding power at lower application weights than other assembly methods while increasing production speed.


AV03647

NEED: Improve fuel efficiency and reduce piston wear.

SOLUTION: Dow Corning developed* Molykote® *brand anti-friction coatings and special coating process technology for their application.

AV03219



Did you know … Silicone absorbs very little water: 0.1% by weight at room temperature?

Environmental Stewardship

Anti-friction-coated components and parts made with silicone help engines perform more efficiently so they produce fewer emissions. For example, our silicone and fluorosilicone compounds used as liner materials in turbocharger hoses and seals in fuel system connectors help meet stringent environmental regulations limiting hydrocarbon emissions. We are also doing developmental work on membranes for hydrogen cars.

The overall durability of silicone can help make many parts "fit and forget." Parts manufactured from liquid silicone rubber also generate very little scrap and usually do not require rework. Many of our silicone materials comply with environmental laws and regulations (including WEEE, RoHS and "Alt Auto Verordnung"). They also emit fewer volatile organic compounds than organic conformal coatings when measured following the standards from EU law 1999/13/EC. All these features support environmental goals by extending vehicle service life, saving energy and reducing waste and emissions.


AV08534


AV07566

NEED: Tighter environmental regulations prohibit the use of many solvents as carriers or diluents, forcing manufacturers to seek substitutes for traditional conformal coatings that use toxic organic solvents.

SOLUTION: Dow Corning developed a new family of 100% solid, solventless silicone conformal coatings. These products, available worldwide, deliver excellent physical protection and regulatory compliance.

Did you know … Silicone comes in a wide variety of forms, from hard solids to low-viscosity liquids?

Solutions Beyond Silicone

Dow Corning is a world leader in providing silicone solutions to the automotive industry. But did you know our expertise extends beyond silicone as well? We provide a wide range of non-silicone anti-friction coatings, dry films, solid lubricants, greases and pastes. These products include both mineral oil and synthetic oil chemistries.

- Area Headquarters
- Manufacturing Sites
- Key Customer Service Centers
- Key Science & Technology Centers
- Warehousing Sites

Global reach, local response

For more information or to contact us

Web: www.dowcorning.com/automotive

E-mail: automotive@dowcorning.com

THE AMERICAS

World Headquarters (United States)
Telephone: + 1 989 496 6000
Automotive Development Center N. America
Telephone: + 1 734 454 2000

Brazil
Dow Corning do Brasil Ltda.
Telephone: + 55 11 3759 4300

ASIA

Asia Headquarters (Japan)
TEL: + 81 3 3287 8300
FAX: + 81 3 3287 1088

China
TEL: + 86 21 6288 2626
FAX: + 86 21 6288 2727

India
TEL: + 91 22 6694 6868
FAX: + 91 22 6694 6848

Korea
TEL: + 82 2 551 7600
FAX: + 82 2 551 6400

Australia & New Zealand
Dow Corning Australia Pty Ltd.
Telephone: + 61 1300 360 732

EUROPE

European Headquarters (Belgium)
Dow Corning S.A.
Telephone: + 32 64 88 80 00

Germany
Dow Corning GmbH
Automotive Center Europe
Telephone: + 49 611 23 70

France
Dow Corning France S.A.
Sales Office
Telephone: + 33 47 284 1360

Italy
Dow Corning S.p.A.
Sales Office
Telephone: + 39 0298 8321

Spain
Dow Corning Iberica
Sales Office
Telephone: + 34 93 363 6900

United Kingdom
Customer Service Center Northern Europe
Sales Office
Telephone: + 44 1676 528 000

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