

Integrated Automotive Solutions: Proprietary and Standard Compounds

HEXPOL is working with key auto industry enterprises to promote compounds as preferred materials to meet automotive fuel efficiency, performance, and sustainability requirements. We assist with material selection and design, processing and manufacturing methods, and green technology leadership.

As a leading developer and manufacturer of advanced, high-quality compounds – whether proprietary or standard – HEXPOL’s integrated approach to recipe development and mixing considers customer processes, technical specifications, cost effectiveness, and raw materials. Our family of compounded products includes:

- **Rubber** – HEXPOL can mix an assortment of rubber polymer types, including natural rubber, CR, EPDM, SBR, NBR, FKM, and FFKM to name a few.
- **Silicone** – We have a line of standard silicone compounds, including HCR, fluorosilicones, and silicone/EPDM compounds.
- **TPE** – Does not require curing or vulcanization. Our TPE products combine the performance of thermoset rubbers with the processing ease of plastics. TPEs are formulated to have excellent color capabilities and are weather and UV resistant.
- **Performance Additives** – HEXPOL has a comprehensive line of custom and standardized productivity enhancing products, including heat additives, UV stabilizers, flame-retardants and friction modifiers, as well as color concentrates.
- **Thermoplastic Olefin (Polyolefin)** – Polymers consisting of thermoplastic and filler such as fiberglass or carbon fiber. TPO is used extensively in the auto
- **Nylon (polyamide)** – These resins are often used to make parts that replace metals in applications that require high temperature resistance, such as automotive powertrains.

HEXPOL: An Auto Industry Partner With...



- **A Global Presence** – HEXPOL rubber compounding benefits automakers around the globe. Every major automobile brand in the world – from North America, Europe, and Asia – turns to HEXPOL for mixing and custom compounding expertise.
- **Strong OEM and Tier 1 Supplier Relationships** – We understand the strict quality standards and specifications in the auto industry. Leveraging our global capabilities delivers the continual improvement demanded by OEMs and suppliers alike, wherever they are located.
- **Advanced Technology** – HEXPOL investments in automation, proprietary process control systems, testing and quality control ensure optimum mixing and compounding – every batch, every time.
- **High-Performance Compounding** – Automotive rubber components require compounds that meet precise performance standards. HEXPOL’s mixing and formulation development capabilities help automakers find rubber solutions for applications such as weather sealing, gaskets, hoses, transmission seals, and shock and sound absorption, to name a few.
- **Superior Customer Service** – HEXPOL’s industry leading polymer expertise, combined with over 60 years of mixing and product development know-how, enable us to give “Best-in-Class” service to our automotive customers. Our team provides personalized service to customers of all sizes.
- **HEXLITE™ Microdense Technology** –An advanced compounding technology from HEXPOL, HELXITE reduces the specific gravity and weight of materials already considered to have low density, while retaining good physical properties. We are working with the auto industry to facilitate volumetric savings and/or provide low-density articles with a solid appearance, reducing the need for conventional blowing agents with a spongy cellular structure. HELXITE is ideal for lightweighting.



HEXPOL Field Technical Services: Know How. Know Why.

HEXPOL field technical service representatives are among the best in the world. Together, they have seven U.S. patents and seven foreign patents in polymer bonding/chemistry. Their mission is to consult with customers, analyze processes, and provide personalized service that matches the product with the process.
[Know How.](#) [Know Why.](#)

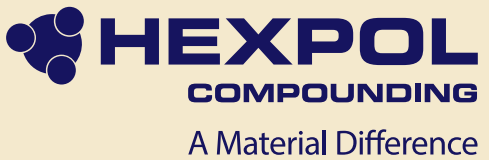
Investing in People Fosters Excellence – We continually invest in their expertise through technical training and leadership programs. Whether they are polymer chemists, industry experts, technical sales or customer service representatives, we strive to elevate customer satisfaction and on-target solutions.
[Know How.](#) [Know Why.](#)

HEXPOL Values the Process – Our field representatives align HEXPOL’s process with the customer’s process to achieve product specification requirements that help ensure end product excellence. A process with stability, reliability, and repeatability is a predictable process that consistently produces the right product.
[Know How.](#) [Know Why.](#)

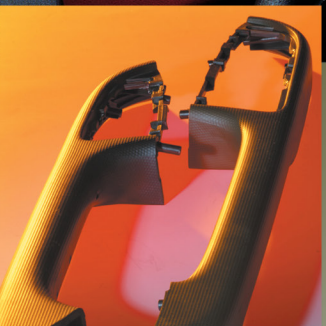
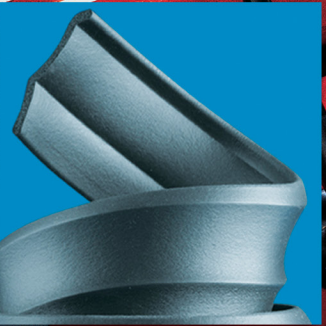
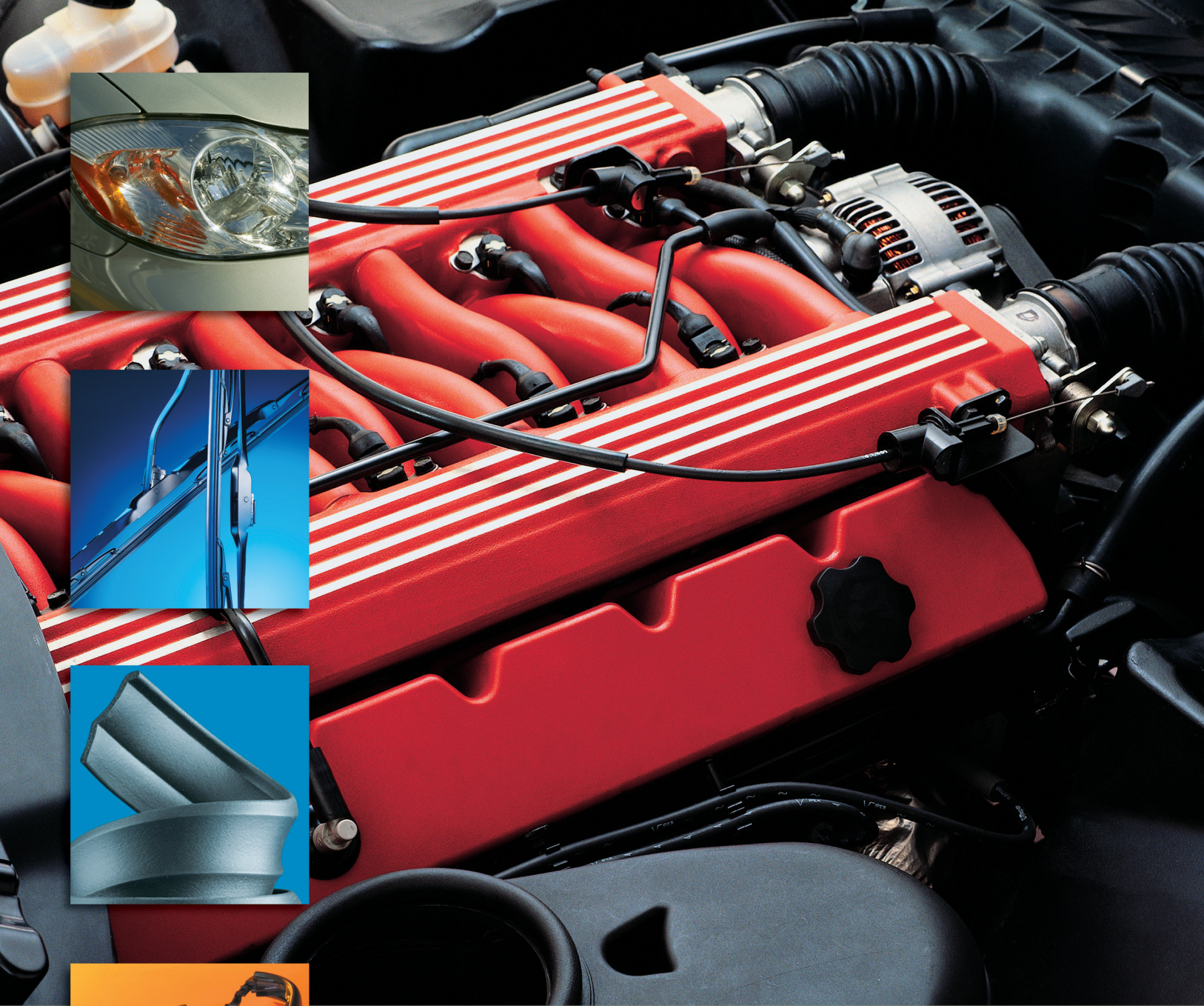
The HEXPOL Technical Visit – We can conduct periodic and confidential on-site reviews, observing and analyzing attributes such as equipment, operator activities, and production processes to solve problems, increase productivity, and improve product quality. HEXPOL brings value to each and every customer relationship.
[Know How.](#) [Know Why.](#)



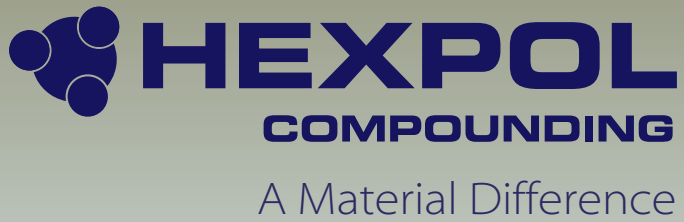
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Rubber Compounding for Global Automotive Applications



Driven By HEXPOL: Compounding for the Auto Industry

More than ever before, elastomers are critical to the manufacturing of automobiles. There are over three hundred elastomer parts on the typical automobile. A small sample includes gaskets, weather stripping, motor mounts, hoses, seals, floor mats, and spark plug wires. The list goes on.

Because of their almost limitless range of properties – whether rubber, silicone, TPE or thermoplastics – HEXPOL compounds deliver easier processing, light-weight parts, increased performance, and durability in extreme environments. Compounds provide seals, reduce vibration, insulate, and protect against the heat generated by smaller engines with more power.

Compounded components are used for the body, chassis, and powertrain of every car that comes off the assembly line.

Auto Body – HEXPOL materials are used for both the exterior body and internal passenger cabin of today’s automobiles, contributing to improved style and aesthetics, toughness and safety, as well as driving comfort by reducing vibration and noise.

Rubber: Floor mats, windshield washer hose, glass run channel, electrical grommets

Silicone: Wiper blades, headlamp seals, electrical components

TPE: Cup holders, gaskets and mats, wheel-arch liners, trunk liners, soft touch levers and switches

TP: Intake manifolds, fan blades, engine covers

TPO: Headlamp housings, HVAC components, grille-opening reinforcements, interior trim

Chassis – HEXPOL products are excellent for chassis suspension components because of their durability, resistance to grease, performance in a broad temperature range, and flexibility. Example applications include:

Rubber: Suspension bushings, CV JOINT boots, brake hose

Silicone: Muffler hangers, tire pressure sensors, shock absorption components

TPE: Brake hose isolators

Powertrain Components – HEXPOL formulations are incorporated into many of the elastomeric parts of an auto’s powertrain system. Our compounds provide properties necessary to perform with higher engine temperatures; resist oil, coolants, and contaminants; contribute to lighter parts for increased fuel efficiency and reduced engine emissions.

Rubber: Fuel hose, spark plug wires, air induction ducts, engine-sealing gaskets

Silicone: Spark plug boots, diaphragms, engine gaskets, turbocharger hose

TPE: Air induction seals

TP: Engine covers, radiator components, fans, water valves

TPO: Fan shrouds, carbon canisters, air induction, battery trays

Lightweighting and “Green Technologies”

Innovative capabilities from HEXPOL leverage proven concepts of lightweighting and “green technology” to help auto manufacturers achieve better fuel economy while reducing carbon emissions.

Lightweighting is critical in motor vehicle manufacturing to achieve government fuel efficiency standards by reducing vehicle weight. Newer and lighter elastomers are creating numerous opportunities for lightweighting by replacing metal parts with polymer-based components.

“Green Technologies” reduce environmental impact, conserve resources, and promote renewably sourced polymers. “Green technologies” in the auto and related industries specifically strive to reduce carbon emissions, both from the car and the manufacturing process.

Compounding for Demanding Applications **Today**

Only the right formulation and a perfect mixing process result in the optimum final automotive rubber product. Our customers benefit from leading-edge product performance and batch-to-batch consistency required for harsh environments and demanding applications.

1 Constant Velocity Joint Boots:

With a full line of performance polymers ideal for CV Joint boots, HEXPOL offers a range of compounds that demonstrate outstanding performance in harsh automotive chassis environments. They stand up to aggressive chemical, dynamic, and thermal challenges.

2 Engine Seals and Mass Air Flow:

To survive the most punishing automotive engine environments, HEXPOL's durable and high-performance formulations can take the heat. HEXPOL can provide a variety of polymer types that are suitable for multiple engine and engine accessory applications. We can also deliver the right compound for your mass air flow sensor needs from vane meter to hot wire.

3 Engine and Chassis Vibration Mounts:

HEXPOL has a comprehensive portfolio of material solutions to meet increasing performance demands for Noise, Vibration, and Harshness (NVH) applications. From muffler hangers to engine mounts, we can help solve your unique application challenges.

4 Transmission Seals and Gaskets:

Starting with dynamic seals and static gaskets to reinforced hose construction, HEXPOL has the application expertise to develop and recommend high-performance solutions. Whether optimizing existing formulations, or developing customer compounds, we have the right solution for any transmission application.

5 Hydraulic and Radiator Hose:

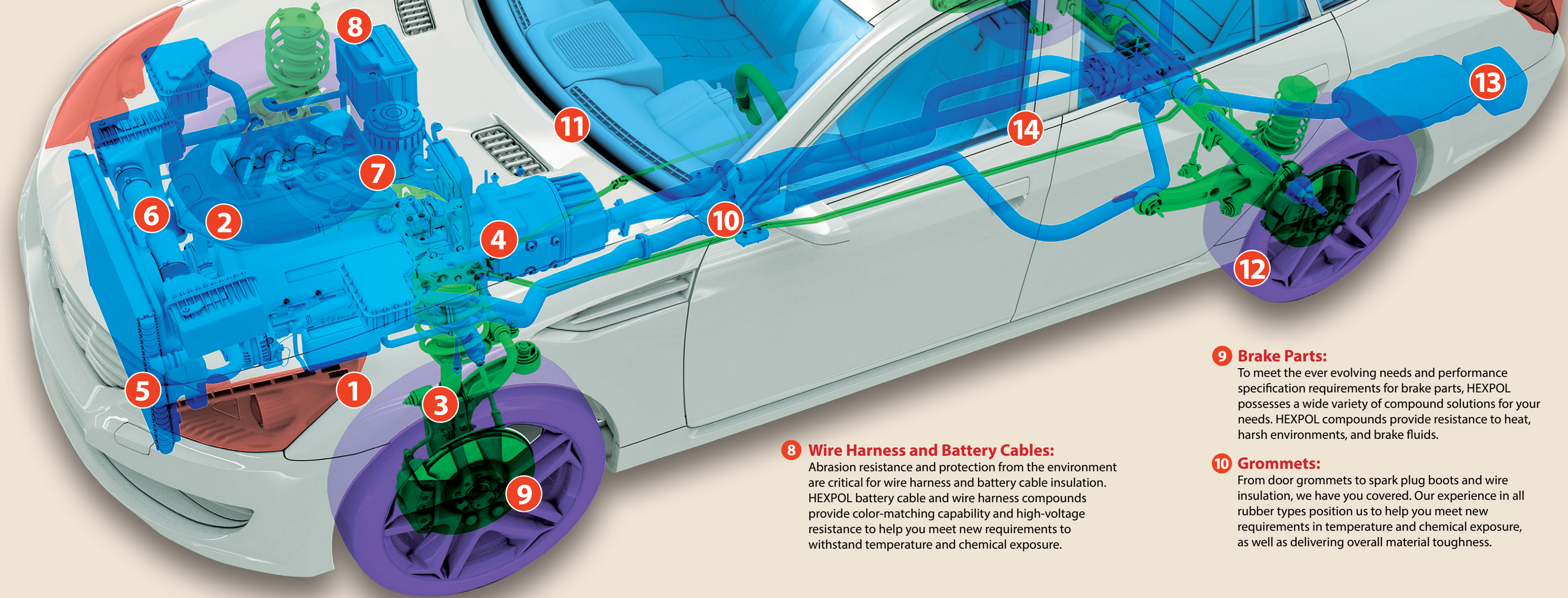
We have the right mix for all of your under-the-hood needs. HEXPOL formulations meet the demands of strenuous automotive temperature, chemical, and thermal environments. If your application is oil cooler hose, AC hose, or PVC hose, among many others, we have new formulations to meet your exacting needs based on alloy technology.

6 Turbo Hose and Molded Air Duct:

HEXPOL experience in these types of applications, plus our extensive line of material solutions, enables us to meet the stringent requirements for your applications – whether “cold side” or “hot side,” black or colors, HEXPOL delivers.

7 Fuel System Components:

With ever increasing regulatory and performance issues (e.g., zero emissions, bio fuels), HEXPOL is positioned to deliver solutions across all fuel system applications – from direct-fuel contact to vapor exposure. We have experience in using our comprehensive portfolio of materials for applications including O-rings, tube, hose, seals, and gaskets.



8 Wire Harness and Battery Cables:

Abrasion resistance and protection from the environment are critical for wire harness and battery cable insulation. HEXPOL battery cable and wire harness compounds provide color-matching capability and high-voltage resistance to help you meet new requirements to withstand temperature and chemical exposure.

9 Brake Parts:

To meet the ever evolving needs and performance specification requirements for brake parts, HEXPOL possesses a wide variety of compound solutions for your needs. HEXPOL compounds provide resistance to heat, harsh environments, and brake fluids.

10 Grommets:

From door grommets to spark plug boots and wire insulation, we have you covered. Our experience in all rubber types position us to help you meet new requirements in temperature and chemical exposure, as well as delivering overall material toughness.

11 Wiper Blades:

Recent advancements in compound testing dramatically reduce variability in results, with reliable and repeatable tests that ensure the wiper blade compounds from HEXPOL are of high quality and meet your requirements. HEXPOL's chemists can provide the ideal compound for the application, whether single polymer or blends (including silicone).

12 Tire-Toll:

HEXPOL offers large volume mixing for tread, retread, coating stocks, bead, inner liner, bladder, and white sidewall compounding. HEXPOL's breadth of technology and tire-toll experience include prototyping formulations in batches as small as 100 pounds for custom compounds, and our proprietary salinization process for new-generation tires.

13 Exhaust Isolators:

HEXPOL compounds provide a wide variety of solutions to choose from for exhaust isolator applications. From muffler hangers to vibration dampeners, we will compound the right mix together to solve your unique situation and application demands.

14 Door, Trunk & Hood Weatherseals:

HEXPOL's compounding knowledge and advanced technology are ideal for the new performance requirements of door weather seal applications. Our testing capabilities provide you with real-time manufacturing product testing for predictive analysis of compound performance.

15 Interior and Exterior Componenets:

HEXPOL products include compounds that offer great UV resistance and are available in customized automotive colors, with the option to utilize our color-matching capabilities. Interior components range from storage consoles and air deflectors to floor mats and cup holders. Our compounds can also be utilized in exterior applications such as mud flaps, roof rack feet, and more.

16 Passive Restraint Systems:

HEXPOL offers a selection of compounds, including silicone and Perfluoroelastomers (FFKM). FFKM provides the best solution for the most critical applications, such as airbags and other restraint systems. These elastomers are ideal for sealing requirements that use fail safe parts, like o-rings and gaskets. FFKM resists over 1,800 different chemicals while offering the high temperature stability of PTFE (327°C), heat resistance up for 320°C/608°F, and long service life.

Compounding for Demanding Applications **Tomorrow**

The future of the automobile isn't waiting down the road, it's right around the corner. As the automobile industry quickly moves to include electric cars and trucks, a variety of challenges for the companies that supply rubber products are on the horizon, which possibly will mean developing new products, and different rubber compound formulations.

As the automotive industry changes and adapts, HEXPOL will continuously be in the forefront of innovation. Our scientists and technologists are among the best in the world, providing proprietary and standard compounding solutions that address our customers' evolving needs in the automotive marketplace.

HEXPOL recognizes that electric vehicles may eliminate some parts for engines, hydraulic systems, exhaust system, and the use of power transmission belts.

There will be an increase in the use of rubber parts for EV's in the areas of sound-deadening equipment, shock/vibration controls, battery mounts, and dampeners. Perfluoroelastomers (FFKM) will offer long service life materials for EV O-rings, gaskets, and seals to meet the demands of future manufacturing for automobiles.

Electric vehicles use elastomer mounts for various motors that are used to propel the cars as well as power brakes, steering, and air conditioning. Rubber products will also be extensively used in battery mounts and cooling systems.

We are already seeing how electric vehicles will forever change the automobile industry, but the future looks promising for rubber product manufacturers, and HEXPOL will be there delivering optimum technological solutions for you.

1 Body Seals: Environmental resistance (sunlight, air pollutants, freezing doors, windows freezing shut).

2 Motor and chassis NVH (noise, vibration, and harshness).

3 Powertrain Parts: A range of electrical conductivity from insulative to semiconductive/static dissipative.

4 Powertrain: EMI/RFI shielding (to eliminate electromagnetic or radio frequency interference).

5 Powertrain: Thermal and fire resistance.

6 Protection of Sensors: Parking sensors and other driver assistance features.

7 High performance braking systems-thermal resistance (regenerative braking).

8 Various environmental seals and gaskets for electronic components.

