

# HENKEL AUTOMOTIVE SOLUTIONS

WORLD LEADER IN ADHESIVES, SEALANTS  
AND SURFACE TREATMENTS FOR THE AUTOMOTIVE INDUSTRY



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WHY HENKEL?

## UNMATCHED EXPERTISE AND CUSTOMER FOCUS

Henkel is the market leader in adhesives, sealants, and surface treatments solutions to the automotive industry. With more than 75 years of automotive experience, proven brands, and best-in-class technologies, we're proud to develop and deliver total solutions to every automotive manufacturer in the world.

With an established global infrastructure, an extensive engineering resource network of more than 3000 engineers and chemists worldwide, and an integrated communications network, our team at Henkel delivers comprehensive solutions for individual vehicle applications, and entire assembly lines. Whether you need to:

- Improve quality, performance and reliability
- Enhance safety, comfort, and ride and handling
- Decrease waste, labor, floor space and manufacturing costs
- Achieve new levels of productivity and profitability
- Attain short- and long-term "green" sustainable solutions

Only Henkel can deliver complete, tailored applications to optimize the efficiency of your production process and your company's overall lifecycle costs.

As a result, our full portfolio of technologies, services and solutions are used everyday by every vehicle manufacturer, as well as system integrators and tiered suppliers throughout the world.



**BODY ASSEMBLY**



**POWERTRAIN**



**FRAME AND CHASSIS**



**COATING**

**INNOVATIVE SOLUTIONS**

On average, Henkel invests \$500 million dollars annually into research and new product development. With over 6000 patents and state-of-the-art research facilities, labs and technology centers around the world, Henkel's commitment and investment in the future of the auto industry is unmatched.



**HENKEL'S TRUSTED BRANDS**

**HENKEL'S BRANDS ARE THE MOST WIDELY RECOGNIZED IN THE AUTOMOTIVE INDUSTRY**

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Acheson™ dry film lubricant weatherstrip coatings are recognized throughout the world for their processing and end-use performance. The coatings are widely used in automotive sealing systems and provide superior noise suppression.



Alodine® conversion coatings were developed to address special requirements posed by the chemical pretreatment of aluminum and other light metals. They can be used for a variety of metal pretreatment applications for fully painted surfaces including aluminum wheels and other vehicle components.



Aquence® is a water-based autodeposition coating technology that will coat tubular, assembled, or intricate design areas uniformly. In addition, it helps customers realize a 40% footprint reduction in their paint shop, reduce capital expenditures, and paint shop complexity while decreasing energy consumption, eliminating heavy metal sludge, and improving inside-out corrosion performance.

# HENKEL'S TRUSTED BRANDS



Henkel's best-in-class Bonderite® products improve the paint adhesion and corrosion resistance of substrates in automotive assembly applications. Its leading edge nanoceramic technology is formulated for use on steel, zinc and aluminum surfaces.



Loctite®, one of Henkel's most recognized brands, provides adhesives, sealants and specialty chemicals primarily for the automotive components and powertrain industries. Our Loctite® brand threadlocking and thread sealing products are complemented by our market-leading instant bonding adhesives, liquid gasketing and impregnation product lines.



Henkel's full line of high-quality Multan® lubricants are available in a variety of chemistries for advanced metal removal and metal forming processes. Henkel metalworking fluids are based on a modular system. Use of the same patented emulsifier and corrosion inhibitor modules assure the best compatibility between metalworking and cleaning stages.



For improved paint adhesion, Henkel offers the high quality P3® product line, which includes products designed for every step of the metal pretreatment process. One of the latest additions to the P3® portfolio is the Neutracare® 3000 series: a demulsifying neutral cleaner enabling extended bath life times and thus reducing chemicals consumption and process cost.



When it comes to adhesives, sealants and coatings for the body shop, paint shop and trim shop, Henkel's Teroson® products are designed with efficiency, conservation value, and process optimization in mind to provide value. The Teroson® automotive body repair products allow vehicle body repairs, conservation and additional protection that add factory-quality finish to every job. In addition, Henkel offers a complete portfolio of NVH and structural solutions including Terocore® structural foams, Terokal® adhesives and Terophon® acoustic coatings for sound dampening. These products play a critical role in vehicle comfort and durability, while providing strength and safety for the road ahead.





## NVH-STRUCTURAL-SEALING SOLUTIONS FOR VEHICLE BODY ASSEMBLY

As the global market leader in NVH, structural and sealing solutions, Henkel provides innovative and advanced technologies, as well as comprehensive design and engineering support, to enable you to meet and exceed your performance requirements for body assembly applications, for today and tomorrow.

Our innovative sealing solutions, including Teroson®, Terostat® and Terolan® multifunctional automotive sealants, play a critical role in vehicle comfort and durability, while providing strength and safety.

Throughout the stamping, body shop, paint line, trim and assembly processes, our body assembly technologies deliver quality, consistency and integrity.

Vehicle body assembly solutions enable customers to achieve targets for vehicle weight reduction, economy of assembly and efficient use of floor space. Additional sustainable benefits include:

- Reduction in waste
- Decreased energy usage and labor
- Increased productivity

### Structural Solutions

Henkel provides complete engineering, design, prototyping and manufacturing of Terocore® parts to meet the most of demanding automotive requirements.

Terocore® structural foams, adhesives and patches address:

- Vehicle stiffness, mass, reinforcement and energy management
- Added structural integrity to automobiles without increasing vehicle weight
- Unrivalled and enhanced durability, strength and NVH improvements



## NVH Solutions

Henkel's acoustics lab is equipped with state-of-the-art instrumentation for engineering, testing and analysis to validate noise reduction solutions for components, as well as full vehicles.

Our versatile Terophon® product line consists of pumpable materials and custom-designed parts that meet OEM requirements for both airborne and structure-borne noise control.

Terophon® customizable acoustic coatings contribute to:

- Quieter vehicles
- Superior adhesion that dampens and deadens noise created by direct impingement and vibration

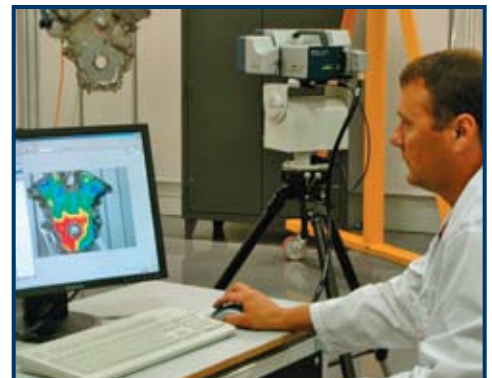
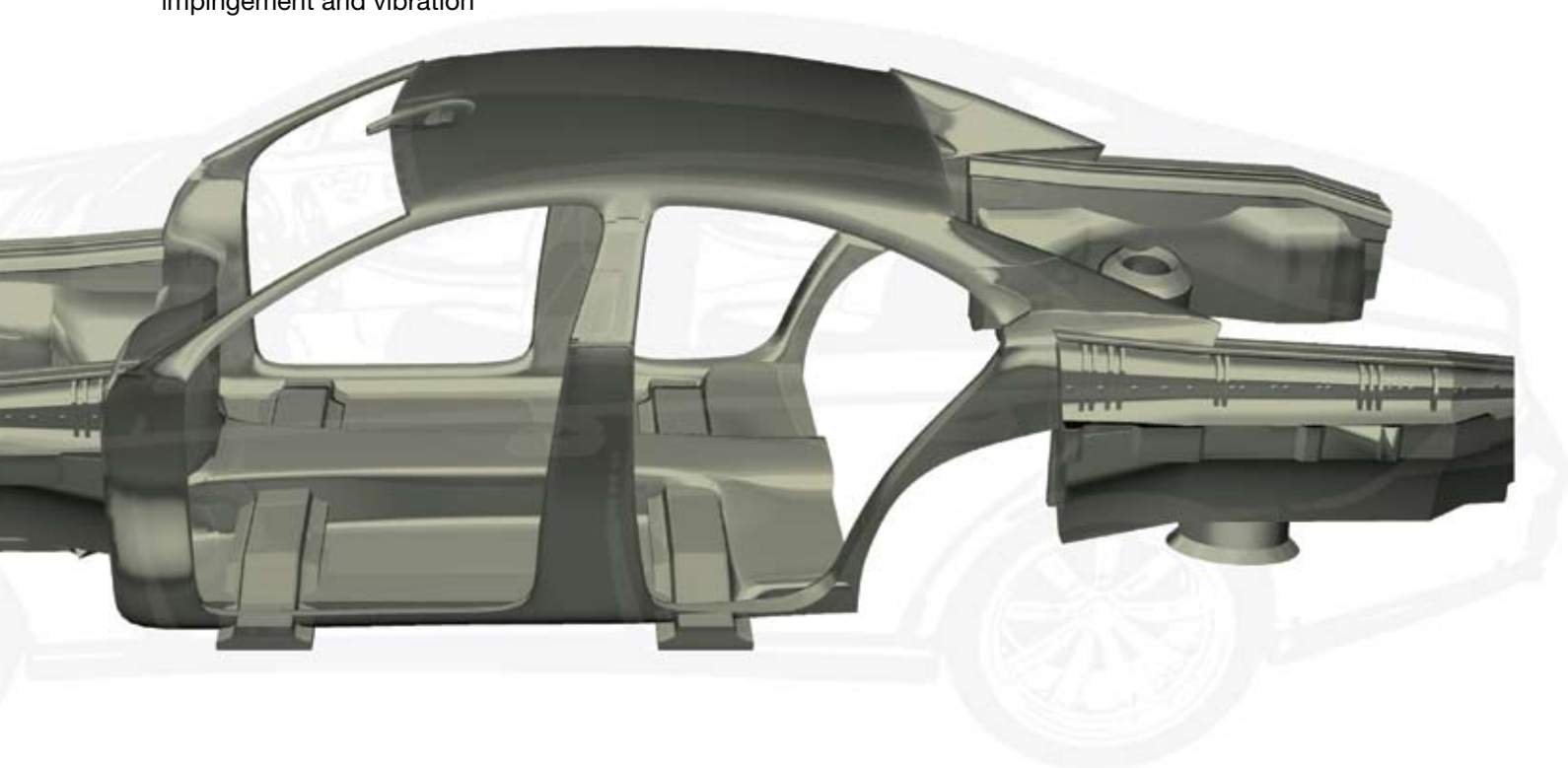


INNOVATIVE  
SOLUTIONS

Henkel's acoustics lab is equipped with:

- State-of-the-art engineering, testing, analysis and validation equipment
- F.E.A. modeling capabilities
- Proprietary FemSpire software

Henkel's comprehensive testing and engineering expertise result in unmatched performance.





## COMPLETE VEHICLE SUPPLIER – POWERTRAIN & UNDERHOOD

At Henkel, our comprehensive approach and innovative solutions to a vehicle's powertrain combines all underhood components with the traditional engine, transmission and axle assembly to help global automotive powertrain manufacturers achieve superior performance, durability and quality.

Henkel's broad technology portfolio consists of leading powertrain and underhood products in the areas of:

### **Loctite® Gasketing and Sealing**

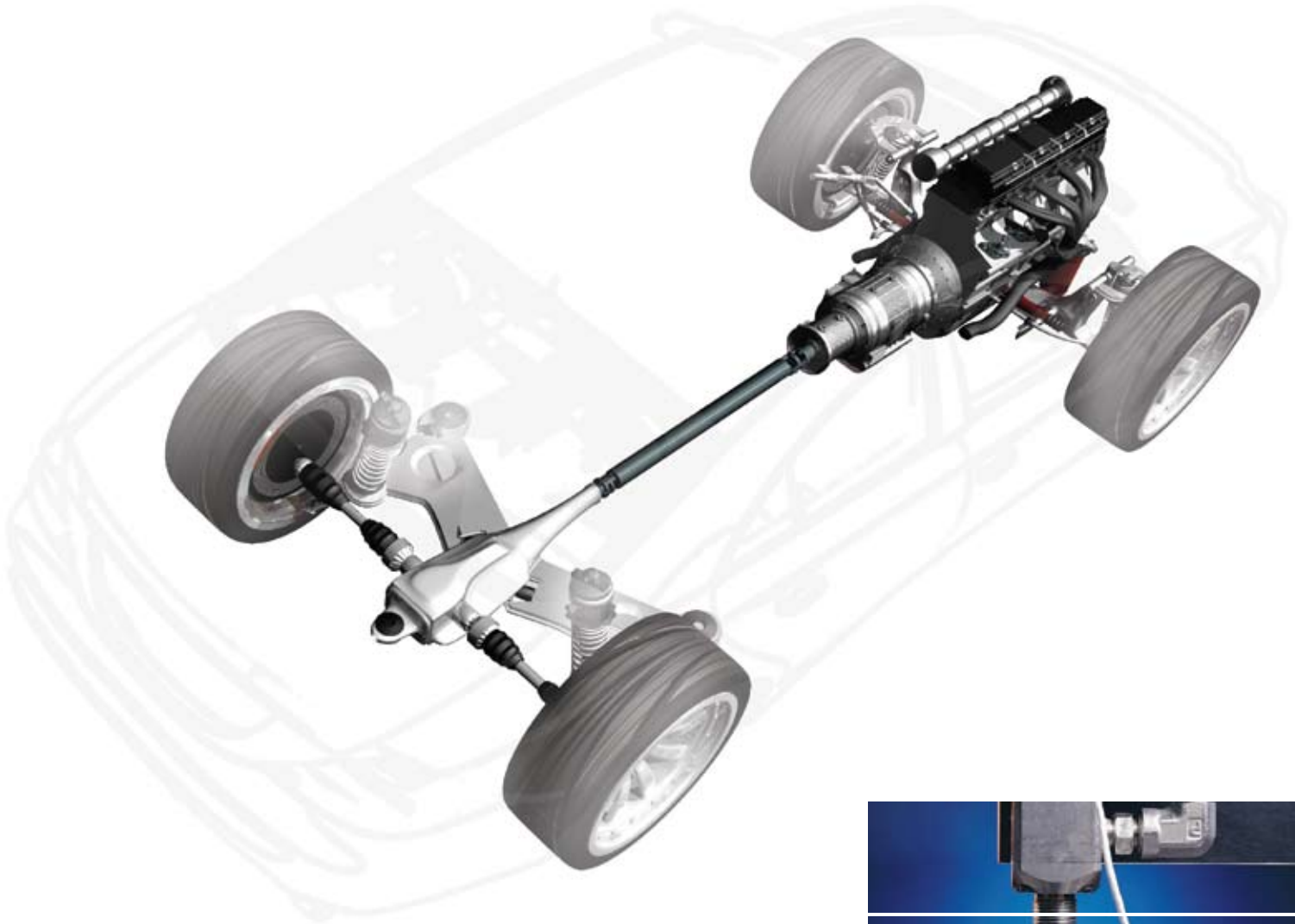
Loctite® liquid gasket, potting, and high performance adhesive technologies ensure leak-free sealing, improved performance, and management of evaporative hydrocarbon emissions on today's powertrain and on hybrid battery and fuel cell capable powertrains of the future. Henkel's Loctite® impregnation system employs heat-cure and anaerobic-cure technologies in sophisticated, fully automated processes for sealing die cast, powdered metal and other porosity-containing parts. Henkel combines both product and process design to achieve the highest quality and most efficient solution. Additional benefits include:

- Increased assembly efficiency
- Improved quality
- Customized solutions

### **Multan® and P3® Metalworking**

For more than 30 years, Henkel has been on the front line of developing best-in-class solutions for the metalworking industries. Henkel's full line of metalworking products consist of high quality metal removal and metal forming solutions for powertrain applications. Additional benefits include:

- Reduced thermal stress on components during crucial, high-speed machining processes
- Decreased tooling costs
- Reduced scrap

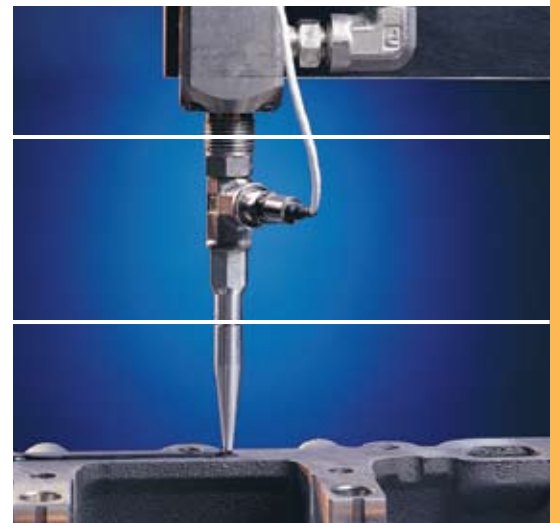


### Alodine® EC<sup>2</sup>™ ElectroCeramic Coating

Alodine® EC<sup>2</sup>™ ElectroCeramic Coating offers exceptional corrosion resistance to aluminum alloys, titanium alloys and aluminized metal or composite materials, while improving retention of lubricants on coated surfaces. This electrodeposited titanium oxide coating can replace complicated multistage operations such as anodizing, plating, pretreatment and painting, while exponentially improving part performance:

- Virtually eliminates corrosion
- Provides excellent wear resistance
- Absorbs oil for lubrication
- Low coefficient of friction
- Unaffected by heat, engine fluids and exhaust gasses

Henkel has the right technologies, processes and “performance-driven know-how” to service and support your powertrain needs.



INNOVATIVE  
SOLUTIONS

Engineering innovations for the road ahead. From technologies that are resistant to evaporative hydrocarbon emissions, to high performance, specialty adhesives and sealants for fuel cells and coatings for lithium ion batteries, Henkel has your future powertrain needs covered.



## TOTAL SOLUTIONS FROM THE GROUND UP

With trusted brands, proven product applications, and world-class technologies – Henkel delivers comprehensive, global solutions to our customers within the design, manufacturing, and finishing of automotive components for chassis, frame and wheel systems.

### Frame

Frame applications are critical to vehicle safety and performance. Henkel’s adhesives, coatings and lubricants contribute to:

- Stronger and more corrosion-resistant frame parts
- Lighter, stiffer, stronger and quieter parts to meet today’s demands for lighter weight and safer vehicles

For unsurpassed sustainable solutions that offer corrosion protection and paint adhesion, Henkel provides several coating and pretreatment options, including:

- Bonderite® pretreatments
- Aquence® water-based autodeposition coatings
- Alodine® chrome-free pretreatments



### Vehicle Dynamics

Ride and stability control are the benchmark of the safety, performance and quality perception of any vehicle. Henkel has the unique ability in today’s global market to bring value every step of the way.

Henkel revolutionized the final coating and assembly of struts and shocks using Aquence® coatings. This coating process improves quality while also saving time and money by reducing the number of steps in the coating process.

### INNOVATIVE SOLUTIONS

Henkel designed and manufactured the first state-of-the-art tire pressure monitor banding system, which saved thousands of hours of labor for this advanced safety requirement.

With Henkel's adhesives and anti-corrosion solutions for corner modules, customers benefit from:

- Significant cost and process efficiencies
- Improved performance and consistency
- Superior longevity in drum and disk brake assemblies

Henkel's advanced surface treatment technologies promote quality paint adhesion and superior corrosion protection on both steel and aluminum wheels. Henkel's Alodine® chrome-free conversion coating technology provides a superior protective seal between an aluminum wheel and various corrosion causing elements.

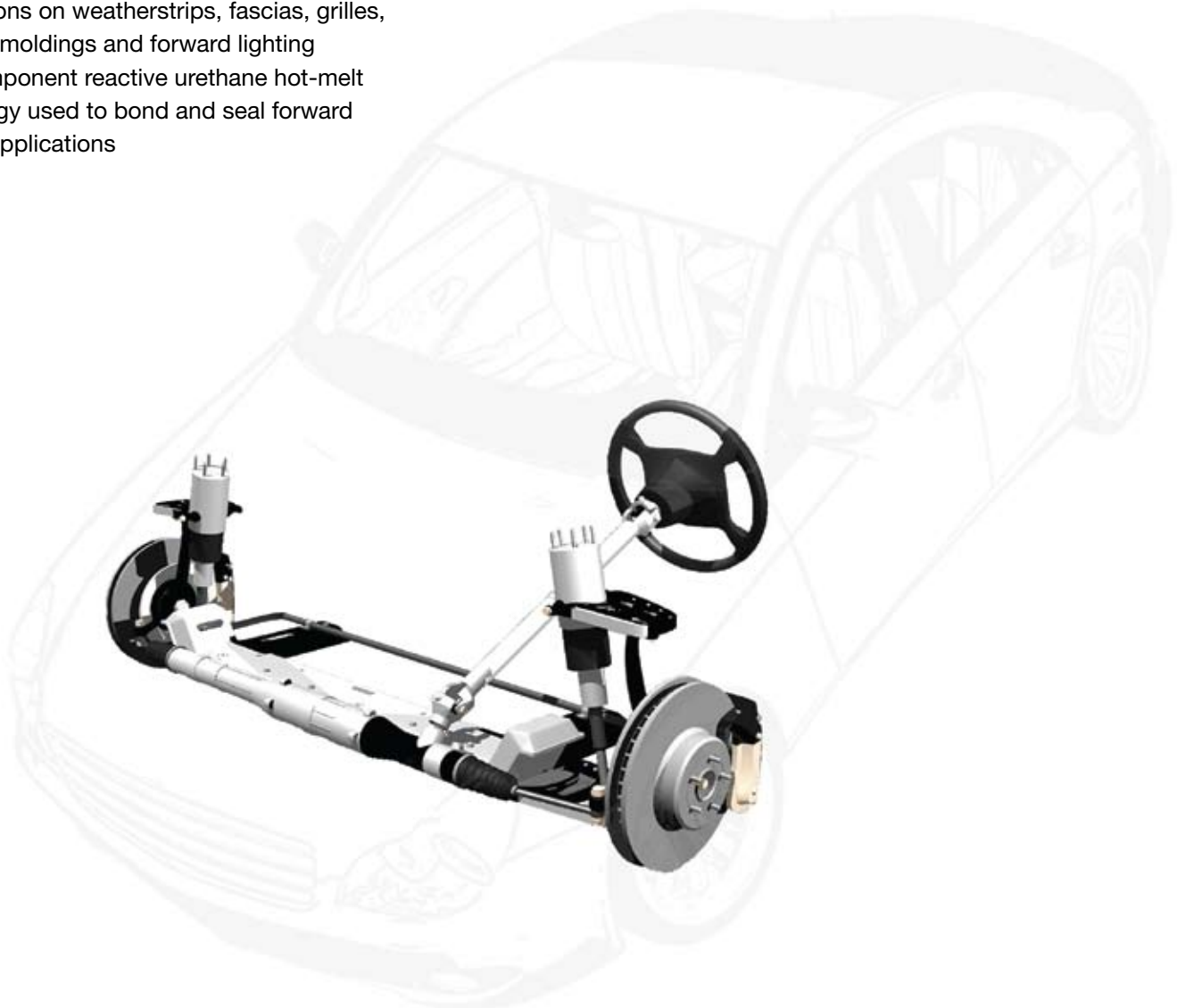
### Exterior Accessories

Henkel's innovative solutions also include a complete line of sealants, pretreatments, lubricants, coatings and adhesives for exterior accessories, including:

- Loctite® products for critical bonding applications on weatherstrips, fascias, grilles, spoilers, moldings and forward lighting
- One-component reactive urethane hot-melt technology used to bond and seal forward lighting applications

- Multan® metal forming lubricants for body panel stamping, including sunroofs
- Terocore® technologies for parts and foams that add structural reinforcement and reliability
- P3® cleaning systems for superior cleaning and adhesion on plastic substrates before painting
- Acheson™ Emralon® weatherstrip products are flexible, low friction coatings that are easily applied by spray onto EPDM or thermoplastic substrates

From bonding adhesives, cleaners, lubricants, metalworking coolants and surface treatments – Henkel has your frame and chassis needs covered.

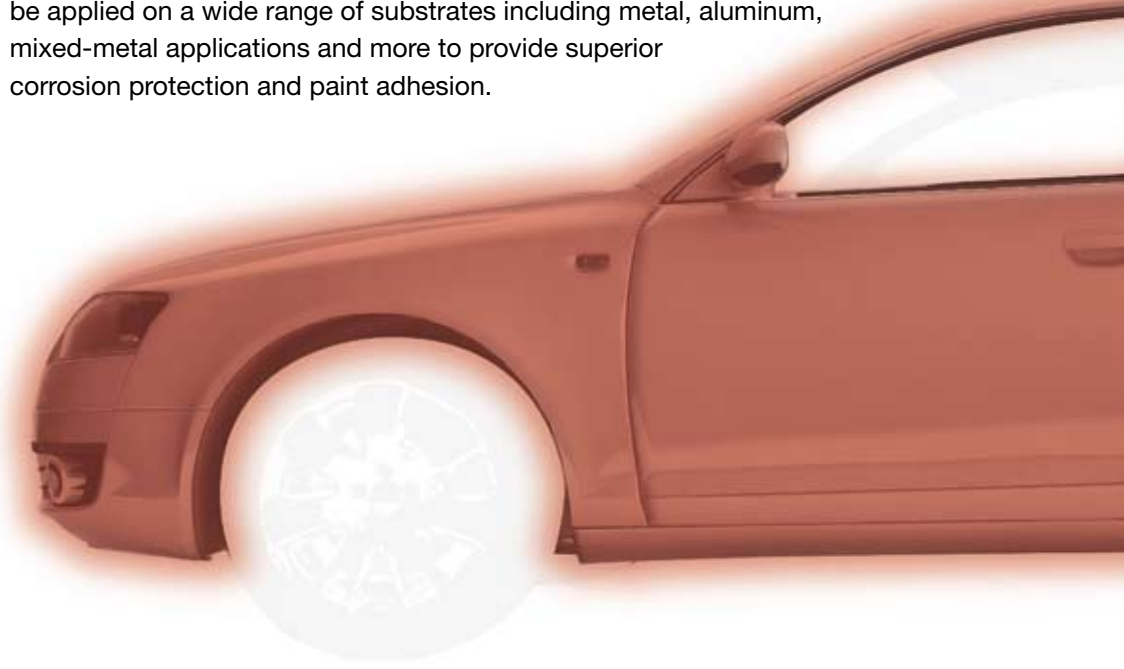




### COMPLETE VEHICLE SUPPLIER – TOTAL AUTOMOTIVE COATINGS

With high performance surface cleaners, conversion coatings and the next generation of coating solutions, Henkel's smart coatings solutions have set the industry standards for corrosion protection and paint adhesion.

Henkel brands are known throughout the automotive industry for their quality, durability and performance. Our automotive coating solutions can be applied to all automotive market segments including chassis, body assembly, powertrain, and interior and exterior accessories. In addition, Henkel's coating solutions can be applied on a wide range of substrates including metal, aluminum, mixed-metal applications and more to provide superior corrosion protection and paint adhesion.



INNOVATIVE SOLUTIONS

Henkel developed TecTalis™, the automotive industry's first phosphate-free conversion coating. This new paint pretreatment option not only uses less energy, making it better for the environment, but lowers manufacturing costs and improves productivity by eliminating steps in the pretreatment process.

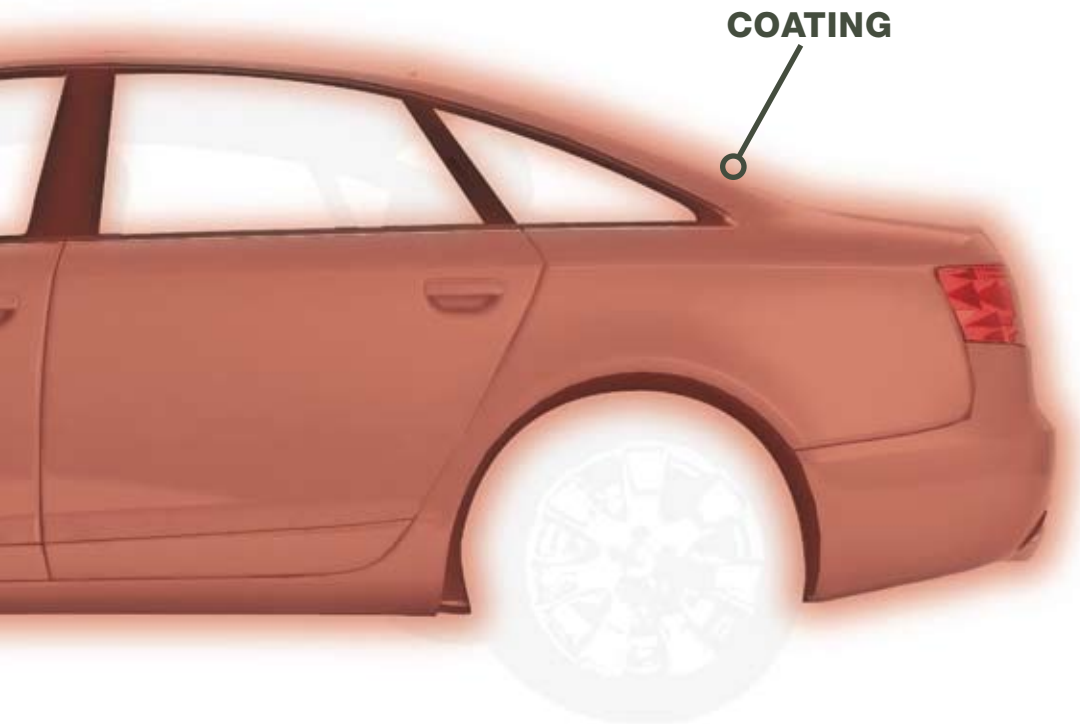
# TOTAL AUTOMOTIVE COATINGS

Our cutting-edge automotive coatings solutions meet and exceed today's environmental, industrial and governmental regulations and requirements, including:

- Aquence® next generation water-based autodeposition coating is used frequently to coat frames and chassis. With Aquence®, customers have been able to realize a 40% footprint reduction in their paint shop, reduce capital expenditures and paint shop complexity while decreasing energy consumption, eliminating heavy metal sludge, and improving inside-out corrosion performance.

- Alodine® EC<sup>2</sup>™ is formed through electrodeposition of titanium oxides. This tough, flexible coating provides exceptional chemical, corrosion, temperature and abrasion resistance at process costs lower than traditional coating methods.
- TecTalis™ is the automotive industry's first non-phosphate conversion coating process for metal pretreatment that streamlines processes, reduces costs and environmental impact.

Henkel is dedicated to developing superior coating technologies for the automotive industry. Backed by our team of technical experts, integrated equipment and process solutions as well as chemical management support, Henkel is able to formulate innovative technologies that enable customers to achieve superior results for today and tomorrow.





Henkel's dedication to sustainability resulted in ecommitment, a grassroots approach to help build sustainable thinking and practices into daily work routines.

### INNOVATION DRIVES SUSTAINABILITY. SUSTAINABILITY MEANS FUTURE VIABILITY.

Henkel offers sustainable technologies and solutions that benefit customers by reducing costs while achieving superior quality and productivity. As environmental sustainability becomes a greater corporate responsibility, Henkel's products help our customers deliver on the legal, social and financial requirements of their customers and the environment.

Throughout its history, Henkel and its employees have demonstrated a commitment to protecting the workplace and the environment while creating technologies that achieve world-class quality and value. From research and development techniques to the selection of raw materials and considerations for logistics, use and disposal, Henkel continuously improves the cost-effectiveness, safety and environmental impact of its products. Henkel's safe, functional products and processes unite customer benefits with ecological progress.

#### Benefits

Henkel understands that only economically successful companies can contribute to effective environmental protection and social progress. That's why Henkel delivers highly effective products and solutions that help reduce costs and improve quality, while remaining ecologically responsible.

- By reducing necessary energy, disposal, packaging and regulation costs, Henkel's innovative products help customers eliminate waste and meet their business and production goals.
- By reducing packaging material, transportation, distribution and storage needs, Henkel provides customers greater efficiency while helping them remain environmentally sustainable.
- Henkel's ecologically sustainable products help customers comply with environmental regulations.
- A global, standardized sustainability program ensures the safety of every Henkel product.
- Innovative products help customers meet the sustainability requirements of the market.



[www.naturallyhenkel.com](http://www.naturallyhenkel.com)



INNOVATIVE SOLUTIONS

In 2007, Henkel was honored as one of the "Global 100: Most Sustainable Corporations in the World" by Corporate Knights, Inc. with Innovest Strategic Value Advisors, Inc., Global 100



## Henkel – Your worldwide partner

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