

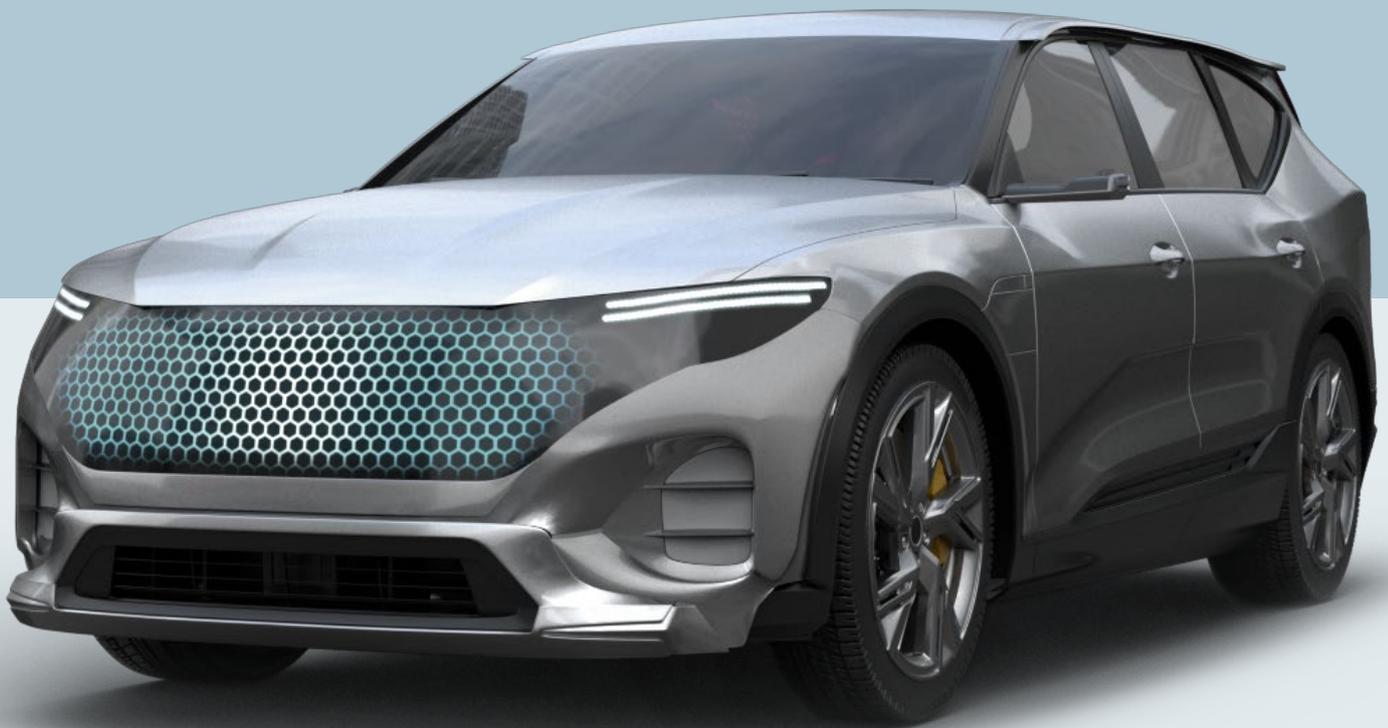
LOCTITE®

TECHNOMELT®

TEROSON®

HENKEL SOLUTIONS FOR

**AUTOMOTIVE
EXTERIOR
COMPONENTS**



Henkel Adhesive Technologies



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AT HENKEL, WE MAKE IT HAPPEN WITH SOLUTIONS THAT *MAKE A* DIFFERENCE



As the leader in automotive adhesives, sealants and surface treatment technologies, Henkel is dedicated to creating exceptional solutions that address our customers' challenges, specifications, unlock design creativity and flexibility, enable manufacturing efficiency, and help them achieve their sustainability goals.

Every day, our experienced global engineering team collaborates with customers to understand their challenges, define custom solutions, and deliver world-class adhesive technologies for the next generation of vehicle exterior components. With nearly 62% of consumers ranking exteriors as a major factor affecting their next vehicle purchase decision, manufacturers appreciate Henkel's ability to deliver on their bold ambitions.*

*Source: Design News, "Auto Interior is the New Exterior"

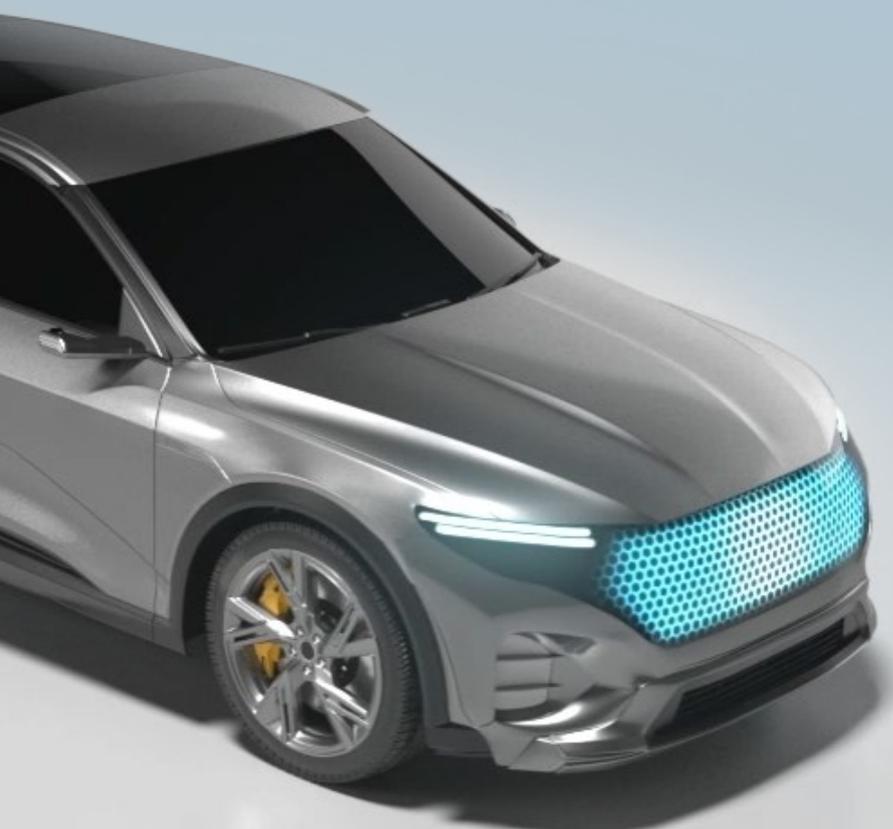
OUR SOLUTIONS

- › Adhesives, sealants and matrix resins for layered smart face and tailgate configurations
- › Structural and elastic bonding solutions for metal and plastic components
- › Coatings and adhesives for weatherstrip sealing
- › Sustainable metal pretreatments for corrosion protection
- › Primers and adhesives for glass bonding

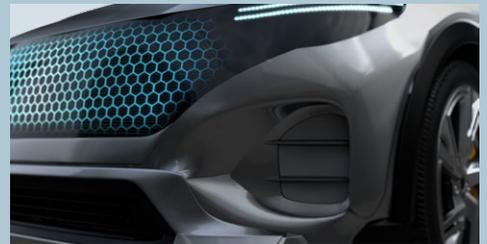
MARKET TRENDS



ADDRESSING TRENDS IN AUTOMOTIVE **EXTERIOR** DESIGN WITH HENKEL SOLUTIONS



Design Variability & Lightweighting



Multi-Functional Modules



Safety



Cost & Process Optimization



Sustainability & Circularity

IMPLICATIONS



Design Flexibility

New and innovative exterior fascia designs are stretching the limitations of traditional materials and joining technologies.



Brand Distinction

Greater emphasis on exterior design uniqueness and broader integration of brand emblems requires new approaches for exterior fascia.



Improve Functionality of Driving Assistances

Seamless integration of ADAS sensors into exterior modules.



Vehicle Performance

To improve vehicle performance and extend driving range, component manufacturers are being pushed to optimize aerodynamics and eliminate excess weight.



Environmental Standards

Expanded regulatory requirements for circularity and end-of-life recyclability, as well as worker safety, are influencing manufacturers' material choices.



Manufacturing Efficiency

Improved production throughput and material reliability along with decreased downtime and warranty claims are critical to profitability and customer satisfaction.

SOLUTIONS

Henkel collaborates with our customers early in the component design process to understand their challenges and recommend solutions through:

Solutions for Circularity

Adhesives that can bond recycled plastics, are recycling-compatible with plastic substrates, and debonding solutions for adhesively bonded plastics.

A Broad Technology Portfolio

Our comprehensive portfolio of world-class products – paired with our global innovation center resources – help us satisfy each customer's unique needs.

Process Expertise

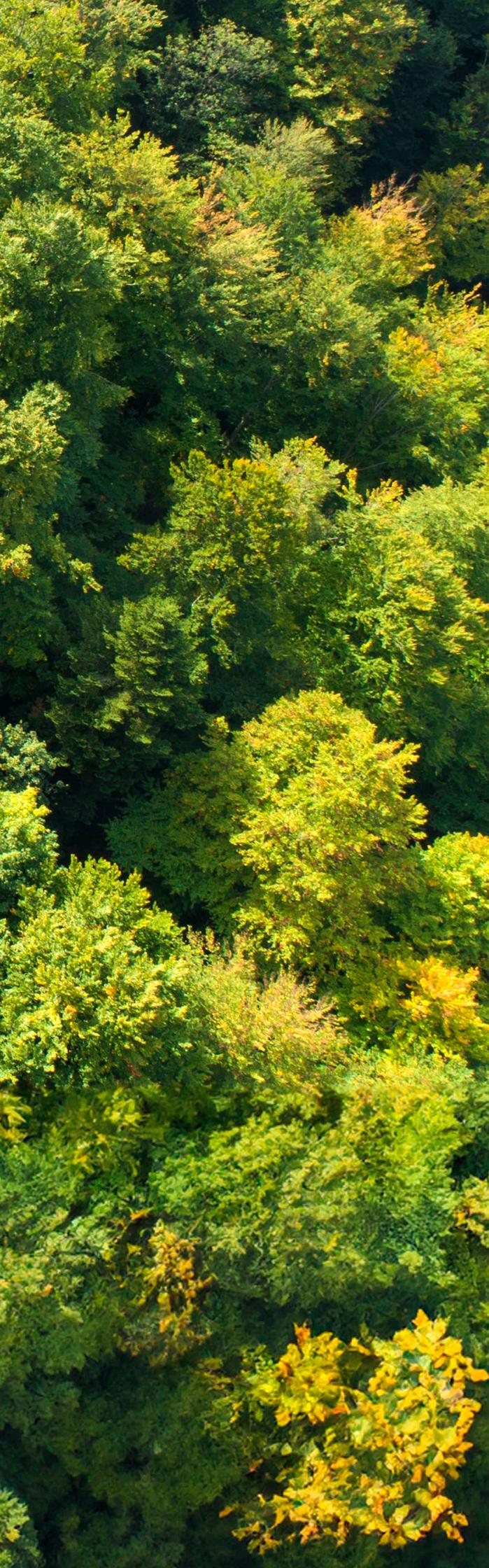
With extensive industrial manufacturing experience across a wide range of disciplines, our regional technical teams offer proactive, professional process support.

Equipment

We offer mixing, dispensing, curing and monitoring equipment as well as process automation services to ensure the very best outcomes for our customers.

SUSTAINABILITY SPOTLIGHT

RECYCLING & *CIRCULARITY*



As part of Henkel's commitment to sustainability, we are focused on helping our customers achieve compliance with mandatory recycling regulations.

We support circularity for both brand-new components and components that have reached the end of their useful life. That means offering manufacturers guidance regarding plastic bonding techniques, creating adhesives capable of bonding recycled plastics, and helping create components that can be economically recycled.

OVERVIEW

OUR SOLUTIONS



EXTERIOR MODULES

- › Front-end Modules
- › Smart Faces
- › Bumpers
- › Hoods
- › Tailgate & Trunk Lids
- › Spoilers
- › Wheel Arch



WEATHERSTRIPPING & SEALING SYSTEMS

- › Door Profiles
- › Dynamic Body Profiles
- › Glass Run Channels
- › Sunroof Profiles
- › Outer Belts
- › Special Applications



ROOF SYSTEMS

- › Retractable Roofs (Hard & Soft)
- › Moonroofs
- › Roof Panels
- › Roof Racks

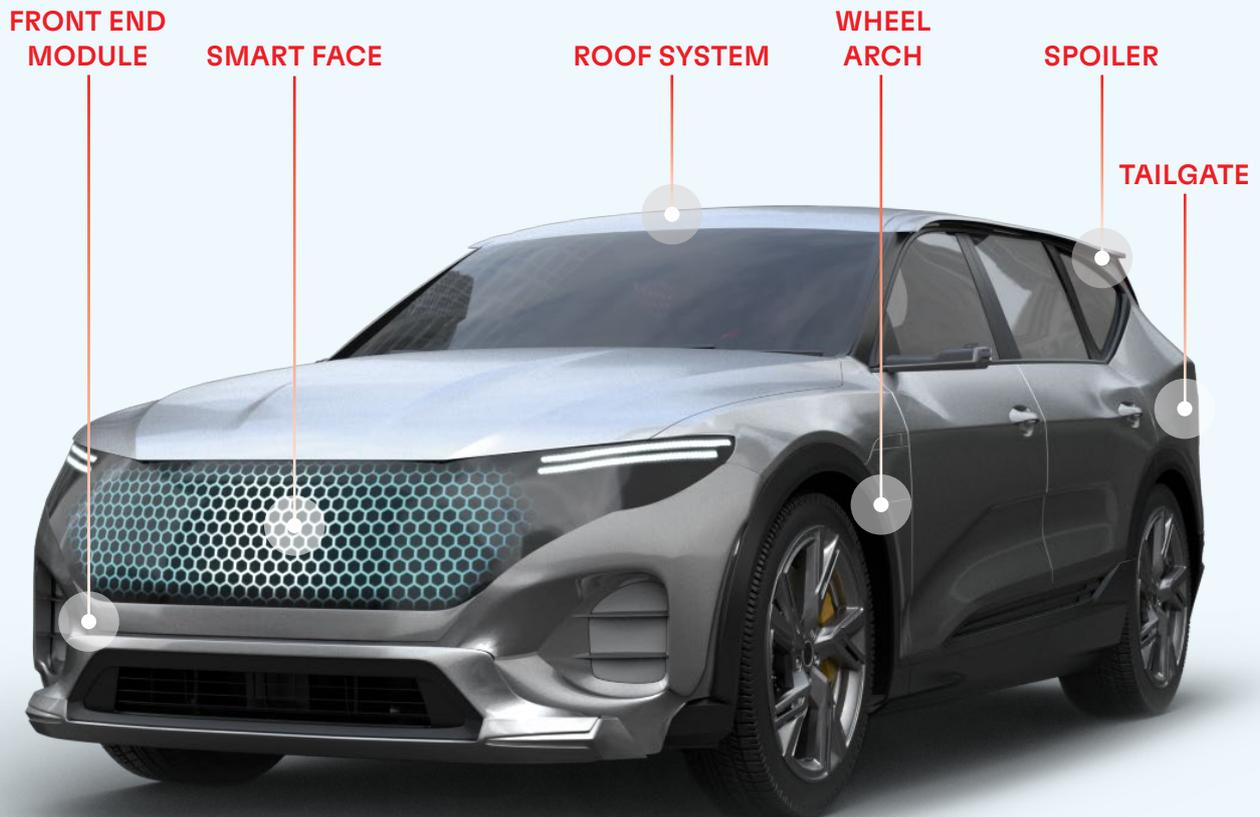
OUR SOLUTIONS FOR

EXTERIOR MODULES

As automotive manufacturers introduce more modern, streamlined, and multi-functional exterior design features, they are transitioning to modular exterior components. Modular designs can incorporate multiple functions within a single finished component.

Doing so requires layering various components together using lightweight, flexible joining techniques that are compatible with the manufacturer's preferred substrates – most commonly plastics.

Henkel adhesives are an ideal match for bonding these complex components into a unified, durable, light weight modular assembly. The most prominent exterior modules are the smart face and the tailgate.



EXTERIOR MODULES

SMART FACE

The front fascia of modern vehicles has become a focal point of innovation, with the front grille, headlights, sensors, and other components being equipped with advanced technology and driver assistance features. Particularly for electric vehicles, this area is transforming into a “**smart face**” assembly that unites numerous features into what appears to be a single component. In the space formerly taken by the grille, designers are integrating smart panels with dramatic visual effects, including signature lighting and branding elements. Meanwhile, sensors and cameras are integrated almost invisibly, preserving the aesthetics without compromising signal transparency. **With smart face assemblies, the design possibilities are virtually endless.**



APPLICATIONS

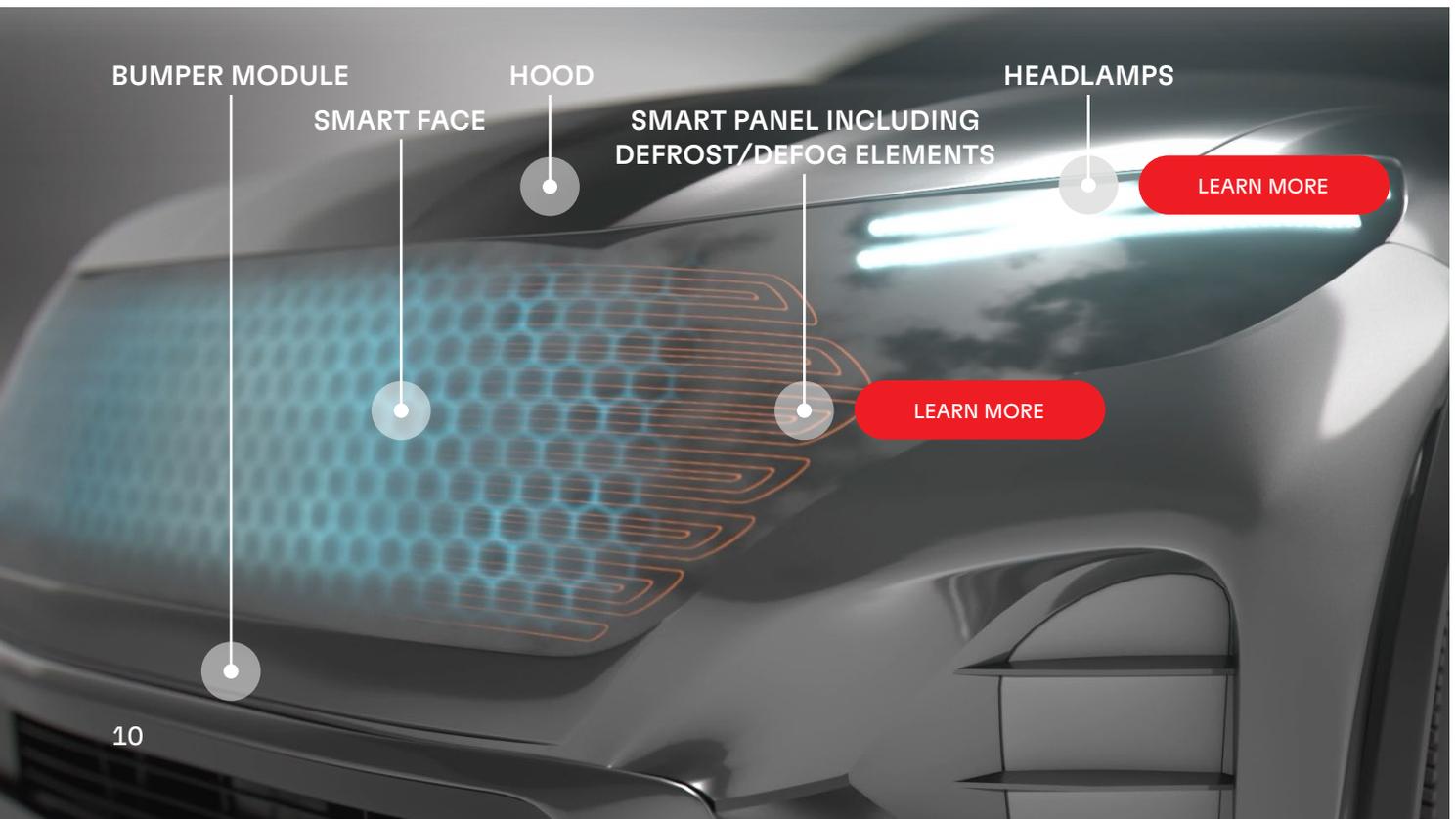
- › Part bonding
- › Printed electronics
- › Process support

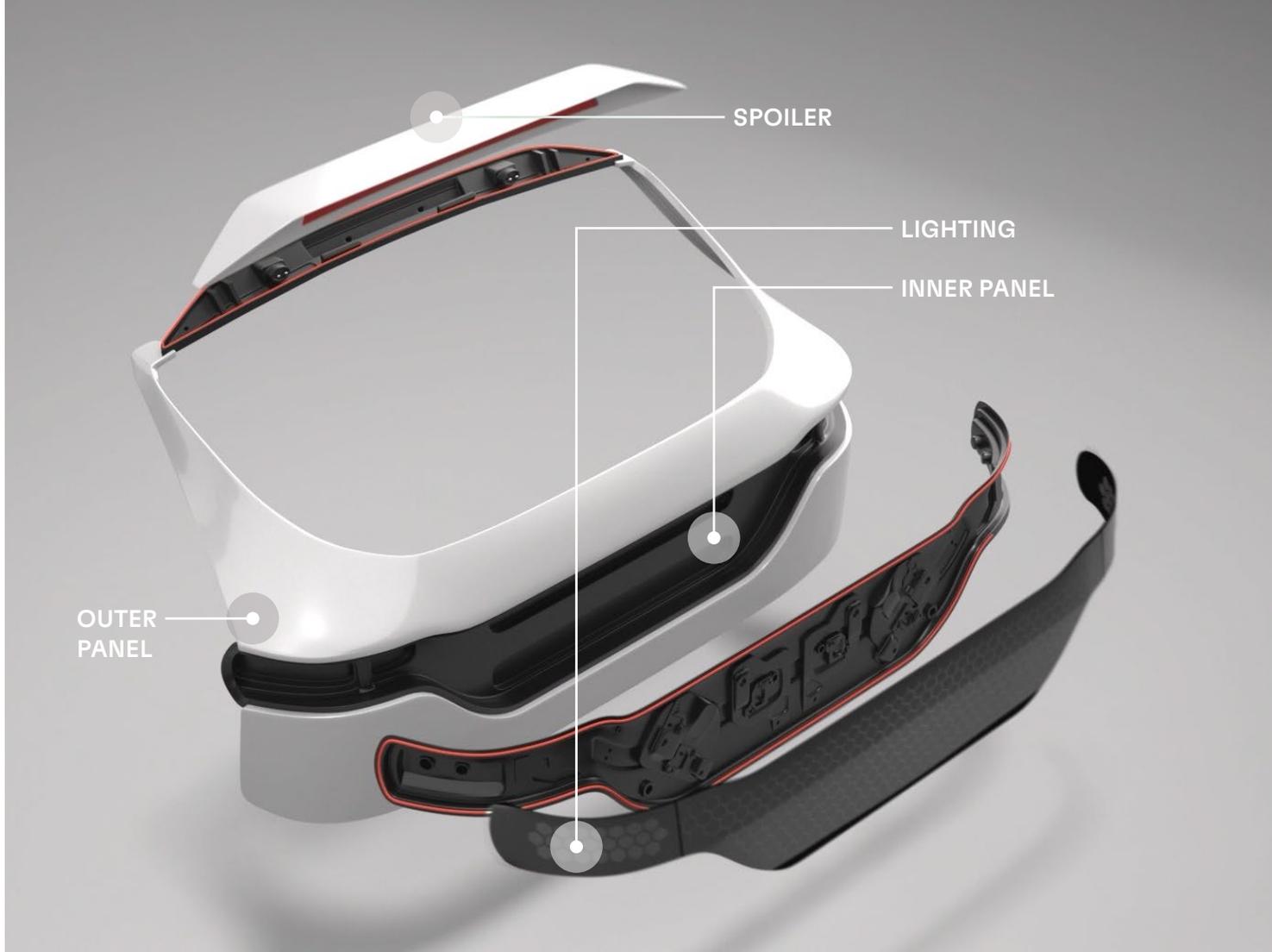
COMPONENTS

- › Front-end module
- › Smart panel with defrost/defog capabilities
- › Headlamps
- › Decorative lighting panel

SUBSTRATES

- › Polypropylene (PP Talc., PPGF)
- › Polycarbonate
- › Recycled PP/PC/PE
- › PC/ABS or PC/PET





EXTERIOR MODULES

TAILGATE

As with the smart face, vehicle tailgates are also being transformed through modern materials and manufacturing techniques. Metal tailgates are being replaced by thermoplastic assemblies that reduce weight significantly while offering far superior design opportunities.

APPLICATIONS

- › Elastic bonding
- › Structural bonding
- › Glass bonding
- › Process support

COMPONENTS

- › Inner panel
- › Outer panel (Class A)
- › Spoiler
- › Light bar or lit panel
- › Taillights
- › Glass
- › Sensors

SUBSTRATES

- › Polypropylene (PP Talc)
- › Polypropylene long glass fiber (PP LGF)
- › Thermoset sheet molding compound (SMC)
- › Polycarbonate
- › Recycled PP/PC/PE
- › PP, PC/ABS or PC/PET

EXTERIOR MODULES

ADDITIONAL MODULES

Beyond the smart face and tailgate modules, a variety of other modules are used to simplify vehicle assembly or minimize complexity. While not as visible as the more prominent modules, these additional modules are no less important when it comes to durability, structural strength, and customer satisfaction.



EXTERIOR MODULES

KEY PRODUCTS

LOCTITE UK 2073 – 2173

HIGH-PERFORMANCE 2K POLYURETHANE ADHESIVE

LEARN MORE

- › Combines elasticity with strong bonding capability
- › Controlled open time to suit assembly process needs
- › Cohesive build-up strength adjustable with heat cure
- › No primer required on most polyolefins
- › Especially suited to low surface energy plastics

LOCTITE UK 2083 – 2183

NOW AVAILABLE

- › Reliable adhesion to plastics with recycled content (PP, PC, etc.)
- › Improved curing speed
- › Improved sag resistance
- › For bonding of PCR-rPP
- › Improved fogging

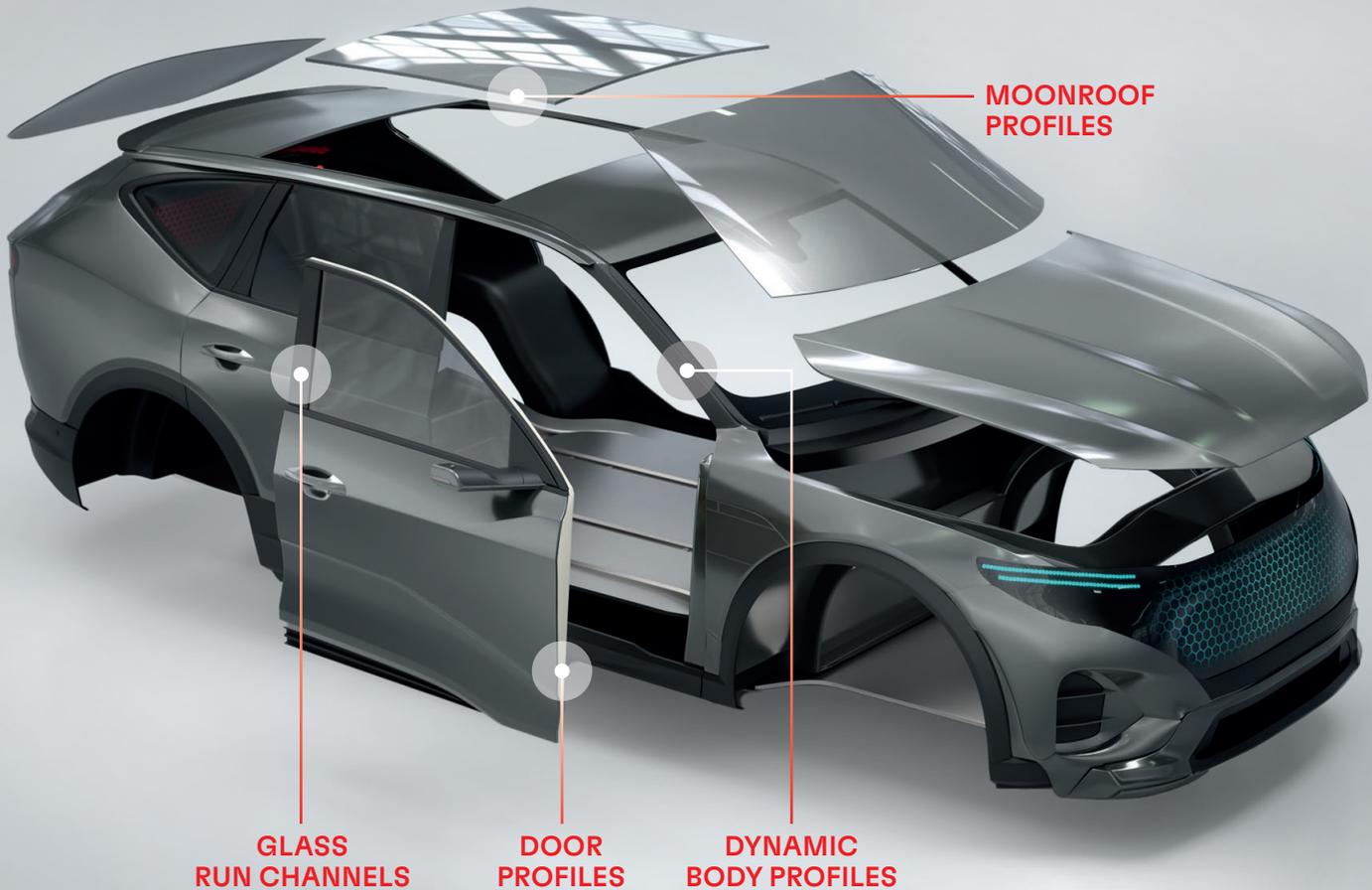
EXTERIOR MODULES

MODULE ASSEMBLY PORTFOLIO EXAMPLES

PRODUCT	FEATURE
LOCTITE UK 2043	2K Polyurethane Adhesive. Excellent adhesion to low surface-energy types, including PP and PC
LOCTITE UK 2143	
LOCTITE AA 3560	2K Methacrylate Adhesives. High strength structural bonding. Fast fixture, excellent adhesion and damp heat resistance to both metal and plastic substrates
LOCTITE AA 3568	

APPLICABLE SUBSTRATES

- › PP-Talc
- › PP-LGF
- › PC-ABS
- › PC-PET
- › PC
- › e-Coated Metal



OUR SOLUTIONS FOR WEATHERSTRIPPING & **SEALING**

Henkel's portfolio of slip coatings for weatherstrip applications offers numerous benefits. The one-component coatings are fast and easy to apply, provide improved adhesion, reduce waste, and increase passenger comfort by decreasing road and wind noise in the cabin.

With product offerings that cover a range of requirements and application locations, Henkel's comprehensive portfolio of weatherstrip solutions can optimize production, purchasing and warehousing. The weatherstripping portfolio includes primers, smooth and structured coatings, cross-linkers, and bonding agents. Since many of our weatherstrip products are one-component, water-based, VOC-free, low-temperature activated and UV traceable, manufacturers can reap additional sustainability, energy usage, employee safety, and customer comfort benefits. All LOCTITE TW products are formulated without PFAS ingredients.



DOOR PROFILES

- › UV resistance
- › Excellent aesthetics
- › Improves ice release
- › Flexibility

GLASS RUN CHANNELS

- › Abrasion resistance
- › Reduced noise

MOONROOF PROFILES

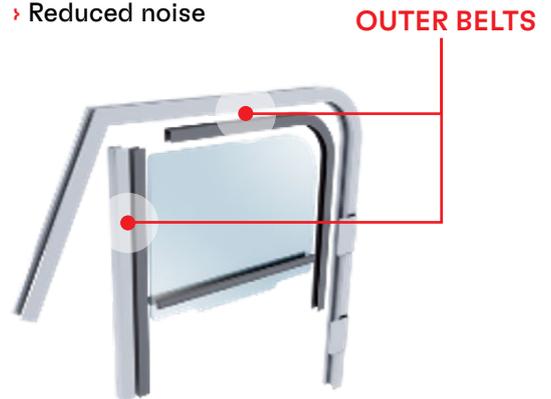
- › Water repellent
- › Abrasion resistance
- › Reduced noise

DYNAMIC BODY PROFILES

- › Improves ice release
- › Abrasion resistant
- › Flexibility
- › Reduced noise

OUTER BELTS

- › UV resistance
- › Improves ice release



WEATHERSTRIP PORTFOLIO EXAMPLES

PRODUCT	FEATURE
LOCTITE TW 2100 / LOCTITE TW 422	Smooth, low noise level and multi purpose 2K
LOCTITE TW 2200 / LOCTITE TW 422	Rough, special for convertible models and best in class 2K rough coating
LOCTITE TW 1100	Smooth, low noise level and multi purpose 1K
LOCTITE TW 1101	Smooth, best in class low noise level and high abrasion
LOCTITE TW 1200	Structured, low noise level and highest abrasion resistant
LOCTITE TW 422	Crosslinker, water based

OUR SOLUTIONS FOR

ROOF SYSTEMS

With industry-leading expertise in metal stamping and highly capable products ranging from lubricants and cleaners to surface treatments, adhesives and sealers, Henkel is well positioned to support roof system manufacturing and assembly.

Henkel's complete solutions offer manufacturers a one-stop shop for metal manufacturing and joining, and our high-performance bonding technologies support glass bonding, rubber bonding and more.

Many of our weatherstrip products are one-component, water-based, VOC-free, low-temperature activated and UV traceable.

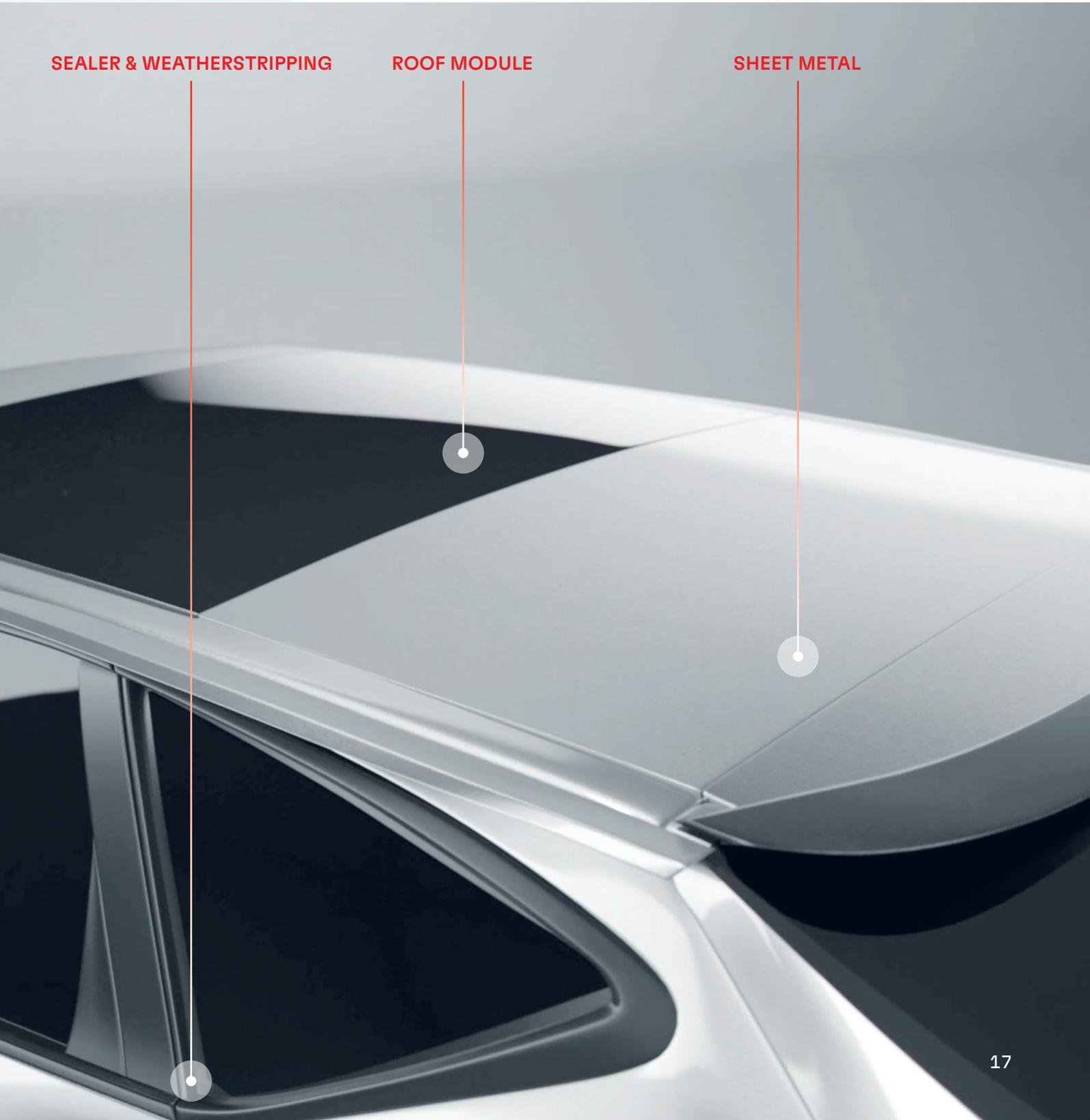
MOONROOF PROFILES



SEALER & WEATHERSTRIPPING

ROOF MODULE

SHEET METAL





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