

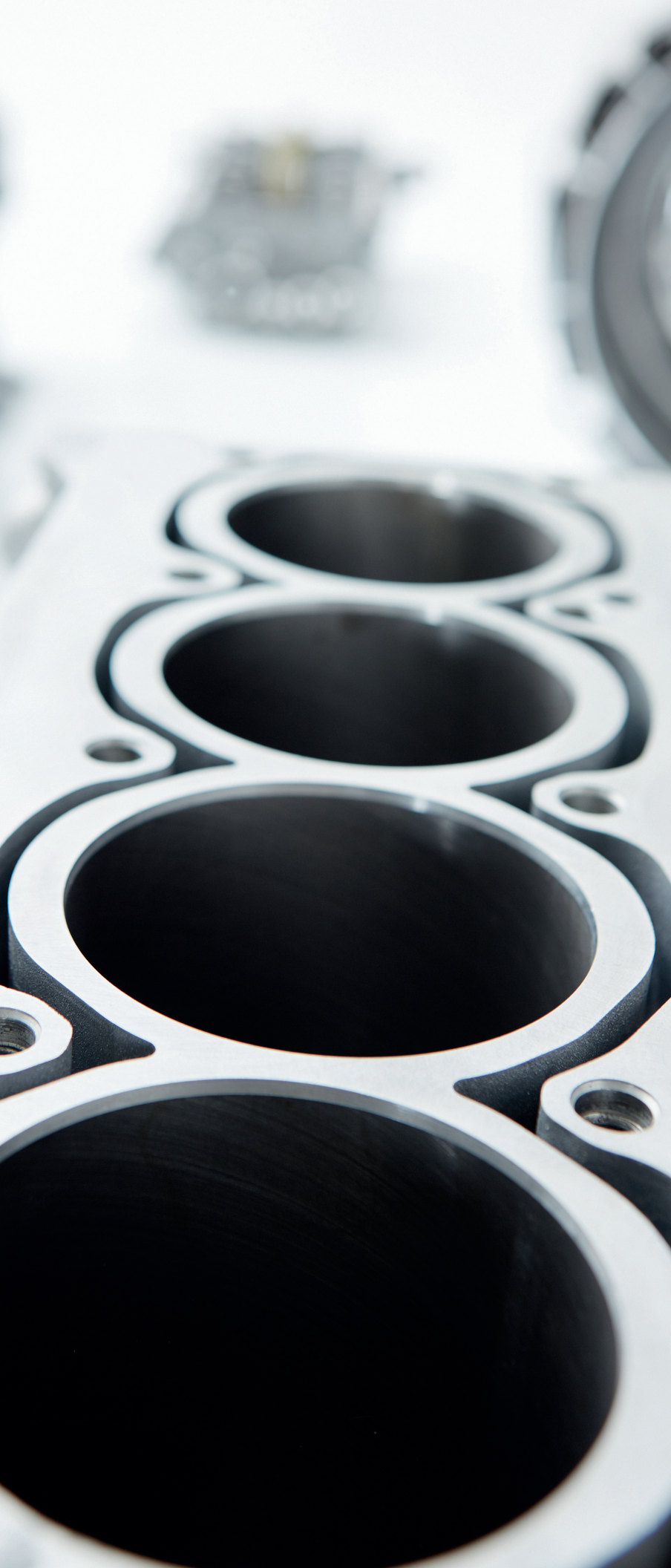
LOCTITE®

THE SEAL OF QUALITY

Reliable Sealing Results from High-Quality
Impregnation Products and Services



Henkel Adhesive Technologies



*When high-quality metal and electronic parts are required, **Henkel is the ideal partner for sealing solutions along the entire automotive value chain.***

SUPERIOR SEALING SOLUTIONS FOR AUTOMOTIVE PARTS



What the industry needs

High-quality metal and electronic parts play a vital role in the automotive industry. The reliability and safety needs of today's automotive industry require all parts to be fully sealed against fluids, gases and other external influences. At the same time, the automotive industry is confronted with the increasingly demanding challenges of reducing costs, increasing productivity and complying with environmental regulations.

How we can help

As a world-leading supplier of porosity-sealing products, we can meet your reliability needs by sealing die-cast metal parts and electronic components against leakage. Our sealing solutions can be provided from close-by impregnation service centers, all of which provide comprehensive evaluations and technical support to meet your sealing needs.

How you benefit



Process optimization

- Improved quality and better performance thanks to a best-in-class product portfolio
- Service center affiliates available to assist across North America
- Exceptional sealing quality thanks to clean, operationally efficient facilities



Cost reduction

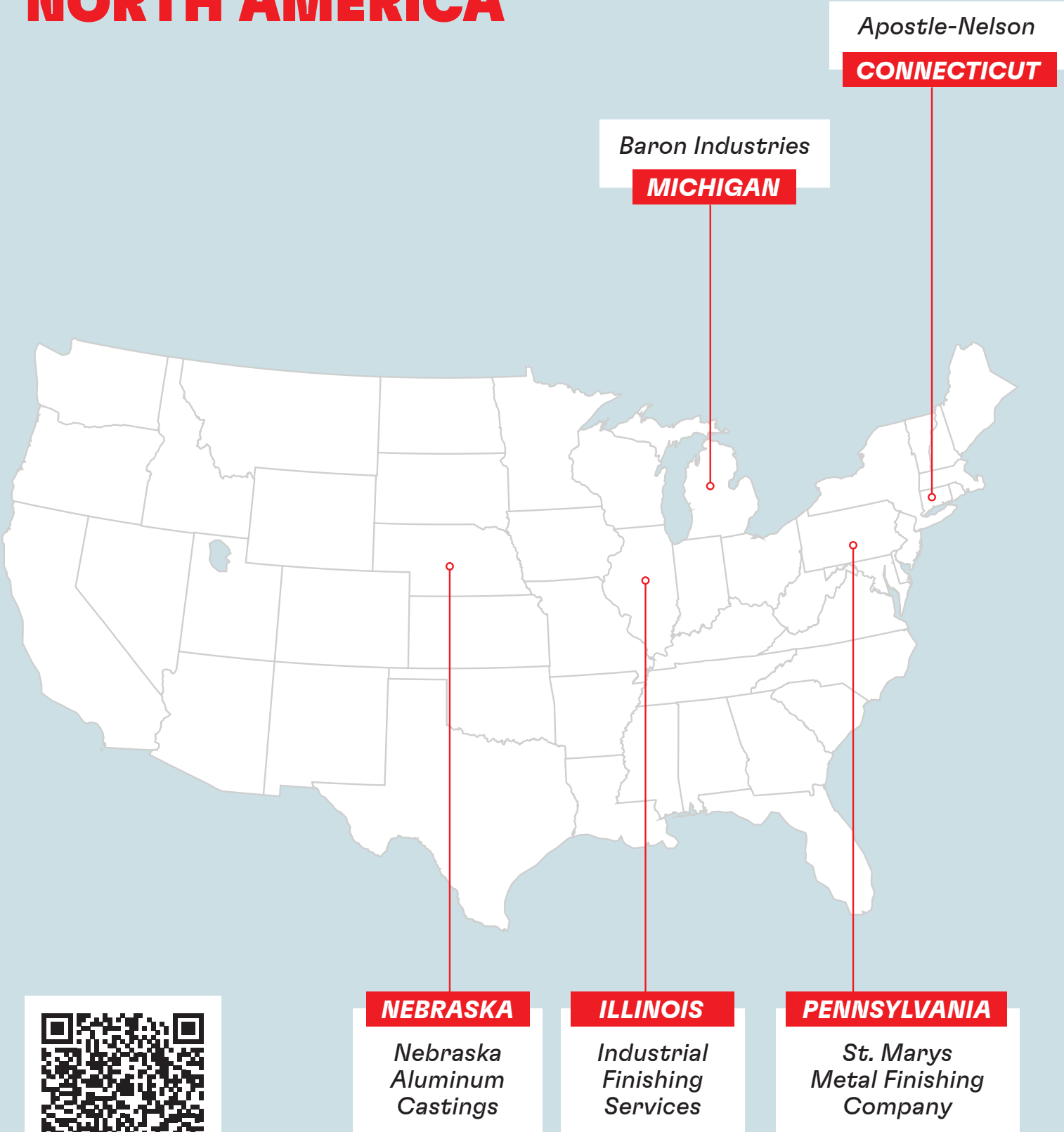
Lower overall costs by reducing scrappage due to porosities and other structural defects

Where our solutions make a difference

At Henkel our mission is to enable our customers to tackle industry challenges with innovative product solutions. Our impregnation products are designed to provide superior quality for sealing porosities and leak paths in your parts and components. To achieve the highest reliability and quality assurance, we ensure our products are designed to be extremely versatile. They can withstand harsh environments while offering excellent resistance to attack from oils, gases, thermal cycling and other external influences.

Impregnation products also help you achieve your cost reduction goals by enabling your operations to run more efficiently, with increased quality accompanying improved productivity. Boasting a global presence at major OEMs and Tier 1 suppliers, Henkel is your ideal partner for sealing solutions along the entire value chain.

SERVICE CENTER AFFILIATES ACROSS NORTH AMERICA



DISTRIBUTOR LOCATOR

Vacuum Impregnation Products and Services

HOW YOUR METAL PARTS BENEFIT

Added value of impregnation

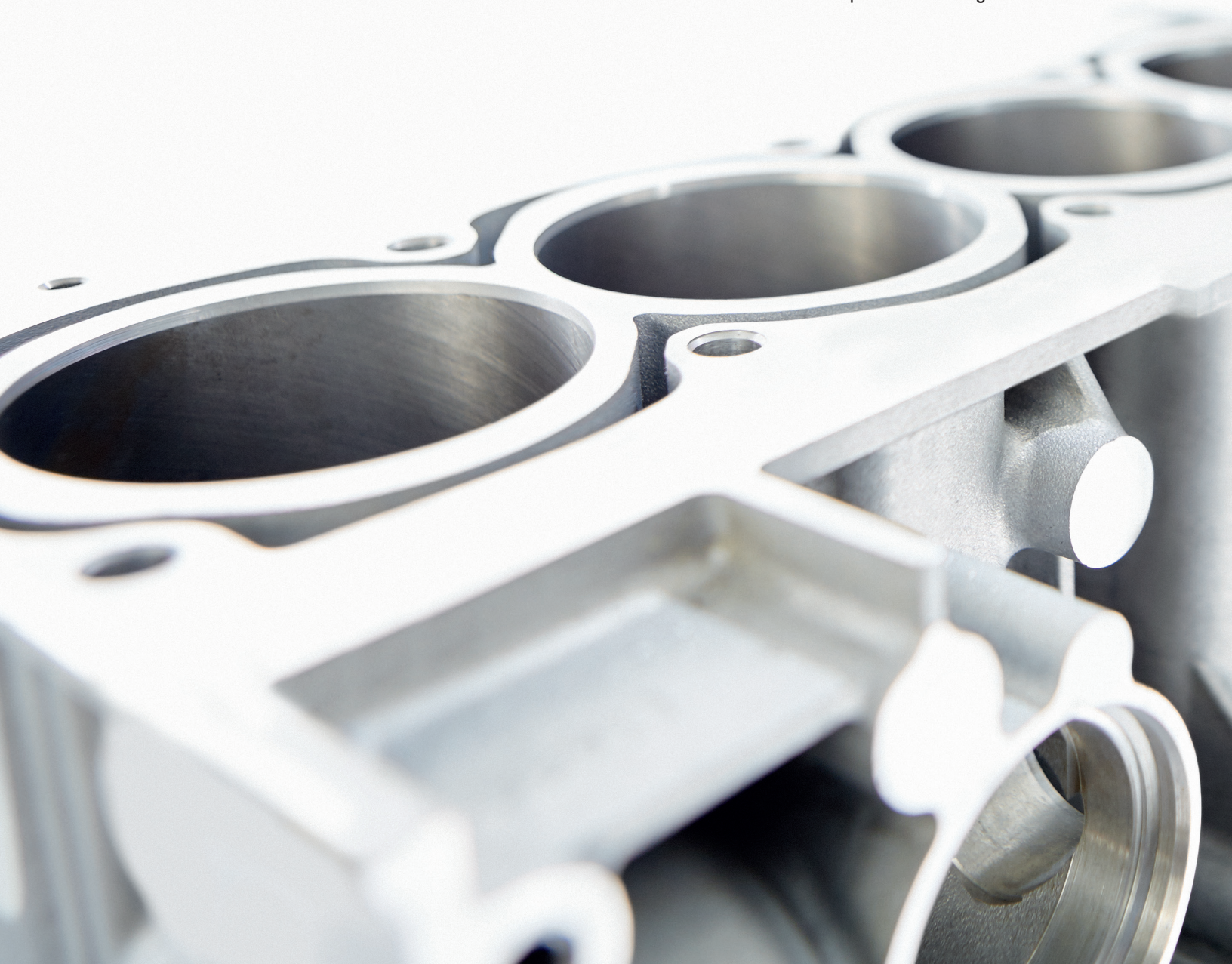
Impregnation products from Henkel bring added value to your casting process by allowing you to make use of metal parts that would otherwise have to be scrapped. Although metal casting is a highly advanced technology, porosities and other defects can still occur during the manufacturing process. Our products have been developed to deliver consistently clean, leak-proof and sealed parts ready for just-in-time assembly. This applies to all casting alloys, sintered metals, ferrites, ceramics and composite materials.

Outstanding portfolio

Our impregnation products meet the worldwide specification requirements of major automotive OEMs and components suppliers. They offer outstanding characteristics including resistance to chemicals and solvents, high temperature resistance and superior sealing.

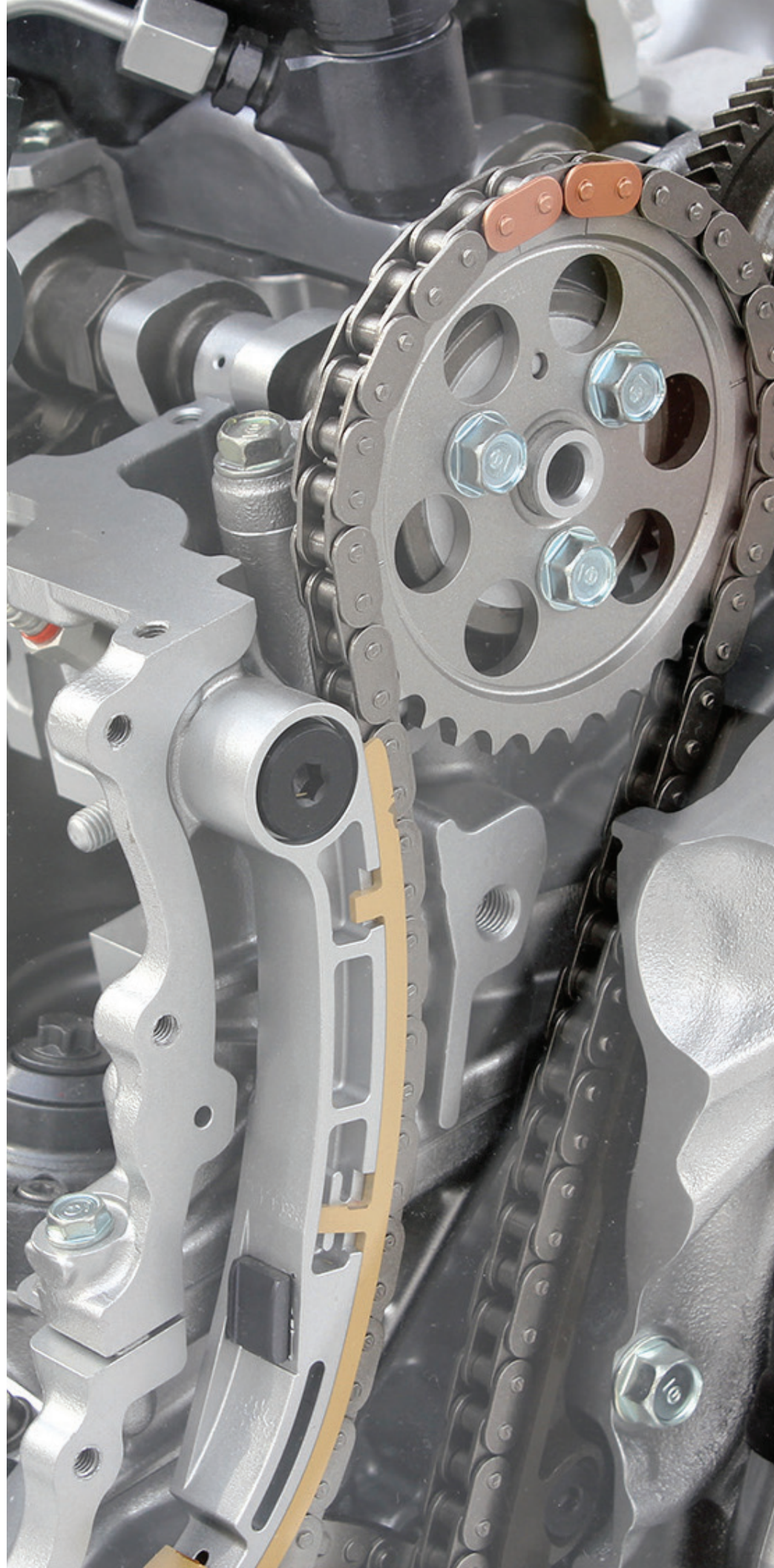
Lifetime sealant

The Henkel impregnation sealants and sealing processes cause no damage or distortion to the parts. After impregnation, all parts are clean, free of corrosion or oxidation, and are ready for use without post-treatment. During the life cycle of the treated parts, the sealant will withstand oils (including aggressive synthetic, low-viscosity varieties), grease, virtually all acids, liquid fuels, gases, coolants and solvents. Continuous operating temperatures may range from -90°C to +200°C, while our products can also withstand short-term exposure to temperatures as high as 250°C.



Application examples for castings

- Engine blocks
- Cylinder heads
- Engine covers
- Clutch housing
- Gear boxes
- Pump components
- Filter housings
- Compressor components
- Cooling/oil pumps



Vacuum Impregnation Products and Services

HOW YOUR ELECTRIC AND ELECTRONIC COMPONENTS BENEFIT

Sealed for good

Impregnation products from Henkel provide the ideal sealing solution for electrical and electronic components. Microscopic voids are inherent in many electronic assemblies, particularly where metals and plastics are assembled together. This can lead to customer complaints, lost production or even lost business. However, our resin solutions seal even microscopic gaps and leak paths in critical electrical and electronic components. Permanently sealing components protects them from moisture, solvents, fluxes and other corrosive agents.

Lasting product improvements

High-performance impregnation products from Henkel are designed for applications requiring greater flexibility and higher temperature and fluid resistance. After the impregnation process, components are clean and unchanged in their dimensions or appearance, and they remain flexible under conditions of thermal cycling. Our solutions allow fast processing of high part throughputs for low unit costs. Impregnation improves the durability and long-term reliability of components with no adverse effect on their solderability or electrical conductivity. Moreover, our innovative sealing solutions eliminate the need for costly and unsightly topcoats.

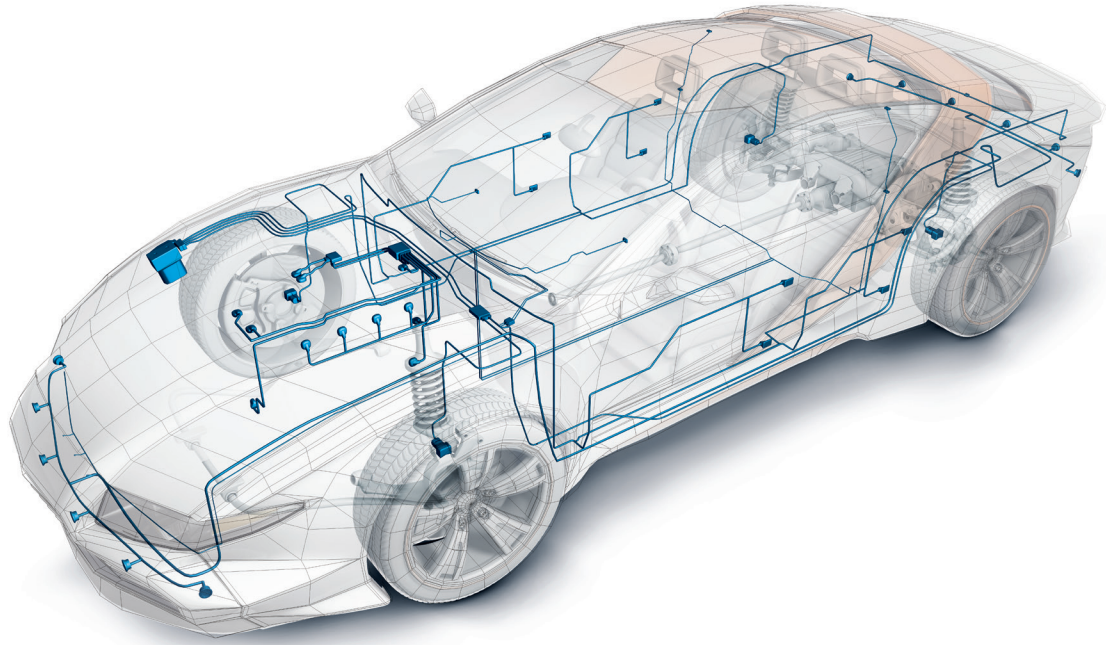
Industry-approved sealing solutions

Thanks to our unmatched portfolio of sealing resins, we can offer outstanding sealing solutions for components such as powertrain electronics, connectors, power supplies, heating and air-conditioning systems, alternative energy vehicle (AEV) power generation systems, tire pressure monitoring systems, safety and driver assistance systems, and fuel delivery systems.



Application examples for electronics:

- Connectors
- Sensors
- Plugs
- Coils and solenoids
- Plastic housings
- Plastic covers
- Overmolded electronics
- Cables
- Wire harness



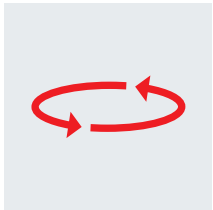
STEP 1

Pre-process preparation of components



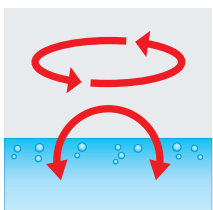
STEP 2

- Dry vacuum
- Wet vacuum
- Sealant fills porosities, shrinkage cavities, capillary pores and cracks
- Centrifuge removes excess sealant from component surfaces



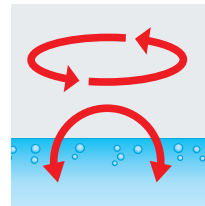
STEP 3

- Drip-off and spin



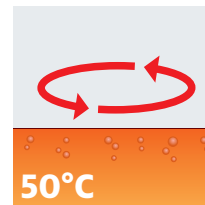
STEP 4

- Washing of parts
- Centrifuge prepares for rinsing step



STEP 5

- Rinsing of parts
- Centrifuge prepares for curing step



STEP 6

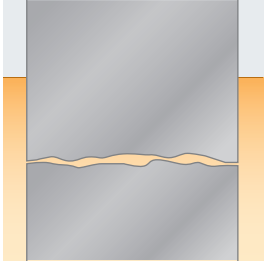
- Curing of sealant in component porosities
- Centrifuge removes surface water and dries parts

STEP 7

- Post-process and packaging

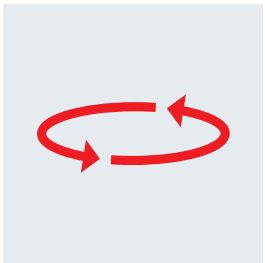
Vacuum Impregnation

HOW YOUR PARTS ARE IMPREGNATED



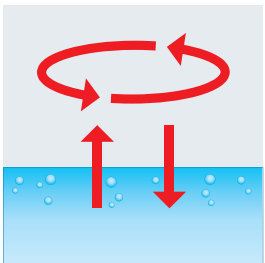
STEP 1

- Dry vacuum
- Wet vacuum
- Sealant fills porosities, shrinkage cavities, capillary pores and cracks



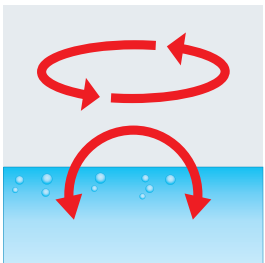
STEP 2

- Drip-off and spin
- Centrifuge removes excess sealant from part surfaces



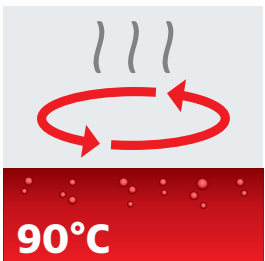
STEP 3

- Washing of parts
- Centrifuge prepares for rinsing step



STEP 4

- Rinsing of parts
- Centrifuge prepares for curing step



STEP 5

- Curing of sealant within part porosities
- Centrifuge removes surface water and dries parts

LOCTITE HIGH-PERFORMANCE IMPREGNATION PRODUCTS

Worldwide consistent quality and service offering with technical manufacturing footprints.

APPLICATION AREA: CASTINGS

| LIS | Chemical type | Cure method | Appearance | Viscosity 23°C, mPa.s | Chemical resistance | Temperature resistance | Resin recycling | Application area |
|--------------------|---------------|-------------|--------------------|-----------------------|---------------------|------------------------|-----------------|--|
| LOCTITE IS 89C | Methacrylate | 90°C | Clear, fluorescent | 8 – 10 | Excellent | -90°C to +200°C | No | Castings with typical porosity range |
| LOCTITE IS 90C | Methacrylate | 90°C | Clear, fluorescent | 5 – 20 | Excellent | -90°C to +177°C | No | Castings with typical porosity range |
| LOCTITE IS RTC | Methacrylate | Anaerobic | Clear, fluorescent | 5 – 15 | Excellent | -90°C to +204°C | No | Casting with macro porosities, powder metal |
| LOCTITE IS RTC ECO | Methacrylate | Anaerobic | Clear, fluorescent | 5 – 15 | Excellent | -90°C to +204°C | No | Sealing macro porosities and powder metal parts with excellent washability performance |

APPLICATION AREA: ELECTRONICS

| LIS | Chemical type | Cure method | Appearance | Viscosity 23°C, mPa.s | Chemical resistance | Temperature resistance | Resin recycling | Application area |
|-----------------|---------------|-------------|--------------------|-----------------------|---------------------|------------------------|-----------------|--|
| LOCTITE IS 5100 | Methacrylate | Anaerobic | Clear, fluorescent | 5 – 30 | Excellent | -54°C to +177°C | No | Soft and flexible product for electronic parts with leak paths |
| LOCTITE IS 5110 | Methacrylate | Anaerobic | Clear, fluorescent | 36 – 66 at 25°C | Excellent | +205°C | No | Rigid and unflexible product with excellent chemical and temperature resistance for electronic parts |

HOW YOU BENEFIT FROM OUR LOCTITE IMPREGNATION SOLUTIONS



Process optimization

High volume drop-in solution for leakage problems



Performance

- Intensive cleaning process for cosmetically clean parts
- Process designed specifically for electronic parts



Cost Reduction

- Sealing solution as a service, no investment required
- No design change required for sealing parts



Sustainability

Reduces scrap of defect parts



Safety & Comfort

Reliable long term solution

LOCTITE®
BONDERITE®
TECHNOMELT®
TEROSON®
AQUENCE®

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