

LOCTITE[®]

TEROSON[®]

TECHNOMELT[®]

BERGQUIST[®]

Henkel Automotive Display Solutions



Henkel

HENKEL AUTOMOTIVE DISPLAY SOLUTIONS

Henkel has developed dedicated solutions to support the manufacture of Automotive Display modules. Supplying innovative solutions across the full assembly process including structural bonding, liquid optically clear adhesives and thermal management materials.

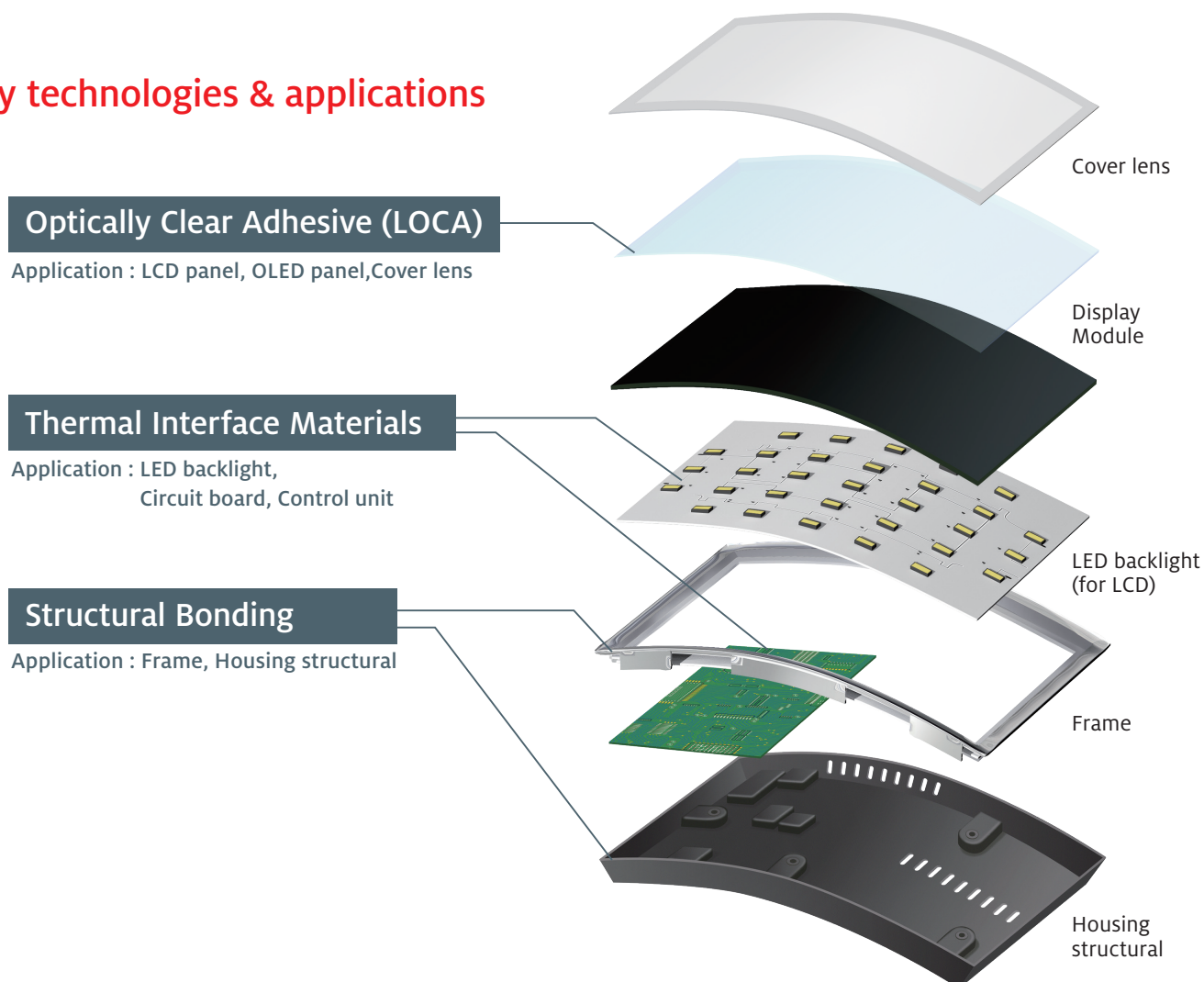
Henkel also provides high specification application equipment designed to make your process more efficient and developed in partnership with leading global lamination equipment manufacturers. Our innovative design approach towards mass production equipment offers significant benefits in terms of process flexibility and optimized foot-print with focus on consistent quality and manufacturing cost efficiency.

As the global technology leader in adhesives and sealants, Henkel has abundant experience in the display industry.

Target automotive components and devices

- Center information displays
- Instrument clusters
- Front and rear (seat) entertainment displays
- Side and rear view e-mirrors
- Head up displays (HUD)

Key technologies & applications



VALUE PROPOSITION FROM HENKEL

Henkel is the Market Leader in Adhesives, Sealants and functional coating solutions for the automotive industry. With more than 80 years of automotive experience, proven brands and best-in-class technologies, we are proud to develop and deliver total solutions to every automotive manufacturer in the world.

Design Partnership

Our large experienced team of engineers provide documented design and application support.

Innovative & Sustainable Solutions

We enable customers' innovation to meet fast design changes and development with green solutions.

Cost Saving & Reliability

Our superior adhesives and equipment improve productivity, durability and reduce overall cost.

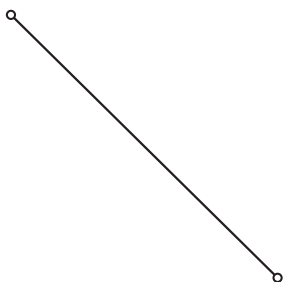


Best-in-Class Technical Support

Our professional engineering support empowers our customers to improve their quality and efficiency.

Global Capabilities

We are the global technology leader with extensive network to support customers' value chain.



LIQUID OPTICALLY CLEAR ADHESIVES (LOCA)

Henkel Liquid Optically Clear Adhesives are designed to achieve high optical and bonding performance on display modules, especially those using multiple substrates or with unique curved design. Henkel LOCA is a low, medium or high viscosity adhesive which cures instantaneously when exposed to UV light.

Features & Benefits

- **Improve optical performance**
Increase contrast ratio by 400% in sunlight
- **Increase display ruggedness & head impact resistance**
Increase in the impact test by up to 3X
- **Extend display reliability**
Optical bonding makes a display more durable to heat, moisture, temperature cycling
- **Offer greater design flexibility**
Bonding uneven surface and design shape (3D)
- **The opportunity to introduce fully automated optical bonding process**
Increased quality, yield rate, lower cycle time

Technologies

- 1-part Silicone
- 1-part Acrylic
- 1-part Hybrid Silicone
- 2-part Silicone

Product typical performance

- Low viscosity
- Low durometer / modulus
- Low shrinkage
- High adhesion to glass & plastic
- > 99% transmission
- < 1% haze
- < 1 yellowness (b*)



STRUCTURAL BONDING

Henkel one and two component structural bonding solutions can be supplied with a range of curing mechanisms, designed to offer flexibility in your assembly process.

These available curing mechanisms include ultraviolet light, heat and moisture.



Features & Benefits

- Excellent multiple substrate bonding with high adhesion to plastic and glass
- Very good resistance to QUV and to thermal cycle/ shock (-40 °C to 95 °C)
- Chemical resistance
- High peel strength
- High impact strength
- Variety of cure speeds
- Allow automation

Technologies

- 2-Part Acrylic Structural Adhesives
- PUR Hotmelt Structural Adhesives
- 2-part PU adhesives
- Silane modified polymer

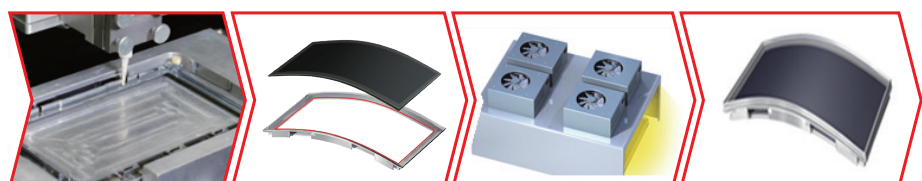


FOR ACCURATE AND EFFECTIVE STRUCTURAL BONDING

Henkel's Special method, SpeedCure™ technology

accurately and efficiently cures adhesives in display applications on targeted area by using customized LED light.

Its key benefit is greatly reduced curing times, e.g. practicable cycle times of just 30-60 seconds.



Quick & accurate automatic dispensing even on narrow bonding area for curved / free-formed display

Customized SpeedCure LED lights follow the bond line and cures in 30-60 seconds

Accurate and effective automated process

THERMAL MANAGEMENT

There has been rising need for Thermal Interface Materials due to the higher power consumption for Automotive Displays and infotainment systems. Infotainment system trends towards multi-functional and Display trends toward larger sizes, the power consumption becomes higher and higher as the number of chips increases.

Thermal Interface Materials

Features & Benefits

- Comprehensive range of thermal interface materials
- Stress relief from thermal cycling
- Conformable: fix gaps / tolerance stack-ups
- Stable over time and operating conditions
- Thermal conductivity 1W/mk~7W/mK

Technologies

Thermal Interface Materials

- Liquid Gap filler
- Gap Pad

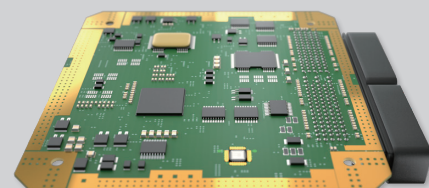
LIQUID GAP FILLER

EFFECTIVE HEAT DESSIPATION in AUTOMOTIVE DISPLAYS

- **BERGQUIST GAP FILLER series** are supplied as a two-component, room or elevated temperature curing system, resulting in a soft, thermally conductive, form-in-place elastomer ideal for coupling “hot” electronic components with an adjacent metal case or heat sink.
- **BERGQUIST LIQUI FORM TLF 3500** is an Innovative one component, highly conformable gel and has enhanced vertical gap stability and high thermal conductivity. The material is precured and requires no curing, mixing or refrigeration.

Features & Benefits

- **Process Automation**
Our dispensable liquid materials enable fully automated process with High Throughput.
- **Low component stress**
Liquid thermal interface materials lower overall component stress compared with pads
- **Effective heat transmission**
Liquid in nature at application stage and then stickier than Pad material that allows more effective heat transmission.
- **Improve reliability**
- **Reworkability**



EQUIPMENT

Cost pressure in automotive assembly of components drives opportunities to develop processing methods that enables precision of the optical bonding but at the same time increases throughput, lower cycle time, and reduce scrap.

Henkel has built up in cooperation with experienced equipment vendors a portfolio of solutions for optical bonding, including alternative processing methods that addresses the design challenges coming with the free-form or curved displays.

Optical Bonding

Liquid optically clear adhesives with superior adhesion, processable under vacuum and with different dispensing processes. Henkel offers specific grades per each processing option.

Process options

- Single-Point Dispensing
- Slit Coating
- Digital Coating
- Stencil Printing

UV activation & curing units

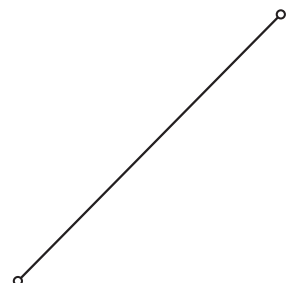
Henkel LOCA cures instantaneously to a solid polymer when exposed to UV/ Visible light or triggered by chemical cure. We provide standard an custom made curing units for 24/7 use. Those are developed following customer specifications.

Structural Bonding & Thermal Management

Multiple kind of Henkel Technologies are available to answer market needs. Depending on chemical parameters like viscosity, speed of curing and fillers (Thermal Interface Materials) the choice of the right dispensing method is of utmost importance to ensure proper mix of product and equipment.

Process options

- Static Mixing
- Dynamic Mixing



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YouTube link
"Automotive Display
Solution Video"