hoenle

HIGH-PERFORMANCE ADHESIVES
FOR IMPRINT & OPTICAL BONDING

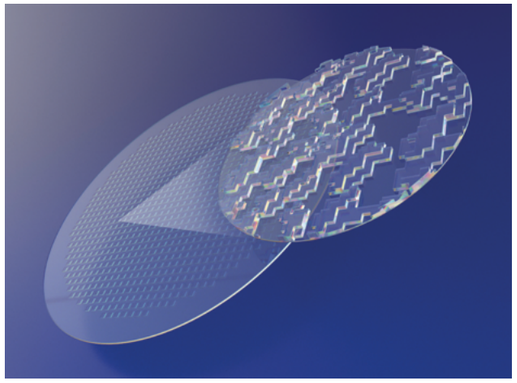
Adhesives, Optical Material and
Matching UV-Curing Equipment
for Bonding Applications

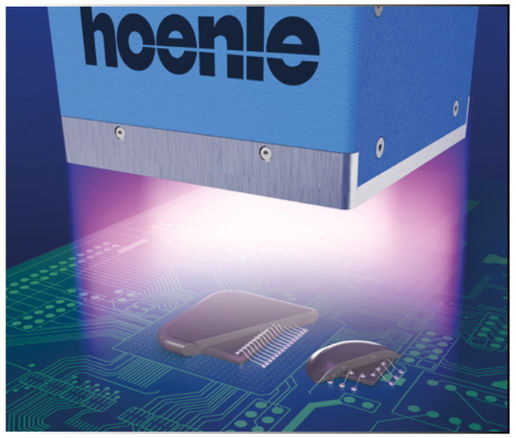
www.hoenle.com

ADHESIVES FOR **WAFER LEVEL OPTICS**

IMPRINT MATERIAL

Hoenle's UV-curable adhesives for imprint replication of refractive lenses and diffractive optical elements (DOEs) are optimized for micro- and nano-imprint lithography, wafer-level optics, and wafer bonding applications. They enable precise replication of fine optical structures with excellent dimensional accuracy and process reliability. The adhesives integrate seamlessly into existing production workflows and can be applied using puddle dispensing, spin coating, or jetting. They provide strong and durable adhesion to commonly used glass wafers as well as to emerging polymer substrates, including optical-grade PET and PC.





After application and imprinting, the materials are rapidly cured with UV light, forming stable and durable micro- and nanostructures on the wafer.
Beyond structural performance, Hoenle offers tailored optical transmission solutions, including formulations with defined transmission levels, adjustable haze, or black light-blocking properties. This enables effective stray-light control and optical functionality to be integrated directly into the material.

Benefits of adhesives:

- optically clear resins with low yellowing
- UV-curable for fast processes
- tailored transmission
- variety of refractive indice

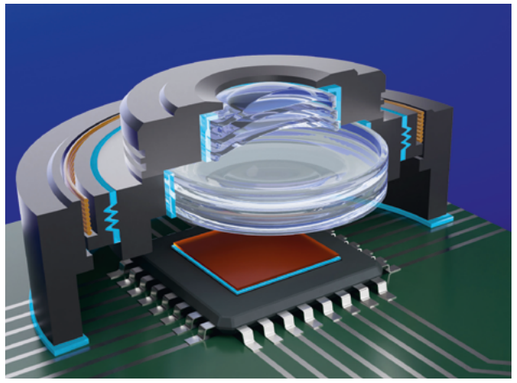
Optical adhesives	Typical application	Viscosity [mPas]	Base	Curing	Characteristics
Vitralit® UC 1633	Micro- and nanoimprint	Newtonian fluid 200	Epoxy	UV	Good adhesion to various substrates, high yellowing resistance
Vitralit® UC 1658	Microimprint, tailored transmission, mastering	75–200 LVT, Sp. 2/30 rpm	Epoxy	UV	Flexible, good polymer adhesion
Vitralit® UC 6020-1 LV	Micro- and nanoimprint, wafer bonding	Newtonian fluid 500	Epoxy	UV	Transparent, high impact resistance
Vitralit® UC 6569-1 LV	Micro- and nanoimprint, mastering	Newtonian fluid 700	Epoxy	UV	High yellowing resistance, transparent
Vitralit® UD 6574	Tailored transmission	2,000–4,000 LVT, Sp. 4/30 rpm	Epoxy	UV	Light blocking, impact resistant
Vitralit® BL UC 1103	Tailored transmission	3,500–7,,000 Rheometer, $10s^{-1}$	Epoxy	UV/VIS	Light blocking, high light curable layer thickness

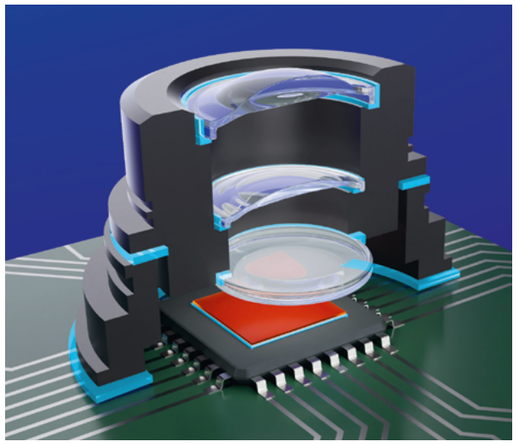
*UV = 320 - 390 nm, VIS = 405 nm

ADHESIVES FOR **OPTICAL BONDING**

OPTICAL ASSEMBLY

For demanding optical bonding applications, Hoenle offers UV-curable adhesives engineered for exceptional adhesion to glass as well as commonly used plastic and metal substrates. Once cured, our lens-bonding adhesives remain flexible and stress-equalizing, effectively reducing mechanical load between dissimilar materials.
To ensure maximum optical stability throughout device operation, our filled adhesive systems provide extremely low shrinkage and swelling, making them highly suitable for precision alignment processes.





Our automotive-grade formulations feature a glass transition temperature designed specifically to lie outside the typical operating range, ensuring robust and proven long-term stability—even after 1,000 hours of testing.
For applications in consumer optics, Hoenle offers soft, impact-resistant solutions that reliably withstand drops and mechanical shocks, protecting both performance and product longevity.

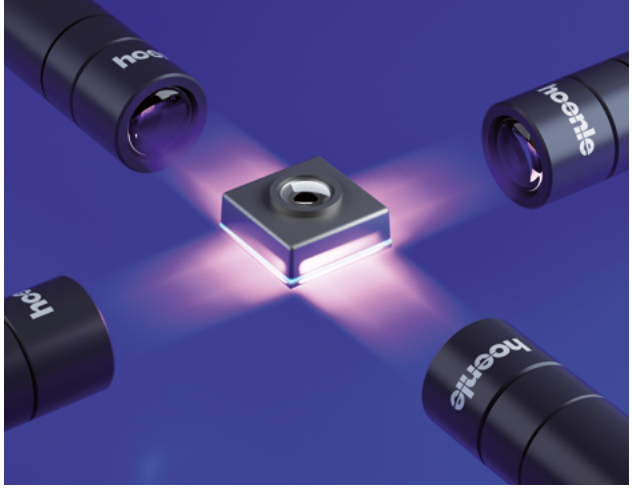
Benefits of adhesives:

- UV-curable transparent and black adhesives
- optical stability through low shringake/swelling
- long term reliability
- minimized outgassing
- tension equalizing possible

optical bonding adhesives	Typical application	Viscosity [mPas]	Base	Curing	Characteristics
Vitralit® 1860	Active alignment	35,000–50,000 Rheometer, $10s^{-1}$	Acrylate	UV/VIS	Flexible, low shrinkage
Vitralit® UC 1870	Active alignment	40,000 Rheometer, $10s^{-1}$	Epoxy	UV/VIS	Low outgassing, low shrinkage and CTE
Vitralit® E-1672	Active alignment with shadow zones	5,000 Rheometer, $10s^{-1}$	Epoxy	UV + thermal	Low outgassing, low shrinkage and CTE
Vitralit® UH 1640	Lens bonding with shadow zones	Newtonian fluid 4,000	Epoxy-acrylate	UV + thermal	Flexible, low outgassing, fast light fixation
Structalit® 8838	LBA, lens bonding	6,500–7,000 Rheometer, $20s^{-1}$	Epoxy	thermal	high mechnical flexibility, tension equalizing, low outgassing
Vitralit® E-VBB 1	Lens bonding, filter bonding	1,300–1,600 Rheometer, $10s^{-1}$	Acrylate	UV/VIS	high mechanical flexibility, tension equalizing

*UV = 320 - 390 nm, VIS = 405 nm

MATCHING
UV EQUIPMENT



BLUEPOINT LED

For active-alignment curing, high-intensity Bluepoint LED systems deliver optimal results.
A newly developed screw-on lens concentrates the output into a narrow linear beam, enabling faster curing through substantially increased intensity. It supports 365/385/405 nm wavelengths and reaches up to 7,000 mW/cm².
With an exit aperture of 10 mm × 2 mm, it is ideal for precision tasks requiring strong, focused irradiation.

For ring-shaped geometries, several LED heads can be arranged around the component to ensure rapid and uniform exposure. The Bluepoint LED platform from Hoenle allows one display unit to control up to five base stations, each powering four heads—enabling operation of 20 LED heads from a single interface.

Benefits

- compact size of LED heads
- high intensity for fast and deep curing
- no active cooling necessary

LED Service Life	> 20.000 hours
Available Wavelength	365/385/405nm
Intensity	Up to 20000 mW/cm2
Interfaces	I/Os and analoge signal for power adjustment for each LED head. Option: BUS interface. Relase safety circuit
Process Flow Control (PFC)	Up to 6 PFCs to program individual irradiation sequences
Accessories	Foot switch, 90° deflection adapter

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Operating parameters depend on production characteristics and may differ from the foregoing information.
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