

LOCTITE®

Solutions for LED Assembly

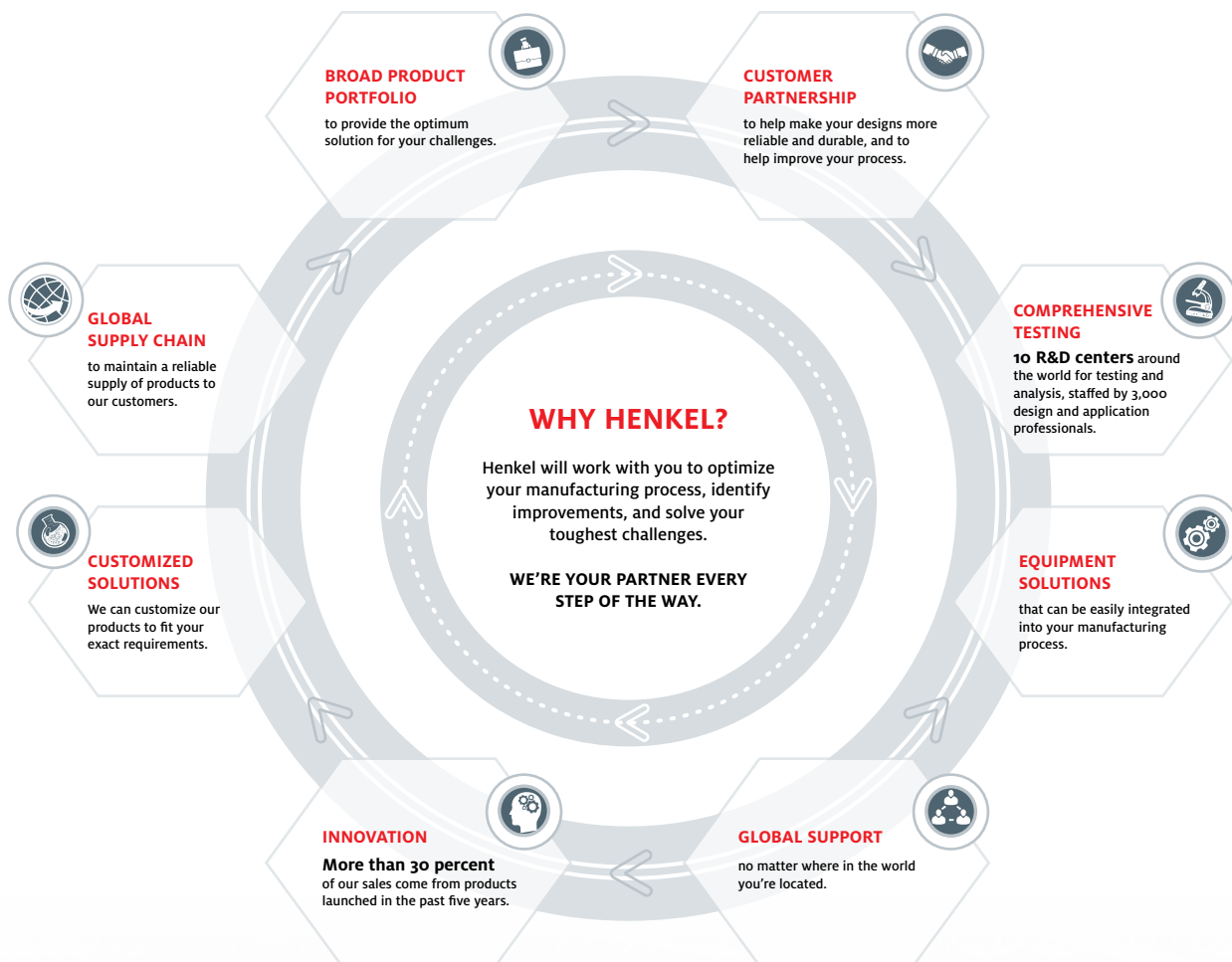


Henkel

Henkel.

Improving your designs, understanding your challenges

PROVEN SOLUTIONS FOR ALL YOUR NEEDS -
TODAY AND TOMORROW



Manufacturers face daily challenges to reduce costs, improve efficiency, and increase innovation, to name just a few. While there are many adhesive suppliers to choose from, they're not all created equal. You need a supplier with a broad product portfolio, a global footprint, and the engineering and application know-how to solve your challenges. You also need a partner who can help you maintain your high quality while developing advanced new products.

Henkel, the leading solutions provider for adhesives, sealants and functional coatings worldwide, offers much more than quality adhesives. With our history and experience in the industry, our experts can help you find ways to optimize your manufacturing processes and drive down costs. We can help you reduce weight, increase durability and enhance the reliability of your equipment. And we're continually developing innovations to help you succeed in the future.

Let us show you the value Henkel offers.

Applications for LED Assembly

- ## 1 Bonding and Sealing
- Realise your desired design through virtually invisible joining of components and adhesives for all types of material combinations, including plastics.
 - Increase luminaire quality and life span:
 - Good water resistance
 - Ingress protection
 - Reliable adhesion
 - Cope with vibrations
 - Optimise manufacturing process:
 - Manage gaps and thermal expansion
 - Optimise line speed through fast cure and automation

- ## 2 Potting - General and Transparent
- Increase luminaire quality and life span by protecting electronic components from humidity and impact
 - Protect LED modules through ultra-clear transparent potting:
 - Increase lumen output
 - Long term UV stable and low yellowing
 - Reduce need for sealed diffusers and additional manufacturing steps
 - Flexible cure time to match your manufacturing process and low shrinkage

- ## 3 Thermal Management
- Increase life span of LED modules by reducing operating temperature
 - Removable solutions to allow maintenance
 - Thermally conductive adhesives to combine fixing and thermal management in one manufacturing step

- ## 4 Low Pressure Moulding - General and Transparent
- Increase luminaire quality and life span: protecting electronic components from humidity and impact
 - Optimise your manufacturing process: overmoulded parts are ready for the next process step in less than 1 minute
 - no curing time required
 - Directly overmould PCBs and in many cases eliminate need for additional housing for components
 - Improve your sustainability footprint: low pressure moulding adhesives are made of renewable raw materials



Roadway and Parking Lot Lighting

Threadlocking

Loctite® Product	Description
243™	Medium strength, primerless
246™	Medium strength, high temp.
263™	High strength, primerless
290™	Wicking grade threadlocker

General Bonding

Loctite® Product	Description
E-30CL™	2-part, clear, epoxy adhesive
E-90FL™	2-part, flexible, epoxy adhesive
H3151™	High viscosity structural adhesive
401™	Surface insensitive instant adhesive
UK 1366 B10™	2-part, flexible, polyurethane adhesive

Thermal Management

Loctite® Product	Description
SI 100™	Silicone grease
384™	1-part acrylic adhesive

Potting

Loctite® Product	Description
E-30CL™	2-part, clear, epoxy adhesive
E-30HV™	High strength potting & bonding epoxy
5620™	2-part, ultra-clear, silicone

Lens Bonding & Sealing

Loctite® Product	Description
5510™	One-component elastomeric sealant
Superflex®	One-component RTV sealant
5050™	UV cure silicone adhesive and sealant
5600™	2-part, fast cure, silicone adhesive and sealant
E-30CL™	2-part, clear, epoxy adhesive
MS930™	General purpose sealing adhesive





Industrial and Commercial Lighting

General Bonding

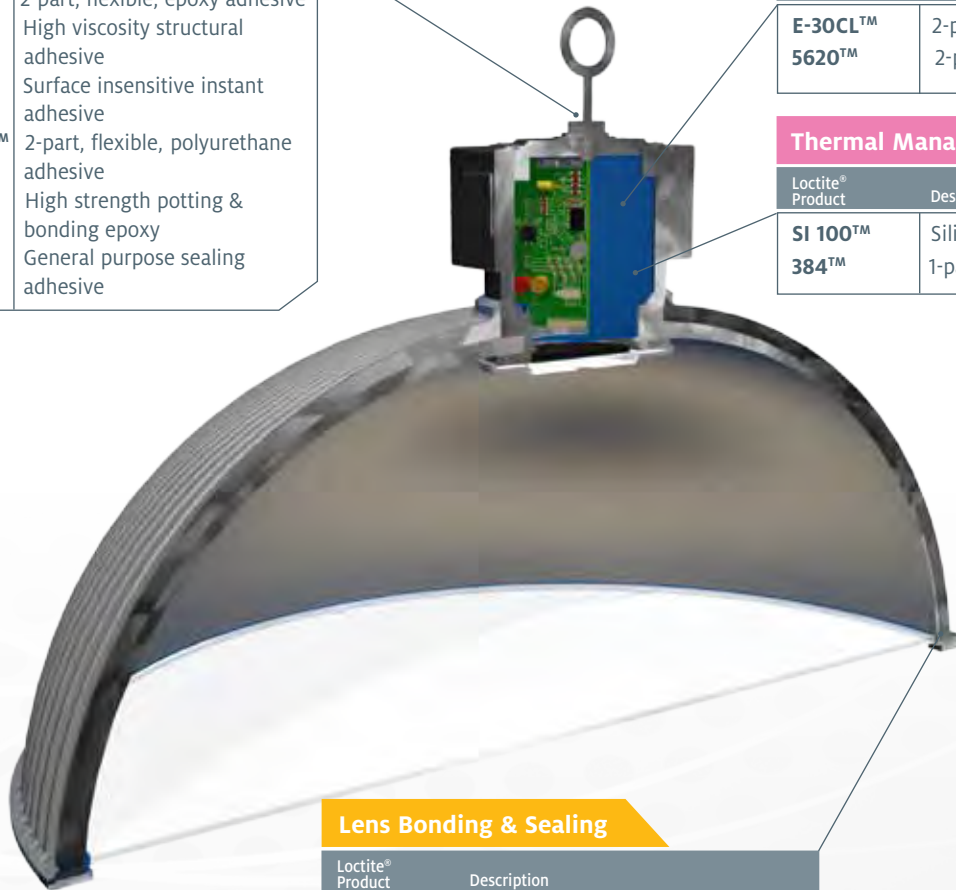
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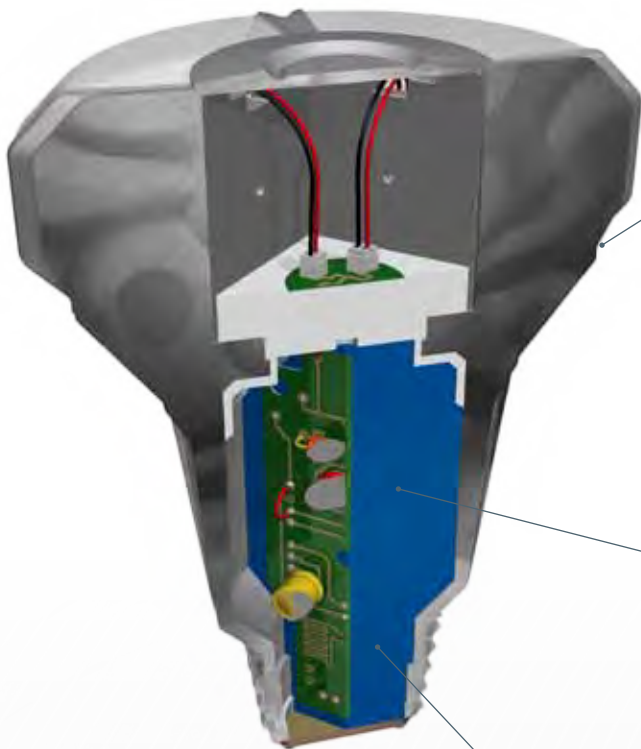


Lens Bonding & Sealing

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Consumer / Residential Lighting



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415™	High viscosity instant adhesive
HVHT™	High viscosity high temperature instant adhesive

Potting

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Thermal Management

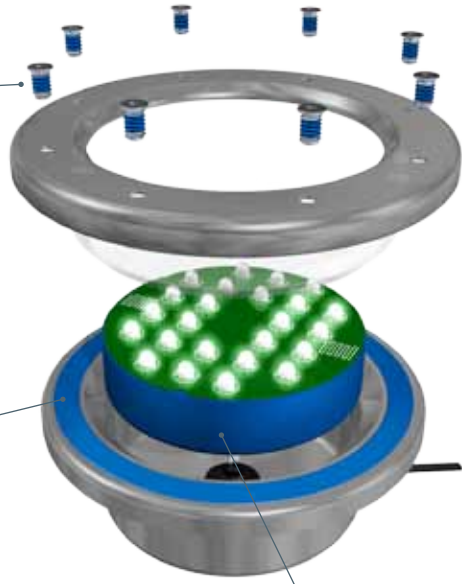
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Architectural Lighting

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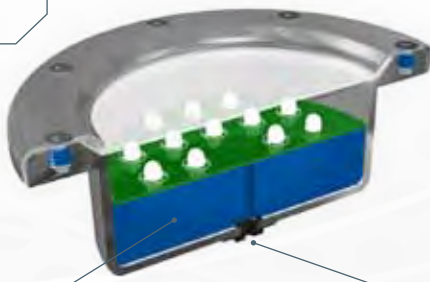


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Product Selector for the Lighting Industry

Including results according to Cree XLamp Chemical Compatibility test method

1	Bonding and Sealing	Clear Bonding					Clear Bonding & Sealing
		Instant handling		Fast UV cure		High strength	Flexible
		Toughened	Low blooming	Glass / metal	Glass / metal	Multiple substrates	Good adhesion on plastics
		LOCTITE® 435	LOCTITE® 460	LOCTITE® AA 3494	LOCTITE® AA 3081	LOCTITE® EA E-30CL	TEROSON® SI 113
Technical Data	1K Instant Adhesive	1K Instant Adhesive	1K Acrylic	1K Acrylic	2K Epoxy	1K Alkoxy Silicone	
Pot Life / Skin Formation Time	-	-	Indefinite	Indefinite	2 min	11 min	
Tensile Strength	30 N/mm ²	30 N/mm ²	23 N/mm ²	22 N/mm ²	55 N/mm ²	2.5 N/mm ²	
Final Cure Time	Few hours	Few hours	Few minutes	Few minutes	24 hours	-	
2	Potting	Polyolefin Bonding	Translucent Bonding & Sealing	Black, White, Grey Bonding & Sealing		White Bonding & Sealing	
		70 min handling strength	Fast UV cure	1K Moisture cure	Fast	Fast	
		LOCTITE® AA 3038	LOCTITE® SI 5088	TEROSON® MS 939	TEROSON® MS 9399	LOCTITE® SI 5616	
		Technical Data	2K Acrylic	1K Alkoxy Silicone	1K Silane Modified Polymer	2K Silane Modified Polymer	2K Alkoxy Silicone
Pot Life / Skin Formation Time	4 min	11 min	10 min	20-30 min	5 min		
Tensile Strength	13 N/mm ²	1 N/mm ²	3 N/mm ²	3 N/mm ²	1 N/mm ²		
Final Cure Time	Few days	72 hours	1 week	1 week	Few days		
2	Potting	Potting			Transparent Potting		
		Up to 80°C	Up to 180°C	Up to 120°C	Up to 150°C	Up to 120°C	
		Flexible cure time	Fast cure	High strength	95% light transmission*	Transparent & high strength	
		LOCTITE® CR 6127 / CR 4300	LOCTITE® SI 5611	LOCTITE® EA E-30HV	LOCTITE® SI 5700	LOCTITE® EA E-30CL	
Technical Data	2K Polyurethane	2K Alkoxy Silicone	2K Epoxy	2K Polyaddition Silicone	2K Epoxy		
Viscosity	2.6 Pa s	3-10 Pa s	40 Pa s	6-7 Pa s	10 Pa s		
Pot Life	2-90 min	6 min	30 min	25 min	2 min		
Shore Hardness	A 80-90	A 50	D 85	A 39	D 85		

* at 2 mm thickness / 550 nm

3 Thermal Management	Removable	Permanent		
	Grease	Adhesive		Potting
	3-4 W/mK	0.8 W/mK	1.4 W/mK	1.7 W/mK
			High Strength	Self Levelling
	LOCTITE® SI 100	LOCTITE® AA 384	LOCTITE® EA 9497	LOCTITE® EA 9496
Technical Data	Silicone Grease	1K Acrylic	2K Epoxy	2K Epoxy
Tensile Strength	-	13 N/mm ²	53 N/mm ²	67 N/mm ²
Final Cure Time	No Cure	1 day	1-7 days	1 day

4 Low Pressure Moulding	Mould around electronics and LEDs with few seconds cure time		
	White	Black	Grey
	Technomelt PA 668	Technomelt PA 646	Technomelt PA 651
Technical Data	Polyamide hotmelt	Polyamide hotmelt	Polyamide hotmelt
Shore Hardness	A 90	A92	A 92
Yield Strength	5.5 N/mm ²	5 N/mm ²	5 N/mm ²
Softening Point	155°C	175°C	170°C

Henkel is continuously testing adhesives to LED compatibility. For products not listed as compatible, please inquire with our sales specialists in case you wish to use them in direct contact or in proximity to LEDs.

- Approved for direct LED contact according to Cree XLamp Chemical Compatibility test method.
- ▼ Approved for use in proximity of LEDs according to Cree XLamp Chemical Compatibility test method.

Other Applications and Products

Threadlocking Adhesives : Prevent loosening of threaded parts



Size of Thread (upto)	Strength	Service Temperature Range (°C)	Products
M10	Low	-55 to 150	LOCTITE® 222 Easy Disassembly
M20	Medium	-55 to 180	LOCTITE® 243 The Allrounder
M36	High	-55 to 150	LOCTITE® 263 High Strength Primerless

Thread Sealants : Seal threads / pipes



Substrate	Max. Pipe Size (inch)	Service Temperature Range (°C)	Products
Metal	3/4	-55 to 150	LOCTITE® 542 Fine Threads
Metal	3	-55 to 150	LOCTITE® 577 The Allrounder
Metal and / or Plastic	4	-55 to 149	LOCTITE® 55 Thread Sealing Cord

Gasketing Products : Seal bolted flanges



Flange Type	Max Gap (mm)	Service Temperature Range (°C)	Products
Rigid	0.25	-55 to 150	LOCTITE® 574 General Purpose
Rigid	0.25	-55 to 200	LOCTITE® 510 High Temperature
All Flanges	6.35	-55 to 260	LOCTITE® 587 High Performance RTV Silicone Gasket Maker

Retaining Compounds : Join cylindrical parts



Diametrical Clearance (mm)	Handling Strength After (min.)	Service Temperature Range (°C)	Products
0.1 to 0.25	4	-55 to 180	LOCTITE® 638 The Allrounder
Up to 0.15	3	-55 to 180	LOCTITE® 648 High Temperature
0.25 to 0.5	15	-55 to 150	LOCTITE® 660 Gap Filling

Instant Adhesives : Fast fixturing of small parts



Gap Size (mm)	Fixture Time (sec.)	Service Temperature Range (°C)	Products
< 0.15	3-10	-54 to 120	LOCTITE® 401 The Allrounder
< 0.15	2-15	-54 to 120	LOCTITE® 456 Plastic & Rubber
< 0.2	30	-54 to 80	LOCTITE® 415 Gap Filling

LOCTITE®
BONDERITE®
TECHNOMELT®
TEROSON®
AQUENCE®

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