



Global Distributor of Henkel LOCTITE  
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# LED Design Guide



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Excellence is our Passion



## Roadway and Parking Lot Lighting



## Industrial and Commercial Lighting

### LED Solutions from Henkel

Henkel Corporation, a global leader in adhesive, sealing and potting technologies, offers a wide range of product solutions engineered for the design and manufacture of light-emitting diode (LED) lighting devices. Typical applications include lens bonding and sealing, potting, general bonding and threadlocking. All Henkel products undergo rigorous testing and qualifying in our labs and are backed by an exceptional customer support team. Whatever the need, Henkel will work with you to find a solution.

For more information, call [1-800-LOCTITE \(562.8483\)](tel:1-800-LOCTITE)  
or visit [www.henkelna.com/LED](http://www.henkelna.com/LED)



## Consumer / Residential Lighting



## Architectural Lighting

LED Products and Dispensing Equipment Tables:

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Lamp heads used for exterior street lighting and parking lots must withstand exposure to the elements, hot/cold temperature extremes, dust, dirt and road vibration. Using Henkel's lens sealing, potting, bonding and threadlocking products in lamp-head design and manufacturing ensures long life and trouble-free operation.



### Did You Know?



The average life of an LED can be as long as 50,000 hours. Compare this to the 1,000-hour life of an incandescent bulb and the 8,000-hour life for compact fluorescents (CFLs).





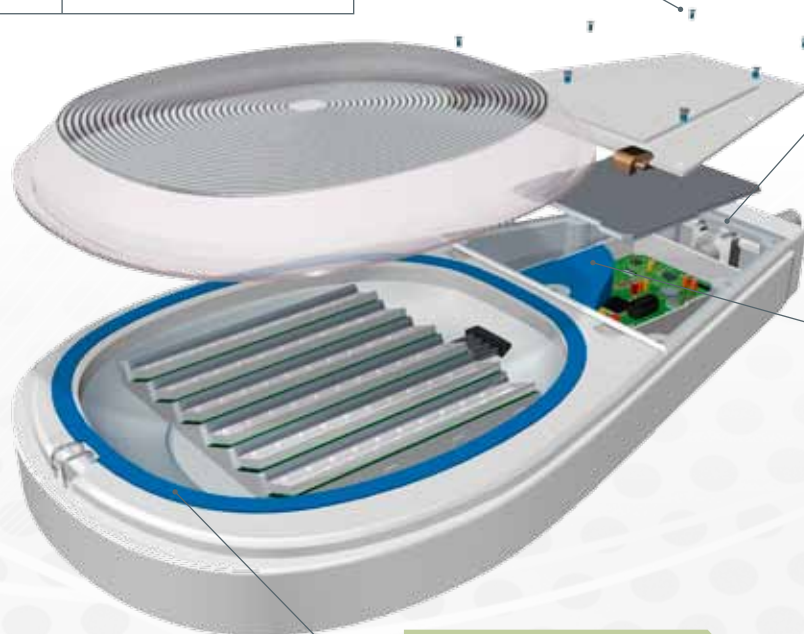
## Roadway and Parking Lot Lighting

### Threadlocking

Loctite® Product	Description
<b>243™</b>	Medium strength, primerless
<b>246™</b>	Medium strength, high temp.
<b>248™</b>	Medium strength, semisolid
<b>263™</b>	High strength, primerless
<b>268™</b>	High strength, semisolid

### General Bonding

Loctite® Product	Description
<b>E-30CL™</b>	2-part, clear, epoxy adhesive
<b>E-90FL™</b>	2-part, flexible, epoxy adhesive
<b>H3300™</b>	2-part, structural acrylic, plastic and composite bonder
<b>435™</b>	Low-viscosity, instant adhesive
<b>UK 1366 B10™</b>	2-part, flexible, polyurethane adhesive



### Potting

Loctite® Product	Description
<b>E-40EXP™</b>	2-part, explosion-proof, epoxy
<b>3173/3184™</b>	2-part, general-purpose, polyurethane epoxy
<b>3145/3165™</b>	2-part, flame retardant, epoxy
<b>5620™</b>	2-part, ultra-clear, silicone

### Lens Bonding & Sealing

Loctite® Product	Description
<b>5510™</b>	One-component elastomeric sealant
<b>Superflex®</b>	One-component RTV sealant
<b>5050™</b>	UV cure silicone adhesive and sealant
<b>5600™</b>	2-part, fast cure, silicone adhesive and sealant
<b>E-30CL™</b>	2-part, clear, epoxy adhesive



Industrial and commercial lighting applications include factories, office buildings, shopping malls and retail stores. Facilities like these require component reliability and sustainable solutions to help reduce operating expenses and maintenance costs. Henkel bonding, lens sealing and potting solutions can help.



### Did You Know?



LEDs project light forward, while most other light sources emit light in all directions. This makes LEDs optimal for spotlights and floodlights.





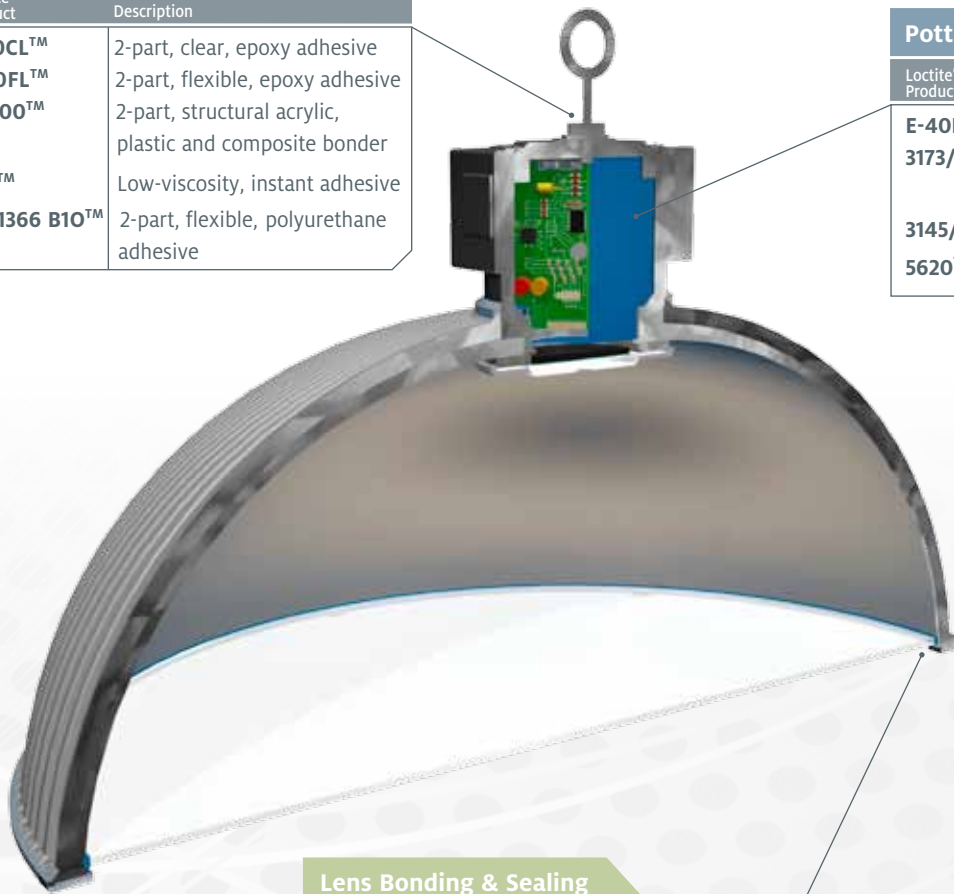
## Industrial and Commercial Lighting

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The use of LEDs for residential and consumer lighting is growing as incandescents become obsolete and concerns remain over the safety and disposal risk of CFLs. Henkel's bonding and potting technologies can help manufacturers build a better, more reliable and potentially lower-cost bulb.



### Did You Know?



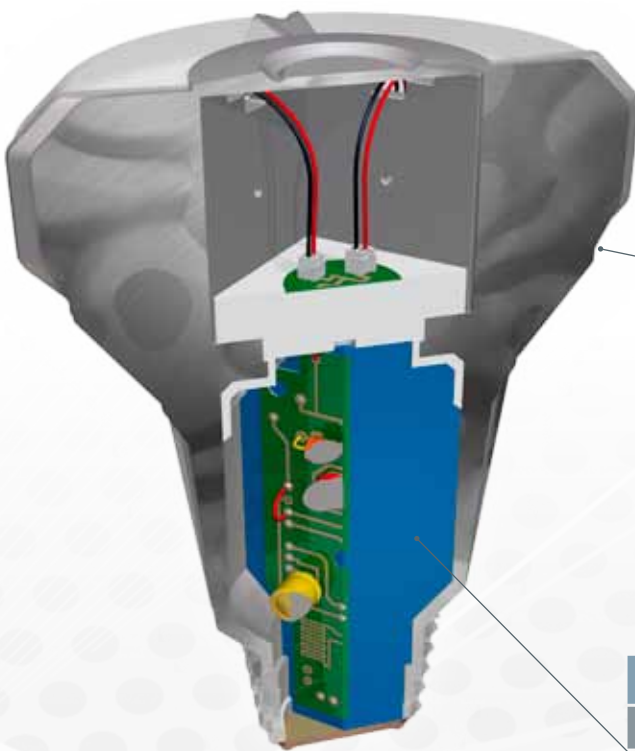
LEDs can be switched on and off instantly and give off full strength immediately, unlike CFLs.







## Consumer / Residential Lighting



### General Bonding

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Safety is of paramount concern when it comes to swimming pool, deck and outdoor lighting. Henkel's lens sealing, potting and threadlocking materials can help achieve a safe, reliable, watertight enclosure to ensure the integrity of underwater and weather-exposed lighting components.



### Did You Know?

LED stands for light-emitting diode.



### Did You Know?

The standard unit of measurement that defines the output or brightness of an LED is called a lumen. The more lumens an LED has, the brighter the light.

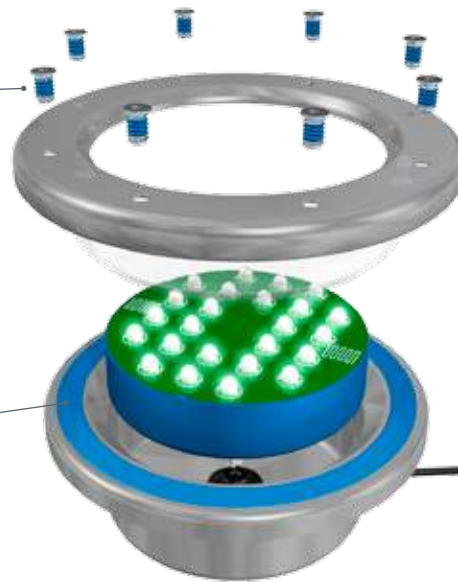




## Architectural Lighting

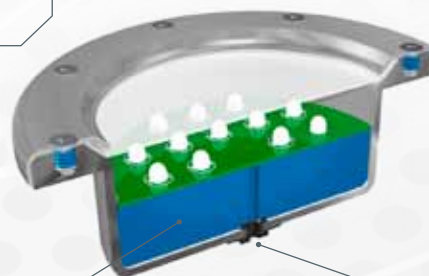
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### Lens Bonding & Sealing

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<b>E-30CL™</b>	2-part, clear, epoxy adhesive



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## Lens Bonding & Sealing

Solution	Loctite® 5510™ Adhesive/Sealant	Loctite® SUPERFLEX® Non-Corrosive RTV	Loctite® 5050™ Fastgasket®	Loctite® 5600™ Silicone Sealant	Loctite® E-30CL™
Chemistry	SMP†	Silicone	UV Silicone	2-Part Silicone	Epoxy
Key Features	Good UV resistance	UL 94 HB rated	Bonds well to highly flexible bond lines	Fast cure	Medium fixture, chemical resistant
Color	White, Grey, Clear, Black	Clear	Clear	Black, Grey, Almond	Clear
Mix Ratio	1-Component	1-Component	1-Component	2:1	2:1
Viscosity (cP)	Paste	Paste	Paste	Paste	10,000
Shear Strength (psi)	250	N/A	N/A	360	3,100
Temperature Range	Up to 200°F	Up to 500°F	Up to 350°F	Up to 350°F	Up to 250°F
Fixture Time	Tack-free – 30 min. Full strength – 24 hrs.	Tack-free – 25 min. Full strength – 24 hrs.	Tack-free – 60 sec. Full cure – 24 hrs.	Tack-free – 60 sec. Full cure – 24 hrs.	Tack-free – <180 min. Full cure – 24 hrs.
Cure Method	Moisture	Moisture	Moisture	Moisture	2-Part static mix

### Descriptions

#### Loctite® 5510™ Adhesive/Sealant

A multipurpose product based on Flextec® Technology suitable for many adhesive and sealant applications. It offers a fast skin time and cures to a tack-free surface. Its outstanding adhesion and toughness make it ideal for bonding and sealing between dissimilar substrates that are subjected to joint movement or impact.

P/N	Package Size
1562042	300 ml cartridge, white
1567697*	50 lb. pail, white
1578972*	250 kg drum, white
1562040	300 ml cartridge, clear
1567698*	40 lb. pail, clear
1578971*	190 kg drum, clear
1560557	300 ml cartridge, black
1567663*	50 lb. pail, black
1579002*	250 kg drum, black
1562044	300 ml cartridge, grey
1567506*	50 lb. pail, grey
1579070*	250 kg drum, grey

#### Loctite® Superflex® Non-Corrosive RTV Sealant

Offers resistance to water, steam, chemicals, and UV ozone exposure. Also adheres to a wide range of substrates (glass, rubber, wood, ceramics, and painted surfaces).

P/N	Package Size
51387	80 ml tube
51388	300 ml cartridge

#### Loctite® 5050™ Fastgasket® Silicone Adhesive Sealant

A UV light curing silicone for high speed adhesion, gasketing and sealing applications. High adhesion for difficult-to-bond substrates.

P/N	Package Size
1212166	300 ml cartridge
1212165	40 lb. pail

#### Loctite® 5600™ Silicone Sealant

*Two-Part/Noncorrosive*  
Fast, 5-minute fixture, high adhesion, flexible adhesive/sealant. Available in Black, Grey and Almond.

P/N	Package Size
41327	440 lb. drum, A
41732	575 lb. drum, B
922122	4.5 gallon pail, A
922089	3.5 gallon pail, B
922546	400 ml dual cartridge
922129	440 lb. drum, A
41732	575 lb. drum, B
922128	4.5 gallon pail, A
922089	3.5 gallon pail, B
922544	400 ml dual cartridge
924107	4.5 gallon pail, A
922089	3.5 gallon pail, B

#### Loctite® E-30CL™ Hysol®

*Epoxy Adhesive*  
An ultra-clear/low viscosity, impact resistant epoxy with a 30-minute work life. An excellent glass bonder. Exhibits exceptional chemical resistance.

P/N	Package Size
29329	50 ml dual cartridge
29330	200 ml dual cartridge
29331	400 ml dual cartridge

†SMP= Silane-modified polymer.

\*Made-to-order item.

## Potting

Solution	Loctite® E-40EXP™	Loctite® 3173™ / 3184™		Loctite® 3145™ / 3165™		Loctite® 5620™
Chemistry	Epoxy	2-Comp Urethane	2-Comp Urethane	2-Comp Epoxy	2-Comp Epoxy	2-Part Silicone
Key Features	Extended worklife	General-purpose	Flame retardant	Flame retardant	Low shrinkage	Fast cure, ultra-clear
Color	Black	Clear Brown	White	Black	Clear	Clear
Mix Ratio	2:1	15:85 by weight 1:4.8 by volume		100:6 by weight 9.7:1 by volume		1:1
Viscosity (cP)	20,000	2,250	2,250	13,400	13,400	200 (Mixed)
Shear Strength (psi)	2,000	N/A	N/A	N/A	N/A	N/A
Temperature Limit	Up to 250°F	Up to 250°F	Up to 250°F	Up to 250°F	Up to 250°F	N/A
Work Life	35 min.	45 min.	45 min.	2.5 to 3 hrs.	2.5 to 3 hrs.	5 min.
Cure Method	2-Part static mix	2-Part mix	2-Part mix	2-Part mix	2-Part mix	2-Part mix and moisture cure

## Descriptions

### Loctite® E-40EXP™ Hysol® Epoxy Potting Compound

#### *Explosion Proof/ Chemical Resistant*

An epoxy designed for potting electrical motors used in hazardous locations. Compliant with UL-674 for explosion-proof electric motors. Excellent chemical resistance.

P/N	Package Size
1511184*	50 ml dual cartridge
1511653	200 ml dual cartridge
1511896*	5 gallon pail, part A
1511897*	5 gallon pail, part B

### Loctite® 3173™ Hysol® Polyurethane Resin

Low viscosity potting compound used with 3184™ hardener, to meet UV94V-0 flammability rating at 3/8 in. thickness.

P/N	Package Size
39984	1 quart can
39985	1 gallon pail
39986*	5 gallon pail

### Loctite® 3184™ Hysol® Polyurethane Hardener

A two-part polyurethane system to be used with Loctite® 3173™ Hysol® Resin to meet UL 94V-0 Flammability Rating at 3/8 in. thickness.

P/N	Package Size
39398	1 gallon pail
39397*	5 gallon pail

### Loctite® 3145™ Hysol® Epoxy Resin

A potting compound resin that is formulated to offer improved flame retardance when mixed with HYSOL® Epoxy Hardener (3160, 3162, 3163, 3164, 3165).

P/N	Package Size
40512	1 gallon pail

### Loctite® 3165™ Hysol® Epoxy Hardener

Used with Loctite® 3145™ Hysol® Epoxy Resin to offer improved flame retardance.

P/N	Package Size
39395	1 quart can

### Loctite® 5620™ Silicone Potting Compound

#### *Ultra-Clear/Fast Cure*

Two-part, ultra-clear, fast cure, noncorrosive silicone. Transparent in color. Ideal for sealant, or potting applications that require a transparent silicone. Fast room temperature cure.

P/N	Package Size
1257593	50 ml dual cartridge
1257595	40 lb. pail, part A
1257597	40 lb. pail, part B
1257594	400 lb. drum, part A
1257596	400 lb. drum, part B

\*Made-to-order item.

## General Bonding

Solution	Loctite® E-30CL™	Loctite® E-90FL™	Loctite® H3300™	Loctite® 435™	Loctite® UK1366 B10™
Chemistry	Epoxy	2-Part Epoxy	MMA	Cyanoacrylate	2-Part Polyurethane
Key Features	Medium fixture, chemical resistant	Flexible	Fast work time	Rubber-toughened, surface insensitive	Flexible structural bonder
Color	Clear	Opaque Grey	Yellow	Clear	Green
Mix Ratio	2:1	1:1	1:1	1-Component	4:1
Viscosity (cP)	10,000	40,000	110,000	175	33,760
Shear Strength (psi)	3,100	810	3,350	2,700	1,550
Temperature Limit	Up to 250°F	Up to 250°F	Up to 300°F	Up to 225°F	Up to 250°F
Work Life	30 min.	90 min.	5 min.	30 sec.	10 min.
Cure Method	2-Part static mix	2-Part static mix	2-Part static mix	Humidity	2-Part static mix

### Descriptions

#### Loctite® E-30CL™ Hysol® Epoxy Adhesive

An ultra-clear, low viscosity, impact resistant epoxy with a 30-minute work life. An excellent glass bonder. Exhibits exceptional chemical resistance.

P/N	Package Size
29329	50 ml dual cartridge
29330	200 ml dual cartridge
29331	400 ml dual cartridge

#### Loctite® E-90FL™ Hysol® Epoxy Adhesive

##### Flexible

A grey, impact-resistant, toughened epoxy with a 90-minute work life.

P/N	Package Size
29309	50 ml dual cartridge
29311	400 ml dual cartridge

#### Loctite® H3300™ Structural Adhesive

##### Fast Fixture

A non-sag, fast fixturing structural adhesive for bonding a variety of substrates.

P/N	Package Size
83020	50 ml dual cartridge
83019	400 ml dual cartridge
83024*	40 lb. pail, adhesive
83022*	40 lb. pail, activator

#### Loctite® 435™ Instant Adhesive

Low viscosity toughened CA with increased flexibility, peel strength and resistance to shock. Surface insensitive, providing excellent bond strengths to most materials.

P/N	Package Size
40994	20 g bottle
40995	1 lb. bottle

#### Loctite® UK1366 B10™ Flexible Structural Bonder

A green, highly flexible bonder with excellent moisture resistance and very good impact strength. Structural strength on metals and plastics.

P/N	Package Size
1668032	415 ml cartridge

\*Made-to-order item.

## Threadlocking

Solution	Loctite® 243™ Threadlocker Medium Strength	Loctite® 246™ Threadlocker Medium Strength	Loctite® 248™ Threadlocker Medium Strength	Loctite® 263™ Threadlocker High Strength	Loctite® 268™ Threadlocker High Strength
Chemistry	Liquid Anaerobic	Liquid Anaerobic	Semisolid Anaerobic	Liquid Anaerobic	Semisolid Anaerobic
Key Features	General-purpose	High temperature	Semisolid stick	General-purpose	Semisolid stick
Color	Blue	Blue	Blue	Red	Red
Viscosity (cP)	1,300/3,000 Thixotropic	2,600	Semisolid	1,250 / 4,250	Semisolid
Torque (in.-lbs.)	106 / 26	130 / 35	110 / 43	275 / 290	220 / 34
Temperature Limit	360°F	450°F	300°F	360°F	300°F
Fixture Time	5 min.	10 min.	10 min.	10 min.	20 min.
Cure Method	Anaerobic	Anaerobic	Anaerobic	Anaerobic	Anaerobic

### Descriptions

#### Loctite® 243™ Threadlocker Medium Strength/ Primerless

Versatile, medium strength liquid threadlocker. Reliably locks and seals metal fasteners up to 3/4 in. Engineered to cure consistently on a variety of metals, despite minor surface contaminants. Works on steel, stainless steel and most plated fasteners. Tolerates thread lubrication, anti-corrosion and protection fluids. Rated for 360°F (180°C).

P/N	Package Size
1330255	0.5 ml capsule
1329837	10 ml bottle
1329467	50 ml bottle
1329505	250 ml bottle
1330333	1 liter bottle

#### Loctite® 246™ Threadlocker Medium Strength

High temperature, medium strength threadlocker. The thixotropic nature of Loctite® 246™ reduces the migration of liquid product after application to the substrate.

P/N	Package Size
29513	10 ml bottle
29514	50 ml bottle
29515	250 ml bottle

#### Loctite® 248™ Threadlocker Semisolid/Medium Strength

Semisolid stick form is convenient, portable and great for hard-to-reach applications. Loctite® 248™ Threadlocker is the ideal general-purpose threadlocker for all nut and bolt applications, especially fasteners between 1/4 in. and 3/4 in. Removable with hand tools.

P/N	Package Size
37684	9 g stick
37087	19 g stick

#### Loctite® 263™ Red Threadlocker High Strength/ Primerless

Versatile, high strength liquid threadlocker. Reliably locks and seals metal fasteners up to 1 in. Engineered to cure consistently on a variety of metals, despite minor surface contaminants. Works on steel, stainless steel and most plated fasteners. Tolerates thread lubrication, anti-corrosion and protection fluids. Rated for 360°F (180°C). Heat required for removal.

P/N	Package Size
1330582	0.5 ml capsule
1330583	10 ml bottle
1330585	50 ml bottle
1330335	250 ml bottle
1330334	1 liter bottle

#### Loctite® 268™ Threadlocker Semisolid/ High Strength

This convenient semisolid stick form is portable and less messy. Its high strength prevents loosening of threaded fasteners. Well-suited for heavy-duty applications. Heat required for removal.

P/N	Package Size
37685	9 g stick
37686	19 g stick

## Dispensing Equipment

	Two-Part Dispensing			One-Part Dispensing	
Product	Loctite® 50 ml Dual Cartridge Manual Applicator	Loctite® 200 ml/400 ml Dual Cartridge Manual Applicators	Loctite® 200 ml/400 ml Dual Cartridge Pneumatic Applicators	Loctite® 300 ml Pneumatic Cartridge Dispenser	Loctite® 300 ml Pneumatic Cartridge Dispensing Retainer
P/N	98472	983436 (200 ml) 983438 (400 ml) 985246 (490 ml)	983437 (200 ml) 983439 (400 ml) 985249 (490 ml)	97002	98319A
Used to Dispense	2-Component Epoxies, Urethanes, Methacrylates	2-Component Epoxies, Urethanes, Methacrylates	2-Component Epoxies, Urethanes, Methacrylates	Silicones & MS Polymers	Silicones & MS Polymers
Package Types/ Sizes	50 ml dual cartridge, 1:1, 2:1, 4:1	200 ml dual cartridge 400 ml dual cartridge 490 ml dual cartridge	200 ml dual cartridge 400 ml dual cartridge 490 ml dual cartridge	300 ml cartridge	300 ml cartridge
Viscosity Range	Low to High	High to Paste	High to Paste	Medium to High	Low to Medium
Type	Manual	Manual	Pneumatic	Pneumatic	Pneumatic



# DIVERSE

ELECTRONICS

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