



# WHICH LOCTITE TO USE

By Henry Zwolak

Many of the questions that we answer at RCGF Aero Products is about the use of Loctite. Our answers are easy - all engines, whether they are single or dual cylinder models produce vibration, and this vibration will loosen bolts and nuts over time.

Checking the tightness of the bolts/nuts every couple of flights is smart preventative maintenance. It only takes a minute or so. Make this a mantra of yours.

We do recommend the use of Loctite products on ANY metal to metal contact surface. The engine itself is OK and you do not have to worry about it, but any bolt and nut that connects to it, like engine mounts DO need it. ANY and EVERY nut and bolt needs on the aircraft needs to have Loctite applied to it.

Using Loctite is very inexpensive insurance for your aircraft. Next time you are at your favorite hardware store, pick up a bottle. It lasts a long time.

OK. So now which one to use? The table below and the attached product guide (produced by Loctite) will tell you the proper ones.



## Summary –

Never use RED – Unless you have a specific reason. Blue is your best choice.

Why? First off - practical experience. Red Loctite when used properly and according to instructions will lock a bolt and nut permanently. I made this mistake when I put it on my prop washer hub. I could not remove the bolt and in fact twisted the head right off. I needed to use a torch!

Also, any time you remove a bolt or nut that was Loctited, you will have to reapply it again.

Should you apply Loctite to Prop Bolts? No.... Don't bother... You need to check the tightness of the bolts here ALL THE TIME. Every new day that you fly, the one thing you should do is check the tightness of the prop bolts.

The below information was taken from the Loctite Industrial Product Guide and as you can see all of the temp. ranges are -65 to 300 degrees F., except 272 red which is up to 450 degrees. The cure times vary except they all require 24 hours to cure fully.



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**222 - Purple** - Low strength thread locker, designed for precision metal fasteners under 3/4". Protect threads from rust and corrosion. Removable with hand tools. Temp range -65 to 300 degrees F. Cure Speed 20 min. Full 24 hrs.

**242 - Blue** - Medium strength thread locker for fasteners up to 3/4". Cures reliably even on stainless steel. Tolerant of oil and other contamination. Protects threads from rust and corrosion. Parts can be disassembled with hand tools. Temp range -65 to 300 degrees F. Cure speed 15 min. Full 24 hrs.

**262 - Red** - Permanent strength thread locker for fasteners up to 3/4". Designed for extreme environmental/chemical conditions. Especially useful for holding tight Grade 5 and 8 fasteners. Protects threads from rust and corrosion. Localized heating and hand tools required for disassembly. Temp range -65 to 300 degrees F. Cure speed 30 min. Full 24 hrs.

**272 - Red** - Hi-temp/hi-strength formula. Suited for temperatures up to 450 degrees F. Fast cure on most surfaces including "as received" fasteners. Recommended for bolts up to 1 1/2" in diameter. Heat and hand tools required for disassembly. Temp range -65 to 450 degrees F. Cure speed 60 min. Full 24 hrs.

**277 - Red** - High strength for locking fasteners up to 1 1/2". Prevents fasteners from loosening due to shock, heat or vibration. Protects threads from rust and corrosion. Removable with heat and hand tools. Temp range -65 to 300 degrees F. Cure speed 60 min. Full 24 hrs.

**290 - Green** - Medium strength thread locker for pre-assembled bolts up to 1/2". Penetrates threads by capillary action: simplifies preventive maintenance. Secures set screws and other assemblies after settings are completed. Used to seal welds and porous metal parts. Protects threads from rust and corrosion. Temp range -65 to 300 degrees F. Cure speed 10 min. Full 24 hrs.

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# Threadlocking

## Locking of Threaded Fasteners

- Prevents loosening from shock and vibration
- Single component – clean and easy to apply
- Can be used on various sizes of fasteners – reduces inventory costs
- Seals threads
- Stops rust and corrosion



### ARE THE PARTS ALREADY ASSEMBLED?

#### Helpful Hints:

- Clean parts with Loctite® ODC-Free Cleaner & Degreaser before applying the adhesive
- If the threadlocker will be applied below 40°F, pre-treat with Loctite® 7649™ Primer N™
- If the parts were in contact with aqueous washing solutions or cutting fluids which leave a protective layer on the surface, wash with hot water before use

#### Solution

Yes			No					
Wicking Grade			What strength do you require?					
What strength do you require?			Low – Purple	Medium – Blue		High – Red		
Medium – Blue	Medium/High – Green		Liquid Product	Liquid Product	Semi-Solid Product	Liquid Product	Semi-Solid Product	
Loctite® 220™ Threadlocker	Loctite® 290™ Threadlocker		Loctite® 222MS™ Threadlocker	Loctite® 2440™ Threadlocker	Loctite® QuickStix™ 248™ Threadlocker – Medium Strength	Loctite® 2760™ Threadlocker	Loctite® QuickStix™ 268™ Threadlocker – High Strength	
Fastener Size	#2 to 1/2"	#2 to 1/2"	Up to 1/4"	1/4" to 3/4"	1/4" to 3/4"	Up to 1"	Up to 1"	
Strength	Medium	High	Low	Medium	Medium	High	High	
Cure Time (Fixture/Full Strength)*	6 min./24 hr.	20 min./24 hr.	10 min./24 hr.	3 min./24 hr.	10 min./24 hr.	4 min./24 hr.	20 min./24 hr.	
Breakaway/Prevail Torque (lb./in.)	20/250	90/260	53/30	215/53	110/43	325/320	220/4	
Temperature Resistance for Continuous Service	300°F (150°C)	300°F (150°C)	300°F (150°C)	300°F (150°C)	300°F (150°C)	300°F (150°C)	300°F (150°C)	
Common Sizes / Part Number	10 ml bottle – 37388 50 ml bottle – 39186 250 ml bottle – 22041	10 ml bottle – 29021 50 ml bottle – 29031 250 ml bottle – 29041	10 ml bottle – 22221 50 ml bottle – 22231 250 ml bottle – 22241	10 ml bottle – 33946 50 ml bottle – 33947 250 ml bottle – 33948	9 g stick – 37684 19 g stick – 37087	10 ml bottle – 32526 50 ml bottle – 32525 250 ml bottle – 32527	9 g stick – 37685 19 g stick – 37686	

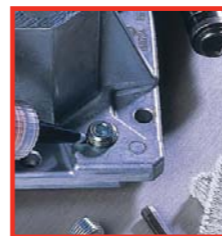
\* Typical value @ 70°F (22°C)

#### Additional Loctite® brand Threadlockers

Name	Strength	Breakaway/Prevail Torque (lb./in.)	Features	Part #	Package Size
242®	Medium	110/43	Fasteners 1/4" to 1/2"	24231	50 ml bottle
243™	Medium	180/62	Oil Tolerance	24078	50 ml bottle
262™	High	189/275	Fasteners up to 1/2"	26231	50 ml bottle
272™	High	200/220	High Temp up to 1 1/2"	27240	50 ml bottle
277™	High	275/275	Fasteners up to 1 1/2"	27731	50 ml bottle
425™ Assure™	Low	4/2	Plastic Fasteners	42540	20 g bottle
Loctite® Bottle Hand Pump – Fits Loctite® 50 or 250 ml bottles				97001 98414	250 ml bottle 50 ml bottle



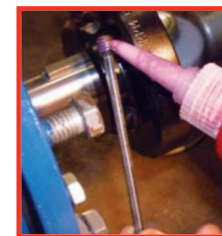
**Loctite® 220™ Threadlocker – Medium Strength/Wicking/Blue**



**Loctite® 290™ Threadlocker – High Strength/Wicking/Green**

A low viscosity threadlocking adhesive that allows the product to wick along the threads of preassembled fasteners. Perfect for fasteners up to 1/4" diameter (6 mm).

Recommended for locking pre-assembled fasteners, i.e. instrumentation screws, electrical connectors, and set screws. Also seals porosities in welds and metal parts. **Mil Spec (S-46163A) Type III, Grade R. NSF/ANSI 61.**



**Loctite® 222MS™ Threadlocker – Low Strength**

Recommended for low-strength threadlocking of adjustment screws, countersunk head screws, and set screws; on collars, pulleys, tool holders, and controllers. Also for low strength metals such as aluminum or brass. **Mil-Spec (S-46163A) Type II, Grade M. NSF P1.**



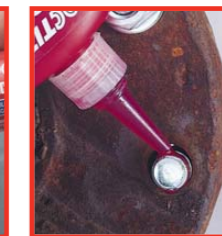
**Loctite® 2440™ Threadlocker – Primerless/Medium Strength**

Particularly fast curing, reducing or eliminating the need for primers. Effective on all types of metal threaded fasteners. Prevents loosening on vibrating parts such as pumps, motor mounting bolts, gear boxes, or presses. Removable with hand tools.



**Loctite® QuickStix™ 248™ Threadlocker – Medium Strength**

Semi-solid stick form is convenient, portable, and great for hard-to-reach applications. Loctite® QuickStix™ 248™ Threadlocker is the ideal general-purpose threadlocker for all nut and bolt applications, especially fasteners between 1/4" and 3/4". Removable with hand tools. **NSF/ANSI 61.**



**Loctite® 2760™ Threadlocker – Primerless/High Strength**

Particularly fast curing, reducing or eliminating the need for primers. For use on all metal fasteners where regular removal for maintenance is not required. Recommended for permanently locking studs on engine blocks and pump housings. **CFIA Approved.**



**Loctite® QuickStix™ 268™ Threadlocker – High Strength**

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

#### Use Loctite® 7649™ Primer N™ to:

1. Activate inactive surfaces.
2. Speed cure times for faster return to service.
3. Speed curing through larger gaps and deep threads.
4. Substantially speed cure times on cold parts.
5. Act as a cleaning agent.

**Primer is optional with:** Active surfaces: Brass, copper, bronze, iron, soft steel, nickel.

**Primer is required with:** Inactive surfaces: Aluminum, stainless steel, magnesium, zinc, black oxide, cadmium, titanium, others.

**Package Size/Part Number:** 1.75 fl. oz. bottle – 38402  
4.5 oz. aerosol – 21348





## Loctite® – Finding a Better Way

### Old Way

#### Mechanical Locking Devices

Mechanical locking devices (e.g., split washers, nylon nuts) were invented to solve the common problem of loosening that occurs in most threaded assemblies. Although they were made for this purpose, they have several shortcomings.

#### Shortcomings of Mechanical Locking Devices

- Loosen under vibration, thermal expansion and/or improper torque
- Do not seal threads
- Require extensive inventory of several shapes and sizes
- Prone to rust



### Better Way

#### Loctite® Threadlockers

Invented fifty years ago by Loctite Corporation, now Henkel Corporation, this revolutionary method to lock and seal threaded fasteners with liquid anaerobic adhesives has found worldwide acceptance. Suited for a wide range of applications, from delicate electronic components to heavy industrial equipment, Loctite® threadlockers have dramatically increased the reliability of threaded assemblies.

#### Benefits of Loctite® Threadlockers

- Lock nuts and bolts against vibration and thermal expansion
- Seal against corrosion and leakage
- Reduce inventory costs
- Suitable for all shapes and sizes of fasteners
- Act as a thread lubricant
- Maintain critical adjustments of the assembly
- No on-torque adjustments needed
- High chemical resistance



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# Threaded Fasteners

# Locking Methods

## Functions of a threaded assembly

1. Create clamp force
2. Maintain clamp force
3. Allow disassembly



## Why do threaded assemblies fail?

### Clamp force is not maintained

Threaded assemblies loosen because of:

**A. Gaps:** In order to make the assembly possible, nuts and bolts must have some tolerance, which creates gaps between the threads.



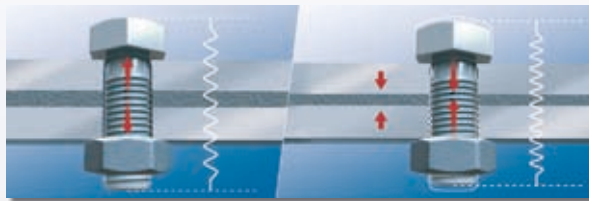
Parts tolerance

**B. Vibration & side-to-side movement:** These gaps allow the parts to move from side-to-side when exposed to vibration.



Vibration and loosening

**C. Expansion/contraction & loosening:** Expansion and contraction can also cause side-by-side movement. This, in addition to vibration, lead to loosening and ultimately disassembly of parts.

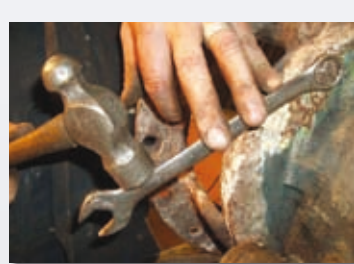


Stretching of the bolt beyond its yield point and thermal expansion/contraction of parts leads to lack of structural rigidity and relaxation of parts

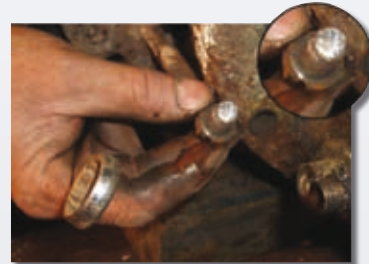
### Disassembly is not always possible

This failure happens because, in certain conditions, a nut and a bolt can seize together. This seizing effect is caused by:

- Galling (friction welding)
- Corrosion, rust, when dealing with:
  - ✓ Humidity
  - ✓ High temperatures
  - ✓ Assembly of different metals (galvanic corrosion)



Corroded assemblies can be difficult to take apart...



...which can lead to broken bolts.

## Shortcomings of locking devices



### Split ring or spring washers

Increased friction reduces clamp load; will not ensure reliable threadlocking under dynamic loads.



### Tab washers, split pins, castle nuts

Expensive and time consuming methods, they often impose challenges to line up their components appropriately (i.e., tabs, cotterpins).



### Tooth or ribbed flanged bolts

Prevent self-loosening, but are expensive; need larger flange-bearing surfaces and may damage the surfaces.



### Nylon nut

More expensive than a standard nut, nylon inserts increase friction, which results in inaccurate torque.

## Why use Loctite® threadlockers

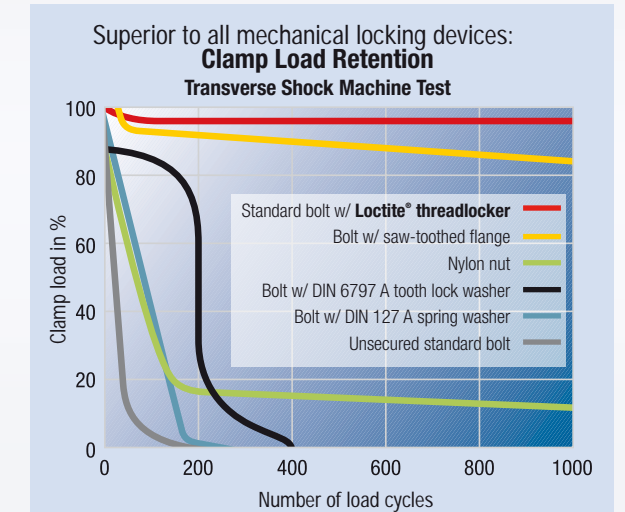


Loctite® threadlockers are the most versatile and inexpensive option to ensure a reliable assembly.

### Loctite® benefits

<b>Superior vibration resistance</b>	<ul style="list-style-type: none"> <li>• Locks and seals in any position</li> <li>• Resists vibration and torque down to zero bolt tension</li> </ul>
<b>Increased reliability</b>	<ul style="list-style-type: none"> <li>• Joints withstand vibration, shock and thermal cycling</li> <li>• Threads are sealed to prevent corrosion</li> <li>• Clamp load is maintained</li> <li>• Prevents loosening</li> <li>• Controlled clamp load</li> </ul>
<b>Longer end product life</b>	<ul style="list-style-type: none"> <li>• Assembly remains locked and leak-proof for its full service life</li> <li>• Clamp load retention and higher off-torque provide additional safety</li> </ul>
<b>Prevention of galling and corrosion</b>	<ul style="list-style-type: none"> <li>• Liquid film prevents friction welding or galling</li> <li>• Sealing effect prevents corrosion</li> <li>• Permits disassembly</li> </ul>
<b>Excellent durability</b>	<ul style="list-style-type: none"> <li>• Withstands most industrial gases and fluids</li> <li>• Thermal resistance up to 300°F (150°C) and higher</li> <li>• Field-proven for decades</li> </ul>
<b>Cost savings</b>	<ul style="list-style-type: none"> <li>• Lower costs for storage, purchasing, maintenance and repair</li> <li>• Universally applicable for a wide range of thread sizes</li> <li>• Ease of automation reduces assembly costs and increases throughput</li> <li>• Easy to integrate into production with low equipment needs</li> </ul>

### Loctite® performance



### Loctite® cost

Lower cost per unit compared to most locking devices:  
**Cost per locking application**

Fastener Size	Split Ring Washer	Loctite® Threadlocker
3/8"	2¢	2¢
5/8"	9¢	5¢
7/8"	25¢	7¢

Note: Washer pricing based on 100 units purchased at an industrial distributor. Loctite® pricing based on 50-ml bottle price and number of drops required per application.

# Loctite® Threadlocking Solutions



## How does a Loctite® threadlocker work?

### Fill Gaps

Loctite® threadlockers are single-component adhesives that cure in the absence of air and in contact with active metal to form a tough thermoset plastic. They completely fill all voids between the interfacing threads, which makes the assembly a unitized component and ultimately prevents loosening.



Loctite® threadlocker between the interfacing threads

### Seal Threads

Another property of Loctite® threadlockers is thread sealing. This property is especially important when assembling through-bolts in an oil reservoir or cooling jacket in order to keep the fluids sealed in and corrosion out. Examples of this application are common but not limited, to gearboxes and internal combustion engines.



Engagement area of rusty bolt that did NOT have Loctite® threadlocker applied



Engagement area of rusty bolt that DID have Loctite® threadlocker applied

## How do I use a Loctite® threadlocker?

### Application Options



For through holes



For blind holes



For post assembly



For overhead applications

**IMPORTANT:** To achieve optimum performance all parts must be clean and free of contaminants (e.g., oil, grease).

### Dispensing Options



250-ml and 50-ml Loctite® hand pumps



Loctite® integrated semiautomatic dispenser, dispense valve, and stationary dispense valve

For maximum convenience and productivity, Loctite® threadlockers can be dispensed through Loctite® dispensing systems. For more information, visit [www.equipment.loctite.com](http://www.equipment.loctite.com).

## When should I use a Loctite® primer?

### Speed up cure

Significantly speed up the cure time of Loctite® threadlockers when assembling metal parts that are cold, have large gaps or deep threads.



Loctite® QuickStix™ 7088® Primer

### Inactive metal assemblies\*

When assembling metal parts with inactive surfaces, Loctite® primers are recommended to ensure proper performance of Loctite® threadlockers.

	*Inactive Metals (Primers Recommended)			Active Metals (Primers Optional)	
Plated Parts	Zinc	Magnetite Steel	Iron	Bronze	
Anodized Aluminum	Pure Aluminum	Inconel®	Plain Steel	Nickel	
Titanium	Cadmium	Silver	Copper	Manganese	
Stainless Steel	Magnesium	Gold	Brass	Monel®	
Galvanized Steel	Natural or Chemical Black Oxide			Kovar®	

Loctite® threadlockers cure in the absence of air and presence of metal ions. When assembling inactive metal parts, which are low in metal ions, the use of Loctite® primers are recommended to ensure proper performance of Loctite® threadlockers.

## Loctite® threadlocker key selection factors

### Strength

- **Low strength:** Easy disassembly using hand tools
- **Medium strength:** Disassembly possible with standard hand tools
- **High strength:** Requires localized heat (>500°F), hand tools and disassembly while still hot

### Viscosity

- **Liquid Formulas:** Everyday assembly; ideal for fine threads and blind holes
- **Gel Formulas:** Ideal for coarse and large threads, they do not run or migrate
- **Semisolid Formulas:** Pocket-friendly, ideal for overhead and pre-applied applications



Liquid



Gel



Semisolid

### Application Methods

- **Pre-Dispensed:** QuickStix™ semisolid threadlocker can be applied beforehand on bolts that are waiting to be assembled
- **Pre-Assembly:** Most Loctite® liquid threadlockers are designed to be applied at the moment that parts will be assembled
- **Post-Assembly:** Wicking grade formula can be applied on parts that are already assembled

### Materials Being Assembled

- All Loctite® Threadlockers: Metal-to-metal applications
- Loctite® 425™ Assure™: Plastic-to-plastic, plastic-to-metal applications



Pre-dispensed application

# Loctite® Threadlocker Selection



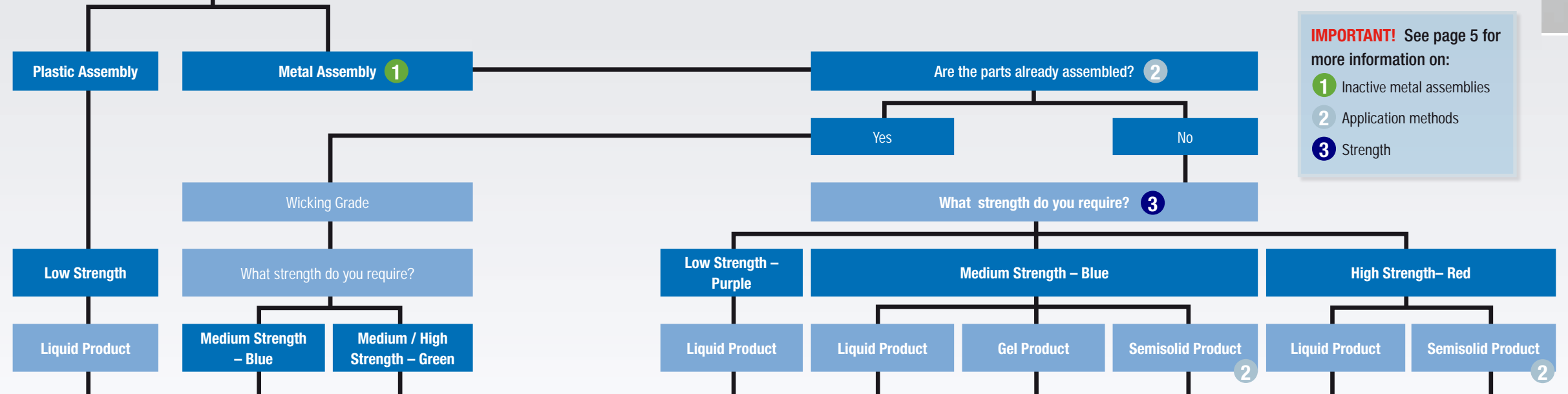
Are the parts being assembled metal or plastic?

### Helpful Hints:

- Clean part with Loctite® ODC-Free Cleaner & Degreaser before applying the adhesive
- If the threadlocker will be applied below 40°F, pre-treat with Loctite® 7649™ Primer N™
- If the parts were in contact with aqueous washing solutions or cutting fluids, which leave a protective layer on the surface, wash with hot water before use

**IMPORTANT!** See page 5 for more information on:

- 1 Inactive metal assemblies
- 2 Application methods
- 3 Strength



Solution	Loctite® 425™ Assure™	Loctite® 220™ Threadlocker	Loctite® 290™ Threadlocker	Loctite® 222MS™ Threadlocker	Loctite® 243™ Threadlocker	Loctite® 2033™ Threadlocker	Loctite® QuickStix™ 248™ Threadlocker	Loctite® 2760™ Threadlocker	Loctite® QuickStix™ 268™ Threadlocker
Fastener Size <sup>a</sup>	Small fasteners	#2 to 1/2"	#2 to 1/2"	Up to 1/4"	1/4" to 3/4"	1/4" to 1"	1/4" to 3/4"	Up to 1"	Up to 1"
Cure Time (Fixture / Full Strength) <sup>b</sup>	1.5 min. / 24 hrs.	6 min. / 24 hrs.	20 min. / 24 hrs.	10 min. / 24 hrs.	3 min. / 24 hrs.	20 min.	10 min. / 24 hrs.	4 min. / 24 hrs.	20 min. / 24 hrs.
Breakaway / Prevail Torque (in.-lb.)	53 / 30	20 / 250	90 / 260	53 / 30	215* / 53	142 / 62	110 / 43	325* / 320	220 / 34
Temperature Resistance for Continuous Service	180°F (82°C)	300°F (150°C)	300°F (150°C)	300°F (150°C)	300°F (150°C)	300°F (150°C)	300°F (150°C)	300°F (150°C)	300°F (150°C)

<sup>a</sup> For bolts over 1", use Loctite® 277™. For more information, see page 9.

<sup>b</sup> Breakloose Value

### Product Description



**Loctite® 425™ Assure™ Instant Adhesive**

Low strength, fast surface-curing threadlocker for plastic fasteners. Can be used as a tamper-proofing agent for the head of screws. Can be applied before or after assembly.



**Loctite® 220™ Threadlocker – Medium Strength / Wicking / Blue**

A low viscosity threadlocking adhesive that allows the product to wick along the threads of preassembled fasteners. Perfect for fasteners up to 1/4" diameter (6 mm).



**Loctite® 290™ Threadlocker – High Strength / Wicking / Green**

Recommended for locking pre-assembled fasteners, i.e., instrumentation screws, electrical connectors, and set screws. Also seals porosities in welds and metal parts.



**Loctite® 222MS™ Threadlocker – Low Strength**

Recommended for low-strength threadlocking of adjustment screws, countersunk head screws, and set screws; on collars, pulleys, tool holders, and controllers. Also for low strength metals such as aluminum or brass.



**Loctite® 243™ Threadlocker – Primerless / Medium Strength**

A general purpose, medium strength threadlocker with improved oil tolerance. Suitable for 1/4" to 3/4" diameter (6 mm to 20 mm) fasteners.



**Loctite® 2033™ Gel Threadlocker – Medium Strength**

A medium strength gel threadlocker for use on standard or large thread applications. It is easy to use, ergonomic, with multi-dispense options. The gel consistency is ideal for overhead or pre-applied applications where product drip is a concern.



**Loctite® QuickStix™ 248™ Threadlocker – Medium Strength**

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



**Loctite® 2760™ Threadlocker – Primerless / High Strength**

Particularly fast curing, reducing or eliminating the need for primers. For use on all metal fasteners where regular removal for maintenance is not required. Recommended for permanently locking studs on engine blocks and pump housings.



**Loctite® QuickStix™ 268™ Threadlocker – 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.

# Loctite® Innovations

## QuickStix™ – Versatility and Cleanliness

### Loctite® QuickStix™ 248™ and Loctite® QuickStix™ 268™

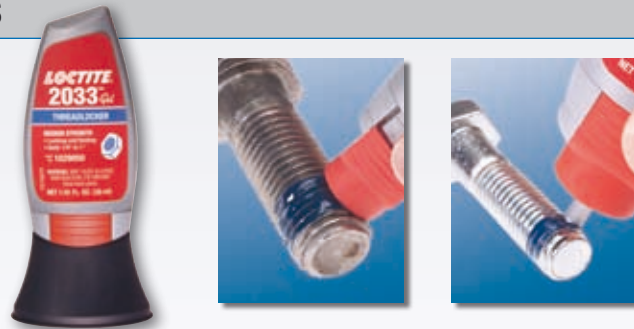
No mess QuickStix™ make Loctite® threadlockers easier than ever to apply. Ideal for overhead and pre-applied applications, coarse and large threads, as well as other applications where liquid are not recommended.



## 2033™ Gel – Multiple Dispense Options

### Loctite® 2033™

Gel dispense capabilities include multiple dispense options with pinpoint and flat-top applicators. Ergonomic packaging offers ease of dispense. Ideal for coarse or large threads.



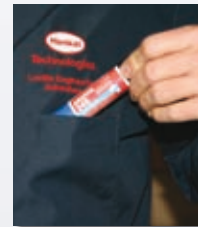
## Primerless Products – Speed and Performance

### Loctite® 2760™

The innovative formula of this Loctite® threadlocker reduces the need for primers. It performs well on all metal substrates including anodized aluminum, stainless steel, and other inactive metals (see inactive metal assemblies table on page 5). It is also particularly fast curing (usable strength within an hour).



## Packaging – Precision and Convenience



Only Loctite® threadlockers are available in multiple packaging and dispensing options. Liquid threadlockers in 50-ml and 250-ml bottles come with a **pull-open/push-close nozzle** to prevent spill when product is not in use. They can also be applied with **hand pumps** for maximum productivity. Semisolid products come in a **pocket-friendly package** that makes it easy to carry from job to job. Our gel formula is available in an **ergonomic package** with multiple dispense options that allow for both pinpoint and wide coverage applications.

## Loctite® Threadlocker Properties Chart

PRODUCT	Item Number	Package Type & Size	COLOR	TYPICAL USE	VISCOSITY (cP)	TORQUE IN.-LBS. (M10 Steel Nuts & Bolts) BREAK / PREVAIL	TEMPERATURE RANGE	CURE SPEED (STEEL AT 25°C)	OIL TOLERANT	AGENCY APPROVALS	
LOW STRENGTH	222MS™	22205 0.5 ml capsule 22221 10 ml bottle 22231 50 ml bottle 22241 250 ml bottle	Purple	Easy removal, small screws under 1/4"	1,200 / 5,000 Thixotropic	53 / 30	-65°F to 300°F	Fixture – 10 min. Full – 24 hrs.	N/A	MIL-S-46163A for existing designs, ASTM D-5363**, NSF P1, CFIA	
	REMOVABLE STRENGTH	242°	24205 0.5 ml capsule 24221 10 ml bottle 24231 50 ml bottle 24241 250 ml bottle 24243 1 liter bottle	Blue	Removable grade, up to 1/4" to 3/4" bolts	1,200 / 5,000 Thixotropic	110 / 43	-65°F to 300°F	Fixture – 10 min. Full – 24 hrs.	N/A	MIL-S-46163A for existing designs, ASTM D-5363**, NSF/ANSI 61, NSF P1, ABS, CFIA
		243™	23977 0.5 ml capsule 24077 10 ml bottle 24078 50 ml bottle 24079 250 ml bottle 21433 1 liter bottle	Blue	For 1/4" to 3/4" bolts with light oil contamination	2,250 / 12,000 Thixotropic	180 / 62	-65°F to 300°F	Fixture – 5 min. Full – 24 hrs.	N/A	NSF/ANSI 61, CFIA
246™		29513 10 ml bottle 29514 50 ml bottle 29515 250 ml bottle	Blue	High temperature, medium strength	2,600	170 / 48	-65°F to 450°F	Fixture – 20 min. Full – 24 hrs.	Yes	N/A	
QuickStix™ 248™		37684 9 g stick 37087 19 g stick	Blue	1/4" to 3/4" (6 mm to 20 mm)	Semisolid	110 / 43	-65°F to 300°F	Fixture – 10 min. (3 min. w/primer) Full – 24 hrs.	N/A	NSF/ANSI 61, CFIA	
HIGH STRENGTH	2033™	1029050 35 ml bottle	Blue-Green	For threads 1/4" to 1" (6 mm to 25.4 mm)	Gel	142 / 62	-65°F to 300°F	Fixture – 20 min. (5 min. w/primer)	N/A	N/A	
	262™	26205 0.5 ml capsule 26221 10 ml tube 26231 50 ml bottle 26241 250 ml bottle 26243 1 liter bottle	Red	High strength locking, up to 3/4" bolts	1,800 / 5,000 Thixotropic	189 / 275	-65°F to 300°F	Fixture – 5 min. Full – 24 hrs.	N/A	MIL-S-46163A for existing designs, ASTM D-5363**, NSF P1, ABS, CFIA	
		QuickStix™ 268™	37685 9 g stick 37686 19 g stick	Red	Up to 3/4" (up to 20 mm)	Semisolid	202 / 34	-65°F to 300°F	Fixture – 20 min. (5 min. w/primer) Full – 24 hrs.	N/A	CFIA
		271™	27105 0.5 ml capsule 27121 10 ml bottle 27131 50 ml bottle 27141 250 ml bottle 27143 1 liter bottle	Red	High strength for fasteners up to 1" diameter	500	250 / 275	-65°F to 300°F	Fixture – 10 min. Full – 24 hrs.	N/A	MIL-S-46163A for existing designs, ASTM D-5363**, UL Classified for U.S., CFIA
	272™	27240 50 ml bottle 27270 250 ml bottle 27285 1 liter bottle	Red	High temperature applications	9,500	200 / 220	-65°F to 450°F	Fixture – 30 min. Full – 24 hrs.	N/A	CFIA	
	277™	21434 10 ml bottle 27731 50 ml bottle 27741 250 ml bottle 27743 1 liter bottle	Red	High strength for large bolts	7,000	275 / 275	-65°F to 300°F	Fixture – 60 min. Full – 24 hrs.	N/A	MIL-S-46163A for existing designs, ASTM D-5363**	
		2760™	32526 10 ml bottle 32525 50 ml bottle 32527 250 ml bottle 32528 1 liter bottle	Red	Primerless, high strength	2,900 / 10,000 Thixotropic	325* / 320	-65°F to 300°F	Fixture – 4 min. Full – 24 hrs.	N/A	CFIA
	WICKING	220™	37388 10 ml bottle 39186 50 ml bottle 22041 250 ml bottle	Blue	Wicking grade for small, pre-assembled fasteners under 1/4"	20	85 / 170	-65°F to 300°F	Fixture – 6 min. Full – 24 hrs.	No	MIL-S-46163A for existing designs, ASTM D-5363**, CFIA
		290™	29005 0.5 ml capsule 29021 10 ml bottle 29031 50 ml bottle 29041 250 ml bottle 29043 1 liter bottle	Green	Wicking grade for pre-assembled parts	12	85 / 250	-65°F to 300°F	Fixture – 6 min. Full – 24 hrs.	N/A	MIL-S-46163A for existing designs, ASTM D-5363**, NSF/ANSI 61, NSF P1, CFIA
			294™	27934 0.5 ml capsule 27935 10 ml bottle 27936 50 ml bottle 27937 250 ml bottle	Green	High temperature, wicking grade	34	289 / 237	-65°F to 450°F	Fixture – 6 min. Full – 24 hrs.	Yes
PLASTIC	425™ Assure™	42540 20 g bottle 42561 1 lb. bottle	Blue	For small metal and plastic fasteners and tamper-proofing	80	4 / 2	-65°F to 180°F	Fixture – 1.5 min. Full – 24 hrs.	N/A	N/A	

\*Breaklose Value †Brookfield RVT spindle 3.20 RPM/25 RPM \*\*For new designs 🌐 Indicates worldwide availability ✓ Indicates TOP CHOICE products

## Loctite® Primers Properties Chart

	Product	Item #	Package Type and Size	Physical Property	On-Part Life	Dry time	Agency Approvals
SOLVENT-BASED	7471™ Primer T™	19267 1.75 fl. oz. bottle 22477 4.5 oz. net wt. aerosol can 19268 1 gallon can	Liquid	7 days	30 to 70 seconds	MIL-S-22473E for existing designs, ASTM D-5363 for new designs	
	7649™ Primer N™	19269 1.75 fl. oz. glass bottle 38402 1.75 fl. oz. aluminum bottle 21347 25 g net wt. aerosol can 21348 4.5 oz. net wt. aerosol can 19266 1 gallon can	Liquid	30 days	30 to 70 seconds	MIL-S-22473E for existing designs, ASTM D-5363 for new designs, NSF/ANSI 61, NSF P1, CFIA	
SOLVENTLESS	7090™	19368 1 fl. oz. bottle 12695 1 liter bottle	Liquid	1 hour	< 10 minutes	N/A	
	Loctite® QuickStix™ 7088™ Primer®	1069258 17 g stick	Semisolid	30 days	N/A	N/A	

# Loctite® Solutions



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## **U.S.A.**

### **Henkel Corporation**

Engineering Adhesives  
1001 Trout Brook Crossing  
Rocky Hill, Connecticut 06067  
Tel: 860.571.5100  
Fax: 860.571.5465

## **Canada**

### **Henkel Canada Corporation**

2225 Meadowpine Blvd.  
Mississauga, Ontario, Canada  
L5N 7P2  
Tel: 1.800.263.5043 (within  
Canada)  
Tel: 905.814.6511  
Fax: 905.814.6522



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