



Threadlocking

User's Guide

What you need to know to ensure
a reliable threaded assembly



www.useloctite.com

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 50 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



Table of Contents

THREADED FASTENERS

| | |
|--|---|
| Functions of a threaded assembly | 2 |
| Why do threaded assemblies fail? | 2 |

LOCKING METHODS

| | |
|---------------------------------------|---|
| Shortcomings of locking devices | 3 |
| Why use Loctite® threadlockers? | 3 |

LOCTITE® THREADLOCKING SOLUTIONS

| | |
|---|---|
| How does a Loctite® threadlocker work? | 4 |
| How do I use a Loctite® threadlocker? | 4 |
| When should I use a primer? | 5 |
| Loctite® threadlocker key selection factors | 5 |

HOW TO SELECT THE RIGHT LOCTITE® THREADLOCKER

| | |
|---------------------|------|
| Decision tree | 6, 7 |
|---------------------|------|

LOCTITE® INNOVATIONS

8

LOCTITE® THREADLOCKER PROPERTIES CHART

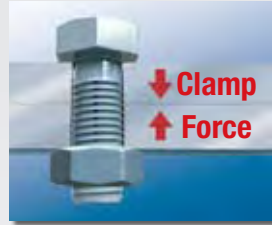
9

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.



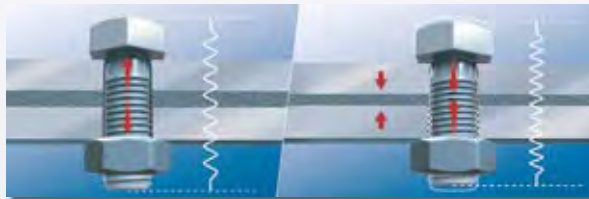
Parts tolerance

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-to-side movement. This, in addition to vibration, leads to loosening and ultimately disassembly of parts.



Stretching of the bolt beyond its yield point and thermal expansion/contraction of parts lead 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:

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



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, cotter pins).



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® Benefits

Better Performance

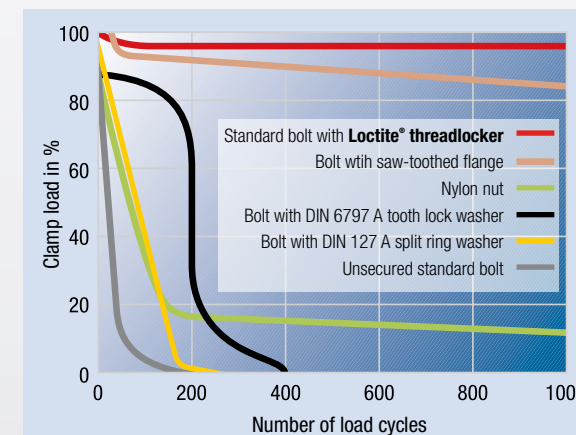
- **Reliable assembly:** Lock against vibration, shock and thermal cycling – plus seal against corrosion and galling.
- **Easy disassembly** using hand tools when low- or medium-grade formula is selected.
- **Outperform locking devices:** Better clamp load retention compared to all mechanical locking devices.

Cost Savings

- **Failure:** Reliable threaded assemblies reduce costly downtimes.
- **Inventory:** “One size fits all,” universally applicable for a wide range of fastener sizes.
- **Processing:** Ease of automation reduces assembly costs and increases throughput.
- **Material Cost:** Lower cost per unit compared to most locking devices.



Vibration loosening test



Note: Results from the Transverse Vibration Test (Junkers Machine) that assesses fasteners' resistance to vibration loosening.

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



For pre-applied 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 push-pull nozzle



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.

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. Not required for primerless products.



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. Not required for primerless products.

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

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 is recommended to ensure proper performance of Loctite® threadlockers.

Loctite® threadlocker key selection factors

Strength

- **Low Strength:** Ideal for fasteners <math><1/4\text{''}</math> (6 mm). Easy disassembly using hand tools.
- **Medium Strength:** Designed to be removable with standard hand tools on - **High Strength:** Designed to deliver high strength on >550^{\circ}\text{F}/260^{\circ}\text{C}), hand tools, and disassembly while hot.



Easy disassembly with hand tools when using Low and Medium Strength formulas

Viscosity

- **Liquid Formulas:** Everyday assembly; ideal for fine threads and blind holes
- **Semisolid Formulas:** Pocket-friendly, ideal for overhead applications
- **Tape Formula:** Pocket-friendly; controlled application; can be pre-applied several days before assembly.



Liquid



Gel

Application Methods

- **Pre-Applied:** QuickTape™ 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

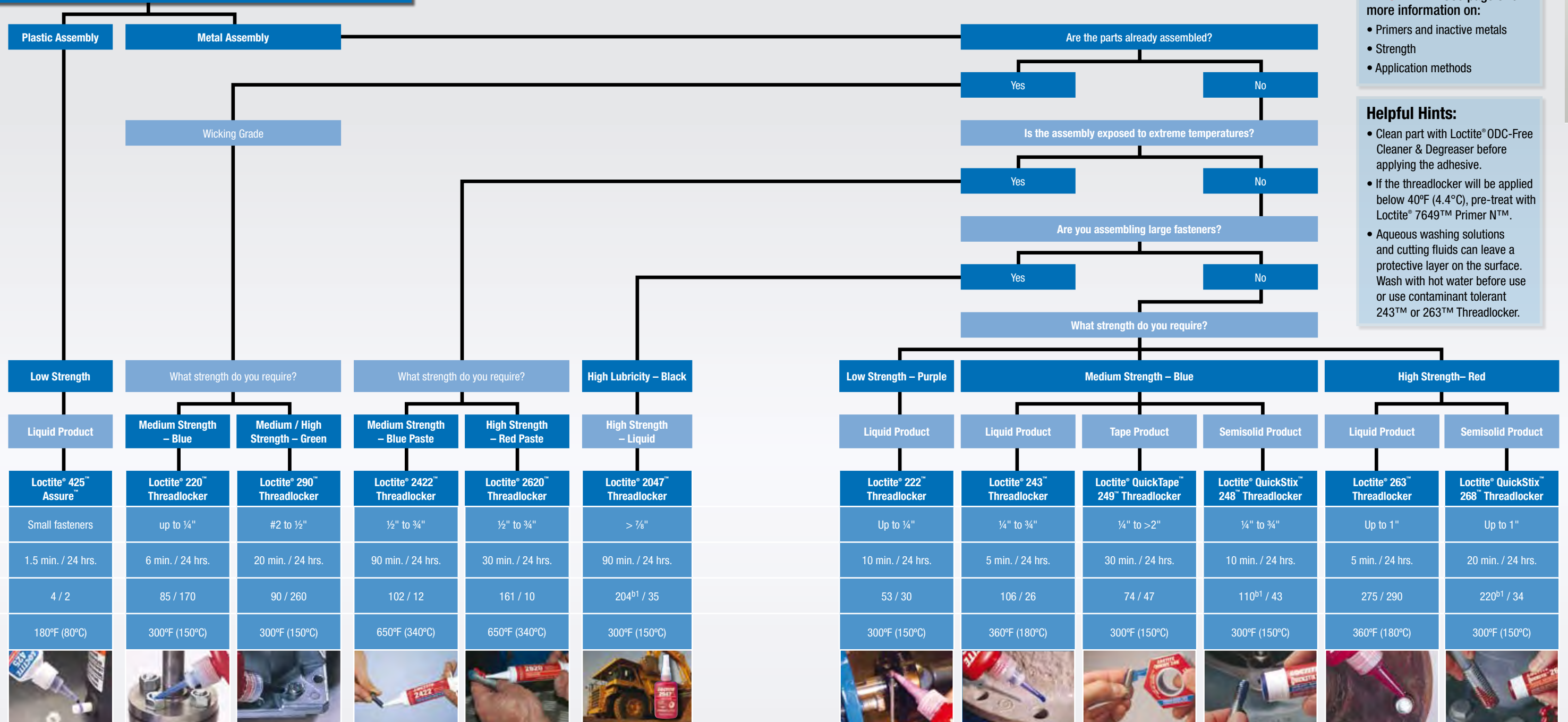
- **All Loctite® Threadlockers:** Metal-to-metal applications.
- **Loctite® 425™ Assure™:** Plastic-to-plastic, plastic-to-metal applications.



QuickTape™: Pre-applied application

Loctite® Threadlocker Selection

Are the parts being assembled metal or plastic?



IMPORTANT! See page 5 for more information on:

- Primers and inactive metals
- Strength
- Application methods

Helpful Hints:

- Clean part with Loctite® ODC-Free Cleaner & Degreaser before applying the adhesive.
- If the threadlocker will be applied below 40°F (4.4°C), pre-treat with Loctite® 7649™ Primer N™.
- Aqueous washing solutions and cutting fluids can leave a protective layer on the surface. Wash with hot water before use or use contaminant tolerant 243™ or 263™ Threadlocker.

| Solution | Loctite® 425™ Assure™ | Loctite® 220™ Threadlocker | Loctite® 290™ Threadlocker | Loctite® 2422™ Threadlocker | Loctite® 2620™ Threadlocker | Loctite® 2047™ Threadlocker |
|--|-----------------------|----------------------------|----------------------------|-----------------------------|-----------------------------|-----------------------------|
| Fastener Size | Small fasteners | up to ¼" | #2 to ½" | ½" to ¾" | ½" to ¾" | > 7/8" |
| Cure Time ^a | 1.5 min. / 24 hrs. | 6 min. / 24 hrs. | 20 min. / 24 hrs. | 90 min. / 24 hrs. | 30 min. / 24 hrs. | 90 min. / 24 hrs. |
| Torque ^b (break/prevail) | 4 / 2 | 85 / 170 | 90 / 260 | 102 / 12 | 161 / 10 | 204 ^{b1} / 35 |
| Temp. ^c | 180°F (80°C) | 300°F (150°C) | 300°F (150°C) | 650°F (340°C) | 650°F (340°C) | 300°F (150°C) |

| Solution | Loctite® 222™ Threadlocker | Loctite® 243™ Threadlocker | Loctite® QuickTape™ 249™ Threadlocking Tape | Loctite® QuickStix™ 248™ Threadlocker | Loctite® 263™ Threadlocker | Loctite® QuickStix™ 268™ Threadlocker |
|--|----------------------------|----------------------------|---|---------------------------------------|----------------------------|---------------------------------------|
| Fastener Size | Up to ¼" | ¼" to ¾" | ¼" to >2" | ¼" to ¾" | Up to 1" | Up to 1" |
| Cure Time ^a | 10 min. / 24 hrs. | 5 min. / 24 hrs. | 30 min. / 24 hrs. | 10 min. / 24 hrs. | 5 min. / 24 hrs. | 20 min. / 24 hrs. |
| Torque ^b (break/prevail) | 53 / 30 | 106 / 26 | 74 / 47 | 110 ^{b1} / 43 | 275 / 290 | 220 ^{b1} / 34 |
| Temp. ^c | 300°F (150°C) | 360°F (180°C) | 300°F (150°C) | 300°F (150°C) | 360°F (180°C) | 300°F (150°C) |

Product Details

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 ¼" 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® 2422™ Threadlocker – High Temp / Medium Strength
Recommended for locking fasteners that are exposed to temperatures up to 650°F (340°C). Removable with hand tools.

Loctite® 2620™ Threadlocker – High Temp / High Strength
Recommended for locking fasteners that are exposed to temperatures up to 650°F (340°C). Recommended for locking fasteners permanently.

Loctite® 2047™ Threadlocker – High Lubricity / High Strength
Recommended for fasteners over 7/8" (22 mm). Formulated with increased lubricity to reduce friction and allow proper clamp load to be achieved. Ideal for locking fasteners permanently.

Loctite® 222™ 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. Also available in Loctite® 222MS™ version which carries Mil-Spec (S-46163A) Type II, Grade M. NSF P1.

Loctite® 243™ Threadlocker – Medium Strength/Primerless
Versatile, medium strength liquid threadlocker. Reliably locks and seals metal fasteners up to ¾" (19 mm). 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).

Loctite® QuickTape™ 249™ Threadlocking Tape
The one and only threadlocker in a tape form. This revolutionary medium strength threadlocking adhesive is removable with hand tools, and offers the same reliability as traditional Loctite® removable grade threadlocking liquids. Convenient, durable package is a must for every toolbox. Loctite® QuickTape™ 249™ is easy to apply and can be reapplied for future assembly.

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 ¼" and ¾" (6 mm to 19 mm). Removable with hand tools.

Loctite® 263™ Threadlocker – High Strength/Primerless
Versatile, high strength liquid threadlocker. Reliably locks and seals metal fasteners up to 1" (25 mm). 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.

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.

^a CURE TIME (fixture time in min./full strength in hrs). Typical value @ 70°F (21°C) ^b TORQUE values in in.-lbs. (breakaway/prevaling torque) ^{b1} BREAKLOOSE VALUE ^c TEMPERATURE resistance for continuous service

Loctite® Innovations



Tape and Semisolid Products – Versatility and Cleanliness

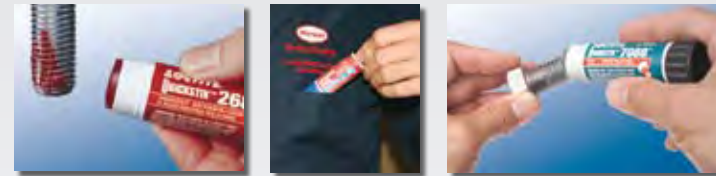
Loctite® QuickTape™ 249™ Threadlocking Tape

The first threadlocker in a convenient, tape form. Easy to use with no mess and no waste, Loctite® QuickTape™ 249™ provides the same reliable performance as traditional Loctite® medium-strength threadlocking liquids and sticks. It can even be pre-applied for future assemblies. It's a MUST HAVE for every toolbox!



Loctite® QuickStix™ 248™ Medium Strength Loctite® QuickStix™ 268™ High Strength Loctite® QuickStix™ 7088™ Primer

No mess, easy to apply and pocket-friendly. Ideal for overhead and pre-dispensed applications.



Primerless Products – Speed and Performance

Loctite® 243™ Medium Strength and Loctite® 263™ High Strength Threadlockers

The NEW Loctite® 243™ Medium Strength and 263™ High Strength Threadlockers offer all of the performance properties of the original Loctite® 242® and 262™ products, plus more, to meet the ever-changing, ever-demanding industrial environments of today and tomorrow. The new formulas offer:

- High temperature performance able to withstand temperatures up to 360°F (182°C)
- Improved cure performance on oil-contaminated surfaces
- Cure without primer, even on inactive surfaces such as stainless steel



High Temperature Products – Performance and Convenience

Loctite® 2422™ Threadlocker, High Temp, Medium Strength Loctite® 2620™ Threadlocker, High Temp, High Strength

New paste formula does not run or migrate, and withstands continuous exposure to temperatures up to 650°F (340°C). These products are conveniently packaged in syringes for easy dispensing. Disassembling Loctite® 2620™ Threadlocker, High Temp, High Strength requires heating to above 650°F (340°C) and disassembling while hot.



Large Fastener Product – High Lubricity and High Strength

Loctite® 2047™ Threadlocker, High Lubricity and High Strength

Designed for applications on fasteners over 7/8" in diameter, this threadlocker and its formula with increased lubricity allow proper clamp load to be achieved by reducing friction. In addition, its high strength property will ensure that clamp load is maintained when exposed to vibration. Standard threadlockers may not have sufficient lubricity on large fasteners to achieve ultimate clamp load.



Low Odor Product – Sensitive Areas and Confined Spaces

Loctite® 2423™ Threadlocker, Low Odor, Medium Strength

Designed for applications in sensitive areas and confined spaces. Suited for fasteners between 1/4" and 3/4".



Loctite® Threadlocker Properties Chart

| KEY FACTORS | KEY FEATURES | PRODUCT | ITEM NUMBER | PACKAGE TYPE & SIZE | COLOR | TYPICAL USE | VISCOSITY (cP)† | TORQUE‡ in.-lbs. (break/prevail) | TEMP. RANGE | CURE SPEED (STEEL @ 25°C) | AGENCY APPROVALS |
|----------------------------|--|-----------------|---|---|--|--|---------------------------|----------------------------------|-------------------------------------|--|--|
| LOW STRENGTH | Small Fasteners | 222™ | 21463 21464 | 10 ml bottle 50 ml bottle | Purple | 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 |
| | General Purpose/Primerless | 243™ | 1330255 1329837 1329467 1329505 1330333 | 0.5 ml capsule 10 ml bottle 50 ml bottle 250 ml bottle 1 liter bottle | Blue | Primerless, medium strength | 1,300 / 3,000 | 106 / 26 | -65°F to 360°F | Fixture – 5 min. Full – 24 hrs. | N/A |
| REMOVABLE STRENGTH | General Purpose Tape | QuickTape™ 249™ | 1372603 | 260" Roll | Blue | Removable strength, 1/4" to > 2", pre-applied | Tape | 74/47 | -65°F to 300°F | Fixture – 30 min. Full – 24 hrs. | N/A |
| | General Purpose Semisolid Stick | QuickStix™ 248™ | 37684 37087 | 9 g stick 19 g stick | Blue | 1/4" to 3/4" bolts, overhead, pre-dispensed, hard-to-reach areas | Semisolid | 110* / 43 | -65°F to 300°F | Fixture – 10 min. (3 min. w/primer) Full – 24 hrs. | CFIA |
| | High Temperature | 246™ | 29513 29514 29515 | 10 ml bottle 50 ml bottle 250 ml bottle | Blue | High temperature, medium strength | 2,600 | 170* / 48 | -65°F to 450°F | Fixture – 20 min. Full – 24 hrs. | N/A |
| | Ultra-High Temperature | 2422™ | 1134601 1134602 | 30 g syringe 300 g cartridge | Blue | Ultra-high temperature, medium strength for 1/2" to 3/4" bolts | Paste | 102 / 12 | -65°F to 650°F | Fixture – 90 min. Full – 24 hrs. | N/A |
| | Low Odor | 2423™ | 1134871 | 50 ml bottle | Blue | Confined spaces / sensitive areas for bolts 1/4" to 3/4" | 1,600 Thixotropic | 102 / 18 | -65°F to 300°F | Fixture – 5 min. Full – 24 hrs. | N/A |
| HIGH STRENGTH | General Purpose / Primerless | 263™ | 1330582 1330583 1330585 1330335 1330334 | 0.5 ml capsule 10 ml bottle 50 ml bottle 250 ml bottle 1 liter bottle | Red | Primerless, high strength | 400 / 600 | 275 / 290 | -65°F to 360°F | Fixture – 10 min. Full – 24 hrs. | N/A |
| | General Purpose Semisolid Stick | QuickStix™ 268™ | 37685 37686 | 9 g stick 19 g stick | Red | Up to 3/4" bolts, overhead, pre-dispensed, hard-to-reach areas | Semisolid | 220* / 34 | -65°F to 300°F | Fixture – 20 min. (5 min. w/primer) Full – 24 hrs. | CFIA |
| | High Temperature | 272™ | 27240 27270 27285 | 50 ml bottle 250 ml bottle 1 liter bottle | Red | High temperature applications | 9,500 | 200 / 220 | -65°F to 450°F | Fixture – 30 min. Full – 24 hrs. | CFIA |
| | Ultra-High Temperature | 2620™ | 1138282 | 30 g syringe | Red | Ultra-high temperature, high strength for 1/2" to 3/4" bolts | Paste | 161 / 10 | -65°F to 650°F | Fixture – 30 min. Full – 24 hrs. | N/A |
| | Large Bolts | 277™ | 21434 27731 27741 27743 | 10 ml bottle 50 ml bottle 250 ml bottle 1 liter bottle | Red | Large bolts > 7/8" | 7,000 | 275 / 275 | -65°F to 300°F | Fixture – 60 min. Full – 24 hrs. | MIL-S-46163A for existing designs, ASTM D-5363** |
| High Lubricity Large Bolts | 2047™ | 1134607 | 50 ml bottle | Black | Large bolts > 7/8". High lubricity allows proper clamp load to be achieved | 2,000 / 12,000 Thixotropic | 204* / 35 | 300°F | Fixture – 90 min. Full – 24 hrs. | N/A | |
| WICKING | Removable Strength | 220™ | 37388 39186 22041 | 10 ml bottle 50 ml bottle 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. | MIL-S-46163A for existing designs, ASTM D-5363**, CFIA |
| | General Purpose | 290™ | 29005 29021 29031 29041 29043 | 0.5 ml capsule 10 ml bottle 50 ml bottle 250 ml bottle 1 liter bottle | Green | Medium/high strength. Wicking grade for pre-assembled parts | 12 | 90 / 260 | -65°F to 300°F | Fixture – 20 min. Full – 24 hrs. | MIL-S-46163A for existing designs, ASTM D-5363**, NSF/ANSI 61, NSF P1, CFIA |
| | High Temperature/Oil Tolerant | 294™ | 27934 27935 27936 27937 | 0.5 ml capsule 10 ml bottle 50 ml bottle 250 ml bottle | Green | Medium/high strength, high temperature, wicking grade | 34 | 289 / 237 | -65°F to 450°F | Fixture – 6 min. Full – 24 hrs. | N/A |
| PLASTIC | Plastic Fasteners | 425™ Assure™ | 42540 42561 | 20 g bottle 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 |
| FOOD GRADE | Processing equipment that can contact food | 2046™ | 1186840 | 12 ml syringe | Blue | Strengthening / coupling agent for joints on equipment | Gel | 111 / 63 | 450°F | Gel Time – 20 min. | FDA 21 C.F.R. 175.300 |
| MIL-SPEC | Small Fasteners | 222MS™ | 22205 22221 22231 22241 | 0.5 ml capsule 10 ml bottle 50 ml bottle 250 ml bottle | Purple | Small screws under 1/4" | 1,200/5,000 Thixotropic | 53 / 30 | -65°F to 300°F | Fixture – 10 min. Full – 24 hrs. | MIL-S-46163A for existing designs, ASTM D-5363**, NSF P1, CFIA |
| | Removable Strength | 242® | 24205 24221 24231 24241 | 0.5 ml capsule 10 ml bottle 50 ml bottle 250 ml bottle | Blue | 1/4" to 3/4" bolts | 1,200/5,000 Thixotropic | 110 / 43 | -65°F to 300°F | Fixture – 10 min. Full – 24 hrs. | MIL-S-46163A for existing designs, ASTM D-5363**, NSF P1, ABS, CFIA |
| | High Strength | 262™ | 26205 26221 26231 26241 | 0.5 ml capsule 10 ml bottle 50 ml bottle 250 ml bottle | Red | Up to 3/4" bolts | 1,800/5,000 Thixotropic | 189 / 275 | -65°F to 300°F | Fixture – 5 min. Full – 24 hrs. | MIL-S-46163A for existing designs, ASTM D-5363**, NSF P1, ABS, CFIA |
| | Low Viscosity | 271™ | 27105 27121 27131 27141 | 0.5 ml capsule 10 ml bottle 50 ml bottle 250 ml bottle | Red | High strength for fasteners up to 1" diameter | 500 | 250 / 275 | -65°F to 300°F | Fixture – 10 min. Full – 24 hrs. | MIL-S-46163A for existing designs, ASTM D-5363**, UL Classified for U.S., CFIA |

*Breaklose Value †See TDS for spindle and speed test measurement **For new designs ††M10 and/or 3/8 x 16 steel fasteners †††M10 and/or 3/8 x 16 steel fasteners ††††Top choice product †††††Worldwide availability

Loctite® Primers Properties Chart

| | PRODUCT | ITEM NO. | PACKAGE TYPE & SIZE | PHYSICAL PROPERTY | ON-PART LIFE | DRY TIME | AGENCY APPROVALS |
|---------------|-----------------------------------|---|--|-------------------|--------------|------------------|---|
| SOLVENT-BASED | 7471™ Primer T™ | 19267 22477 19268 | 1.75 fl. oz. bottle 4.5 oz. net wt. aerosol can 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 38402 21347 21348 19266 | 1.75 fl. oz. glass bottle 1.75 fl. oz. aluminum bottle 25 g net wt. aerosol can 4.5 oz. net wt. aerosol can 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 |
| SOLVENT-LESS | 7090™ | 19368 12695 | 1 fl. oz. bottle 1 liter bottle | Liquid | 1 hour | <10 minutes | – |
| | Loctite® QuickStix™ 7088™ Primer® | 1069258 | 17 g stick | Semisolid | 30 days | – | – |

Loctite® Solutions



www.loctite.com



For your local Loctite® Adhesives and Sealants Specialist, the nearest authorized Loctite® products distributor, to place an order, to arrange an in-plant seminar or for technical product assistance, call 1.800.LOCTITE (562.8483) in the U.S.A, or call 1.800.263.5043 within Canada.

When you choose the Loctite® brand, you receive much more than a reliable assembly; you obtain a comprehensive solutions package:

- Wide product range
- Advanced training programs
- Engineering services
- Research and development
- Agency certification and approvals
- Local application assistance
- Global availability



U.S.A.

Henkel Corporation
Engineering Adhesives
One Henkel Way
Rocky Hill, Connecticut 06067
Tel: 1.800.LOCTITE (1.800.562.8483)
Tel: 860.571.5100
Fax: 860.571.5465

Canada

Henkel Canada Corporation
Engineering Adhesives
2225 Meadowpine Blvd.
Mississauga, Ontario L5N 7P2
Tel: 1.800.263.5043 (*within Canada*)
Tel: 905.814.6511
Fax: 905.814.5391



Henkel Corporation
Engineering Adhesives
www.henkelna.com/industrial
www.loctite.com

The data contained herein are furnished for information only and are believed to be reliable. It is the user's responsibility to determine suitability for the user's purpose of any production methods mentioned herein and to adopt such precautions as may be advisable for the protection of property and of persons against any hazards that may be involved in the handling and use thereof. In light of the foregoing, Henkel Corporation specifically disclaims all warranties expressed or implied, including warranties of merchantability or fitness for a particular purpose, arising from sale or use of Henkel Corporation's products. Henkel Corporation specifically disclaims any liability for consequential or incidental damages of any kind, including lost profits. We recommend that each prospective user test its proposed application before use. Please contact your local Henkel Technical Support Group for assistance and recommendation on specifications for these products. Except as otherwise noted, all marks used in LT-4985 are trademarks and/or registered trademarks of Henkel and/or its affiliates in the U.S. and elsewhere. ® = registered in the U.S. Patent and Trademark Office. © Henkel Corporation, 2010. All rights reserved. 6407/LT-4985 (3/10)