

# 3M

# Rite-Lok™

## Threadlockers

TL22 • TL42 • TL43 • TL62 • TL71 • TL72 • TL77 • TL90

Technical Data

July, 2007

---

**Product Description**

3M™ Rite-Lok™ Threadlockers are one-component anaerobic adhesives that cure and seal threaded assemblies that meet a wide range of applications to prevent vibration loosening and/or leakage. All products provide excellent vibration, corrosion, and shock resistance. Engineered to provide different strengths, temperatures, nut/bolt sizes, and other requirements, some threadlockers allow removal and meet various selections depending on the specific application.

---

**Specific Features**

- 3M™ Rite-Lok™ Threadlocker TL22 is removable with hand tools. It is a low strength thread-locker for small diameter, fine threaded screws, set screws, nuts, bolts, and hex and slot driven components such as keyed fasteners.
- 3M™ Rite-Lok™ Threadlocker TL42 is a general purpose, removable with hand tools, medium strength threadlocker ideal for machine tool access bolts, and hydraulic system bolts. It can also be used on gear box/driveshaft bolts, bearing cover cap screws, countersunk screws, and conveyor roller bolts.
- 3M™ Rite-Lok™ Threadlocker TL43 is a general purpose, removable with hand tools, medium strength threadlocker for most medium and coarse-threaded screws, nuts and bolts. It is oil tolerant to help secure as-received parts and its thixotropic property prevents run-off, dripping, or migration of the adhesive product when applied on parts.
- 3M™ Rite-Lok™ Threadlocker TL62 is a medium to high strength threadlocker that is especially developed to secure assemblies with high strength retention. It allows disassembly with heat and will perform on lightly oily parts with only approximately 10% strength reduction.
- 3M™ Rite-Lok™ Threadlocker TL71 is a general purpose, permanent, high strength thread-locker that locks bolts and studs up to 1" in diameter as it seals against leakage and corrosion.
- 3M™ Rite-Lok™ Threadlocker TL72 is a permanent, high strength threadlocker formulated to lock bolts and studs up to 1" in diameter. It can be used for high temperature thread-locking (intermittently up to 450°F) and its thixotropic nature prevents dripping or migration of the liquid adhesive after assembly.
- 3M™ Rite-Lok™ Threadlocker TL77 is a permanent, high strength, high viscosity threadlocker designed to work well with larger diameter (up to 1½") and coarse threaded parts.
- 3M™ Rite-Lok™ Threadlocker TL90 is low viscosity to provide a wicking action, medium strength threadlocker that locks and seals small compression and ferrule fittings. It is useful for pre-assembled parts.

---

**Common Threadlocker Features**

- Prevent corrosion
- Fluorescence
- Shock and vibration resistant
- Fast setting

# 3M™ Rite-Lok™

## Threadlockers

TL22 • TL42 • TL43 • TL62 • TL71 • TL72 • TL77 • TL90

### Typical Uncured Physical Properties

**Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.**

	3M™ Rite-Lok™ Threadlockers							
	TL22	TL42	TL43	TL62	TL71	TL72	TL77	TL90
<b>Color</b>	Purple	Blue	Blue	Red	Red	Red	Red	Green
<b>Strength</b>	Low	Medium	Medium - High	Medium - High	High	High	High	Medium, Wicking Grade
<b>Chemistry Type</b>	Dimethacrylate	Dimethacrylate	Dimethacrylate	Dimethacrylate	Dimethacrylate	Dimethacrylate	Dimethacrylate	Dimethacrylate
<b>Appearance</b>	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid
<b>Viscosity (cP)</b>	800 - 1,600 <sup>1</sup>	800 - 1,600 <sup>2</sup>	2,500 - 4,000 <sup>1</sup>	800 - 1,600 <sup>2</sup>	400 - 600 <sup>2</sup>	4,000 - 15,000 <sup>3</sup>	6,000 - 8,000 <sup>3</sup>	10 - 30 <sup>4</sup>
<b>Fixture Time (min)</b>	≤ 20	≤ 20	≤ 20	≤ 20	≤ 20	≤ 20	≤ 20	≤ 20
<b>Fixture Time with Activator (min)</b>	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
<b>Full Cure Time (hr)</b>	24	24	24	24	24	24	24	24

<sup>1</sup> Brookfield RVT #3 spindle @ 20 rpm and 25°C.

<sup>2</sup> Brookfield RVT #2 spindle @ 20 rpm and 25°C.

<sup>3</sup> Brookfield RVT #4 spindle @ 20 rpm and 25°C.

<sup>4</sup> Brookfield LVF #1 spindle @ 30 rpm and 25°C.

### Typical Cured Physical Properties

**Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.**

	3M™ Rite-Lok™ Threadlockers							
	TL22	TL42	TL43	TL62	TL71	TL72	TL77	TL90
<b>Color</b>	Purple	Blue	Blue	Red	Red	Red	Red	Green
<b>Strength</b>	Low	Medium	Medium - High	Medium - High	High	High	High	Medium, Wicking Grade
<b>Fastener Size Range</b>	< 5/16"	1/4" - 3/4"	1/2" - 1"	1/2" - 1"	1/2" - 1"	1/2" - 1"	Up to 1 1/2"	Up to 1/2"
<b>Breakaway Torque Range (in.lbs)<sup>5,6</sup></b>	40 - 100	70 - 160	110 - 220	180 - 290	180 - 410	180 - 330	220 - 350	60 - 190
<b>Prevail Torque Range (in.lbs)<sup>5,6</sup></b>	10 - 40	20 - 90	40 - 130	180 - 300	180 - 410	130 - 350	220 - 350	220 - 390
<b>Temperature Range (°F)</b>	-65 to 300	-65 to 300	-65 to 300	-65 to 300	-65 to 300	-65 to 450	-65 to 300	-65 to 300

<sup>5</sup> Reference ISO 10964.

<sup>6</sup> To convert to N.m divide in.lbs value by 8.851.

# 3M™ Rite-Lok™

## Threadlockers

TL22 • TL42 • TL43 • TL62 • TL71 • TL72 • TL77 • TL90

---

### Handling Information

#### Directions for Use

3M™ Rite-Lok™ Threadlockers are not recommended for use on most plastics due to potential cracking of plastic parts. Also, they are not recommended for use in piping systems that contain pure oxygen or an oxygen-rich environment, chlorine, or strong oxidizing substances.

#### For Assembly

1. Ensure parts are clean, dry and free from oil, grease and dirt. For best results, clean and dry parts with solvent or 3M™ Rite-Lok™ Activator. (Activator can also be used on inactive surfaces or to accelerate the cure on active surfaces.)
2. If not sure of surface type, always use activator. Refer to Material Surface Activity and Cure Speed section for more information.
3. Shake the adhesive bottle well before use.
4. Avoid touching the metal surfaces with the bottle tip since the metal ions may react with the adhesive upon contact and eventually may clog the bottle tip.
5. Apply adhesive onto the threaded part where the contact area will be in the final assembly. For larger parts, use more adhesive and rotate the threaded part to spread adhesive evenly around contact area.
6. For through holes, apply several drops of adhesive onto the bolt at the nut engagement area. For blind holes, apply several drops of the adhesive down the internal threads to the bottom of the hole.
7. Assemble the nut/fastener and tighten as required.
8. Allow assemblies to set for sufficient time so that handling strength or full cure will occur before further processing or testing.

#### For Disassembly

1. Loosen or remove with regular hand tools.
2. If hand tools do not work due to the assembled parts being well tightened, apply localized heat (approximately 490°F) to the nut or bolt and disassemble while parts are still hot. Use extreme caution when working with heat sources (e.g. heat gun, flames, etc).

---

### Material Surface Activity and Cure Speed

#### Active (Fast)

- Brass
- Bronze
- Commercial aluminum
- Copper
- Iron
- Kovar®
- Manganese
- Monel®
- Nickel

#### Inactive (Slow)

- Anodized aluminum
- Cadmium
- Chemical black oxide
- Galvanized steel
- Gold
- Inconel®
- Magnesium
- Magnetite steel
- Plated parts
- Pure aluminum
- Silver
- Stainless steel
- Zinc

# 3M™ Rite-Lok™

## Threadlockers

TL22 • TL42 • TL43 • TL62 • TL71 • TL72 • TL77 • TL90

---

### Military Specification S-46163A

3M™ Rite-Lok™ Threadlockers TL22, TL42, TL62, TL71, TL72, TL77, and TL90 have been tested and passed the requirements of MIL-S-46163A.

---

### Storage

Store product in cool, dry area out of direct sunlight.

---

### Shelf Life

3M™ Rite-Lok™ Threadlockers have a shelf life of twelve months when stored at 60° to 80°F (16° to 27°C) in the original unopened container.

---

### Precautionary Information

Refer to Product Label and Material Safety Data Sheet for health and safety information before using this product. For additional health and safety information, call 1-800-364-3577 or (651) 737-6501.

---

### Product Use

All statements, technical information and recommendations contained in this document are based upon tests or experience that 3M believes are reliable. However, many factors beyond 3M's control can affect the use and performance of a 3M product in a particular application, including the conditions under which the product is used and the time and environmental conditions in which the product is expected to perform. Since these factors are uniquely within the user's knowledge and control, it is essential that the user evaluate the 3M product to determine whether it is fit for a particular purpose and suitable for the user's method of application.

---

### Warranty and Limited Remedy

Unless stated otherwise in 3M's product literature, packaging inserts or product packaging for individual products, 3M warrants that each 3M product meets the applicable specifications at the time 3M ships the product. Individual products may have additional or different warranties as stated on product literature, package inserts or product packages. 3M MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY IMPLIED WARRANTY ARISING OUT OF A COURSE OF DEALING, CUSTOM OR USAGE OF TRADE. User is responsible for determining whether the 3M product is fit for a particular purpose and suitable for user's application. If the 3M product is defective within the warranty period, your exclusive remedy and 3M's and seller's sole obligation will be, at 3M's option, to replace the product or refund the purchase price.

---

### Limitation of Liability

Except where prohibited by law, 3M and seller will not be liable for any loss or damage arising from the 3M product, whether direct, indirect, special, incidental or consequential, regardless of the legal theory asserted, including warranty, contract, negligence or strict liability.

**ISO 9001:2000**

This product was manufactured under a quality system registered to ISO 9001:2000 standards.



### Industrial Business Industrial Adhesives and Tapes Division

3M Center, Building 21-1W-10, 900 Bush Avenue  
St. Paul, MN 55144-1000  
800-362-3550 • 877-369-2923 (fax)  
www.3M.com/industrial



*Recycled Paper*  
40% pre-consumer  
10% post-consumer

3M and Rite-Lok are trademarks of 3M.  
Kovar is a registered trademark of Carpenter  
Tech Corp.  
Monel is a registered trademark of Special  
Metals Corporation.  
Inconel is a registered trademark of INCO.  
Printed in U.S.A.  
©3M 2007 78-9236-7148-7 (7/07)