



## Scotch-Weld™

### Threadlocker Anaerobic Adhesives

TL22 • TL42 • TL43 • TL62 • TL70 • TL71 • TL72 • TL77 • TL90

#### Technical Data

November 2016

<b>Product Description</b>	3M™ Scotch-Weld™ Threadlocker Anaerobic Adhesives 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.
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| <b>Specific Features</b> | <ul style="list-style-type: none"><li>• <b>3M™ Scotch-Weld™ Threadlocker TL22</b> is removable with hand tools. It is low strength (low torque removal) threadlocker for small diameter, fine threaded screws, set screws, nuts, bolts and hex and slot driven components such as keyed fasteners.</li><li>• <b>3M™ Scotch-Weld™ Threadlocker TL42</b> 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.</li><li>• <b>3M™ Scotch-Weld™ Threadlocker TL43</b> 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.</li><li>• <b>3M™ Scotch-Weld™ Threadlocker TL62</b> 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</li><li>• <b>3M™ Scotch-Weld™ Threadlocker TL70</b> is a high strength threadlocker that locks all metal fasteners and thus prevent vibration loosening and leakage through the applications where maximum strength is needed. TL70 prevents corrosion of assembled parts.</li><li>• <b>3M™ Scotch-Weld™ Threadlocker TL71</b> is a general purpose permanent high strength threadlocker that locks bolts and studs up to 1" in diameter as it seals against leakage and corrosion. Temperature resistance intermittently up to 400°F.</li><li>• <b>3M™ Scotch-Weld™ Threadlocker TL72</b> is a permanent high strength threadlocker to locks bolts and studs up to 1" in diameter. It can be used for high temperature threadlocking (intermittently up to 400°F) and its thixotropic nature prevents dripping or migration of the liquid adhesive after assembly.</li></ul> |
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<b>Specific Features</b>	<ul style="list-style-type: none"> <li>• <b>3M™ Scotch-Weld™ Threadlocker TL77</b> is a permanent, high strength, high viscosity threadlocker designed to work well with larger diameter (up to 1 ½ ") and coarse threaded parts.</li> <li>• <b>3M™ Scotch-Weld™ Threadlocker TL90</b> is a low viscosity to provide a wicking action, medium strength threadlocker that locks and seals small compression and ferrule fittings with service temperature up to 400F. It is useful for pre-assembled parts.</li> </ul>
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<b>Common Threadlocker Features</b>	<ul style="list-style-type: none"> <li>• Prevent corrosion</li> <li>• Fluorescence</li> <li>• Liquid (before cure)</li> </ul>	<ul style="list-style-type: none"> <li>• Shock and vibration resistance</li> <li>• Fast setting</li> <li>• 24 h cure at room temperature</li> </ul>
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**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 purpose

	TL22	TL42	TL43	TL62	TL70 <sup>c</sup>	TL71	TL72	TL77	TL90
<b>Color</b>	Purple	Blue	Blue	Red	Green	Red	Red	Red	Green
<b>Chemistry</b>	Dimethacrylate								
<b>Viscosity (cP)</b>	800-1,600 <sup>1</sup>	800-1,600 <sup>1</sup>	10,000-18,000 <sup>2</sup>	1,200-2,400 <sup>3</sup>	400-900 <sup>2</sup>	400-900 <sup>3</sup>	4,000-15,000 <sup>4</sup>	6,000-8,000 <sup>4</sup>	10-30 <sup>5</sup>
<b>Fixture Time (min)</b>	20 <sup>a</sup> (10-30) <sup>b</sup>	20 <sup>a</sup> (10-30) <sup>b</sup>	20 <sup>a</sup> (10-30) <sup>b</sup>	17 <sup>a</sup> (10-30) <sup>b</sup>	13 <sup>a</sup> (10-30) <sup>b</sup>	17 <sup>a</sup> (10-30) <sup>b</sup>	20 <sup>a</sup> (10-30) <sup>b</sup>	15 <sup>a</sup> (10-30) <sup>b</sup>	25 <sup>a</sup> (10-30) <sup>b</sup>

<sup>1</sup> Brookfield Viscometer spindle #3 at 20 rpm;

<sup>2</sup> Brookfield Viscometer spindle #3 at 2.5 rpm

<sup>3</sup> Brookfield Viscometer spindle #2 at 20 rpm;

<sup>4</sup> Brookfield Viscometer spindle #4 at 20 rpm

<sup>5</sup> Brookfield Viscometer spindle #1 at 30 rpm;

<sup>a</sup> Average time;    <sup>b</sup> Range;    <sup>c</sup> Not available in North and South Americas

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**Typical cured  
Physical  
Properties**

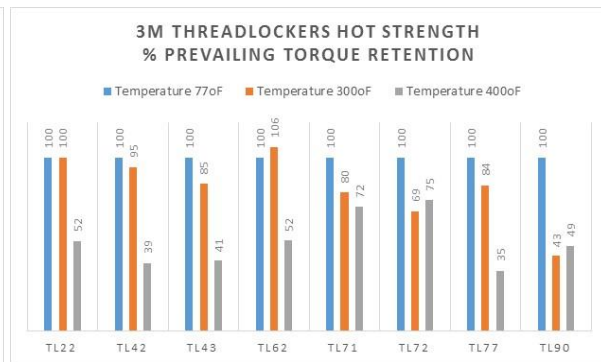
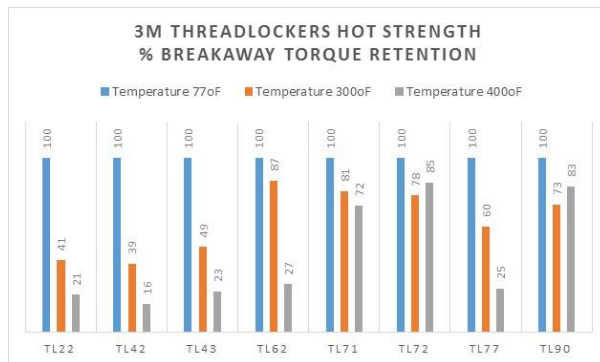
Note: The following technical information and data should be considered representative or typical only and should not be used for specification purpose

	TL22	TL42	TL43	TL62	TL70	TL71	TL72	TL77	TL90
<b>Color</b>	Purple	Blue	Blue	Red	Green	Red	Red / Orange	Red	Green
<b>Strength</b>	Low	Medium	Medium	High	High	High	High	High	Medium
<b>Breakaway Torque * (in.lb)</b>	30-100 95 <sup>a</sup>	70-200 140 <sup>a</sup>	70-200 130 <sup>a</sup>	100-250 140 <sup>a</sup>	150-355 210 <sup>a</sup>	≥150 225 <sup>a</sup>	150-350 190 <sup>a</sup>	150-35 290 <sup>a</sup>	20-150 95 <sup>a</sup>
<b>Prevailing Torque * (in.lb)</b>	10-100 40 <sup>a</sup>	20-200 100 <sup>a</sup>	20-200 60 <sup>a</sup>	100-300 220 <sup>a</sup>	150-505 360 <sup>a</sup>	≥204 345 <sup>a</sup>	150-505 230 <sup>a</sup>	150-500 345 <sup>a</sup>	150-500 265 <sup>a</sup>
<b>Temperature Range (°F)</b>	-65 to 300	-65 to 300	-65 to 300	-65 to 300	-65 to 300	-65 to 400	-65 to 400	-65 to 300	-65 to 300

\*Reference ISO 10964. 3/8" – 16 Steel bolt and matching nut. <sup>a</sup> Average strength.

To convert to (N.m) divide (in.lb) by 8.851 1 in.lb = 0.0833 ft. lb

### Hot Strength (measured at temperature)



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### Handling Information

#### Directions for Use:

3M™ Scotch-Weld™ Threadlocker Anaerobic Adhesives 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™ Scotch-Weld™ 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 (approx.. 400°F / 254°C) 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.)

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<b>Material</b>	<b>Active (Fast cure)</b>	<b>Inactive (Slow cure)</b>
<b>Surface Activity and Cure Speed</b>	<ul style="list-style-type: none"><li>• Brass</li><li>• Bronze</li><li>• Commercial aluminum</li><li>• Copper</li><li>• Iron</li><li>• Kovar®</li><li>• Manganese</li><li>• Monel®</li><li>• Nickel</li></ul>	<ul style="list-style-type: none"><li>• Anodized Aluminum</li><li>• Cadmium</li><li>• Chemical black oxide</li><li>• Galvanized steel</li><li>• Gold</li><li>• Inconel®</li><li>• Magnesium</li><li>• Magnetite Steel</li><li>• Plated parts</li><li>• Pure aluminum</li><li>• Silver</li><li>• Stainless Steel</li><li>• Zinc</li></ul>

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<b>Storage</b>	Store product in cool, dry area out of direct sunlight
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<b>Shelf Life</b>	3M™ Scotch-Weld™ Threadlocker Anaerobic Adhesives have a shelf life of 12 months when stored at 60° to 80°F (16° to 27° C) in the original unopened container.
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<b>Precautionary Information</b>	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.
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<b>Technical Information</b>	The technical information, recommendations and other statements contained in this document are based upon tests or experience that 3M believes are reliable, but the accuracy or completeness of such information is not guaranteed.
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<b>Product Use</b>	Many factors beyond 3M's control and uniquely within user's knowledge and control can affect the use and performance of a 3M product in a particular application. Given the variety of factors that can affect the use and performance of a 3M product, user is solely responsible for evaluating the 3M product and determining whether it is fit for a particular purpose and suitable for user's method of application.
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Liability**

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**ISO 9001:2000**

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

**3M**

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[www.3M.com/structuraladhesives](http://www.3M.com/structuraladhesives)

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