

Industrial Maintenance & Plant Operation

The ties that bind

Ten points about liquid threadlockers

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Bolts, studs, set screws, and other threaded fasteners are the “ties that bind” industrial equipment together. Considering that fastener loosening is a leading cause of catastrophic failure in machinery, maintaining proper clamping forces is an important element in fastener effectiveness.

Liquid anaerobic threadlockers are an excellent method of keeping fasteners firmly in place. Listed here are ten points that plant personnel should know about using liquid anaerobic threadlockers:

It's not just a bolt. The real function of nuts and bolts is to provide clamping force to hold two components together. If that clamping force decreases, the fastener begins to slip, and failure becomes inevitable.

Thread space is the enemy. There can be as little as 15% metal-to-metal contact between the threads of a nut and bolt. The empty space leaves room for movement that leads to self-loosening and loss of clamping force.

Side movement causes failure. Fasteners work loose for complex reasons, but a key cause is side movement. Bolted surfaces can slide sideways as a result of thermal expansion, bending of the assembly, impact, or vibration. As this happens, the bolt takes on a rocking motion that causes the threads to wear against each other. In time, the bolt becomes almost frictionless, and the threads can unwind.

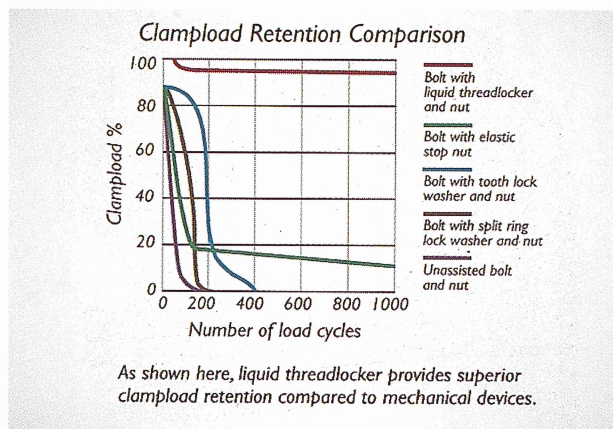
Threadlockers stop all kinds of movement. Liquid anaerobic threadlockers attack the root cause of loosening by filling spaces between the threads. The result is a secure, one-piece assembly that will not loosen under stress.

Sealing stops corrosion. By sealing between thread spaces, threadlockers keep out air and moisture that can cause corrosion — another common source of fastener failure. Because they are chemical resistant, threadlockers seal effectively in contact with

most fluids, gases, and solvents used in industry.

Threadlockers hold better. In tests on a transverse shock and vibration machines, liquid threadlockers drastically outperformed mechanical locking devices (see graph). Bolts secured with threadlocker retained nearly all their clamping force after more than 1,000 cycles. Mechanical devices began to fail almost immediately.

Better performance costs less. Mechanical locking methods are effective to some degree, but are difficult to justify based on cost. A special nut or washer can cost up to four times as much as an application of liquid threadlocker. Mechanical devices also require extensive and costly inventories to keep the right kinds and sizes on hand. Three or four kinds of threadlocker — easy to carry and color-coded — serve the same purpose.



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It will come out. All threadlocked fasteners can be removed. Different grades of threadlocker can be used depending on the job. Fasteners secured with low- and medium-strength grades can be removed with common hand tools. Those secured with high-strength grades can be removed by applying heat for a specified time.

Threadlockers ease assembly and disassembly. When wet, threadlockers lubricate fasteners, allowing proper, consistent assembly tightening and torque. When cured in place,

threadlockers stop corrosion, thus preventing seizure and allowing for ease in disassembly.

There is no “downside.” Liquid threadlockers are not just for certain specialized uses. They perform effectively on fasteners and threaded assemblies of any type and size, in any kind of equipment.

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