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CALTRANS-APPROVED
ANAEROBIC THREADLOCKING SYSTEMS

When required, one of the following approved chemical anaerobic threadlocking systems shall be used for any of the following:

1. 25.4mm(1") ASTM A 449 hot-dipped galvanized threaded rod with a matching ASTM A 563, Grade DH nut
2. 38.1mm x 101.6mm(1-1/2"x4") long A325 plain bolts in 50.8mm (2") deep tapped holes in a 63.5mm (2-1/2") thick steel plate, no pre-tension.
3. 25.4mm x 101.6mm(1" x 4") long A325 plain bolts with matching A194 Grade 2H nuts,
4. 22.2mm x 101.6mm(7/8" – 9 UNC x 4") long A193 Grade B8 (Type 304 SS) plain bolts with matching A194 Grade 8 (Type 304 SS) Heavy Hex nuts,
5. 38.1mm(1-1/2") A325 plain bolts with matching A194, Grade 2H, plain nuts,
6. 31.75mm(1-1/4") A325, Type 1, HDG bolts with matching A563, Grade DH, HDG nuts.

These systems have been tested and approved for use only for those of specific type and size. Other applications may require different components and application procedures. Consult the Office of Structural Materials (916) 227-6946 or (916) 227-7251 if you wish to use these products for applications other than that stated above.

Each of these Caltrans-approved anaerobic threadlocking systems has three required components:

- 1) **CLEANER** - to clean lubricant and oils from the threads of the stud and nut.
- 2) **PRIMER** - to promote rapid curing of the anaerobic compound and to minimize migration of compound on threads.
- 3) **ANAEROBIC THREADLOCKER ADHESIVE** - to secure nut onto stud by filling the gap between nut and stud threads. Note: Anaerobic threadlocker adhesive compounds will set only where no oxygen is available.

TABLE 1.
APPROVED ANAEROBIC THREADLOCKING SYSTEMS

Manufacturer Information	Component	Trade Name	Part No.
1. Loctite Pro-Lock Division 1001 Trout Brook Crossing Rock Hill, CT 06067-3910 (800) 562-8483 www.loctite.com	Cleaner	ODC-Free Cleaner & Degreaser (Formerly 7070 cleaner)	22355
	Primer	Pro-Lock “Klean-N-Prime”	30566
	Adhesive	Pro-Lock High Strength Threadlocker	81792
2. Permabond International 480 South Dean Street Englewood, NJ 07631 (800) 370-9647 www.permabond.com	Cleaner & Primer	Perma-Lok Anaerobic Surface Conditioner	ASC10
	Adhesive	Perma-Lok Heavy Duty Bolt and Stud Locking Anaerobic Adhesive/Sealant	HH120
3. Hernon Manufacturing, Inc. 121 Tech Drive Sanford, FL 32771 (800) 527-0004 www.hernonmfg.com	Cleaner	Hernon Cleaner	EF-62
	Primer	Hernon Primer	EF-49
	Adhesive	Hernon Nuts N’ Bolts Anaerobic Adhesive	429
4. Saf-T-Lok 300 Eisenhower Lane North Lombard, IL 60148 (630) 495-2001 www.saftlok.com	Cleaner	Non Specified	-----
	Primer	Primer T	19166
	Adhesive	T77 High strength Anaerobic Adhesive	27741
5. Pacer 7001 Ardmore Avenue Fort Wayne, IN 46809 www.crosslink-tech.com	Cleaner	Non Specified	-----
	Primer	Primer	580-031
	Adhesive	ANL-77 Anaerobic Adhesive	560-073

All components used in a single threadlocking application shall be from one of the systems above and from the same threadlocking adhesive manufacturer.

Note: Refer to the Application Instructions.

For critical applications with regards to the breaking or prevailing torque values exercise caution and consult with a qualified engineer.

Also, exercise caution when using the Pacer brand product for stainless steel bolting applications.

Application Instructions for Caltrans-approved Anaerobic Threadlocking Systems:

The following application instructions shall be used for all Caltrans-approved anaerobic threadlocker systems previously listed. In the event of conflict between application instructions stated here and those of a manufacturer, the manufacturer's instructions shall take precedence.

The following 4-step application procedure shall be used for anaerobic threadlocker systems:

- 1) **Clean Threads;** Brush or spray the required cleaner/solvent onto both nut threads and stud threads at the desired final nut location to remove any lubricants; use only in a well-ventilated area. Scrub nut threads thoroughly using a small wire brush. Remove all traces of the dry lubricant from the internal threads of the nut. Allow the cleaner to completely evaporate before applying primer. Wait the required drying time as recommended by the threadlocker manufacturer.
- 2) **Prime Threads;** Apply primer liberally onto cleaned threads of both the stud (only in area where nut will be positioned) and the nut. Wait briefly until threads appear dry.
- 3) **Bond Threads;** Apply the anaerobic compound liberally onto the stud threads according to the instructions provided by the manufacturer. Coat only in the threaded area where the primer was applied (the final desired position to be occupied by the nut).
- 4) **Adjust Nut;** Thread the nut onto the rod until it contacts the threadlocking compound. Then install the nut by turning it in one full turn and then backing it off one-half turn to evenly distribute the adhesive. Continue this procedure until the nut is one complete turn past the desired final location. Place a small bead of threadlocker compound around the outboard side of the nut/rod interface. Then slowly back the nut up one complete turn to the final desired position. This procedure will ensure even distribution of the adhesive on the rod threads and seal any thread gap at the ends.

For nuts tightening against a positive stop, follow the above procedures until the positive stop or the final position is reached.

Basic Performance Requirements: To be acceptable for securing nuts approved threadlocker systems shall achieve a minimum breaking torque* of 61 N·m(45 lbs. ft.) when installed according to the above directions (or the manufacturer's recommended installation instructions) and cured for a minimum of 48 hours.

*Breaking torque is the initial torque required to cause the nut to begin to move on the threaded rod after the adhesive has fully cured. It is measured using a dial or digital (not click type) torque wrench, at the point the nut first begins to move relative to the threaded rod, while attempting to move/turn the nut in the direction that will unseat the nut.

Note: Refer to Table 1 for a listing of Caltrans-approved anaerobic threadlocking components.