

3M™ Scotch-Weld™ Anaerobic Adhesives Frequently Asked Questions

Please refer to the Technical Data Sheets (TDS) or contact 3M Customer/Technical Service for more details

What are the different threadlockers and their colors?

There are different grades of threadlockers to refer to different strengths. For example, the purple threadlocker is a low strength, blue is medium and red is high strength; the green threadlocker is a special wicking grade product that allows faster and deeper penetration through the assembled parts.

On what kind of materials can I use anaerobic adhesives (threadlockers, thread sealants, retaining compounds and gasket makers)?

Generally, anaerobic adhesives are recommended for use on metal surfaces. Some materials are more active than others and depending on the types of materials used, the curing may be faster or slower.

What is the difference between active and inactive materials?

Active and inactive materials are classified as followed:

Very Active	Active	Inactive	Very Inactive
Brass	Alluminum	Annodize aluminum	Ceramics
Copper	Bronze	Cadmium	Composites
Manganese	Iron	Chrome finishes	Glass
	Kovar	Gold	Plastics
	Monel®	Inconel	Paint coated parts
	Nickel	Magnesium	Paint coated parts
	Steel	Plated parts	Rubber
		Galvanized steel	
		Stainless steel	
		Titanium	
		Zinc	

How fast do anaerobic adhesives set up or cure?

Please refer to the Technical Data Sheets for detailed data. In general, it takes 24 hours or less to fully cure and, for example, fixture time of under 20 minutes for the threadlockers.

How do anaerobic adhesives work?

These two following conditions are needed for proper cure:

- a. Metal ionization: Contact with metal ions, especially those of the active materials.

- b. Absence of oxygen or air: Oxygen is an inhibitor which prevents the anaerobic adhesive from setting up (solidified) while in storage. When oxygen is deprived, such as by the screwing of the nut onto the bolt or mating of the flanged parts, then the adhesive will cure up.

The cure rate of an anaerobic adhesive may also be accelerated by using an activator such as 3M™ Scotch-Weld™ Activator 3989 or by heat.

When do I need to use an activator?

The 3M™ Scotch-Weld™ Activator 3989 is an activator that achieves two things:

- a. Accelerates the cure of the anaerobic adhesives on active materials at lower temperatures or for inactive materials at room or elevated temperature.
- b. Cleans the parts to be assembled, replacing the need to use solvents for surface cleaning.

Activator 3989 has 30 days on-part life, so it can be pre-applied in advance.

Can 3M™ Scotch-Weld™ anaerobic adhesives (threadlockers, thread sealants, retaining compounds and gasket makers) be used on plastics?

We do not recommend the anaerobic adhesives to be used on a large number of plastics since the adhesives may cause stress cracking of the soft plastics. However, for some plastics of higher densities such as Acetal (Delrin®) then the adhesives can be used without the cracking effect. Alternatively, some cyanacrylate adhesives (CA) such as CA40, CA7, CA4 and CA8 may be used as threadlocking adhesives on soft plastics.

It seems that threadlockers and retaining compounds are similar in performance, can they be used interchangeably?

Even though these two groups of adhesives appear to be similar, they are designed for specific purposes and applications. The retaining compounds may be used for threadlocking but the threadlockers should not be used to replace retaining compounds.

What is the difference between a threadlocker and a thread sealant?

Again, threadlockers and thread sealants are designed for specific purposes and applications and *should not* be used interchangeably. A threadlocker adhesive locks and seals the threaded parts with stronger locking/bonding strength. On the other hand, a pipe sealant seals threaded parts tighter to withstand very high pressure but with lower bonding/locking strength.

How do I determine which threadlockers to use?

3M offers a wide range of threadlockers with color-coded packaging to help users understand the different threadlocker grades for different applications. Refer to the Technical Data Sheet for more information.

The following quick guide can be used to narrow down your choice for threadlockers:

- a. What are the assembled parts made of? Refer to Active and Inactive Materials chart above for examples and decide whether to use the activator/primer or not.
- b. Do you want the assembly to be removable later for servicing? If so a low strength (purple color) or medium strength (blue) thread locker is the appropriate product since hand tools can be used for disassembly – with some efforts. If not, a higher strength threadlocker (red) is suggested, but the assembly may still be loosened with heat and hand tools.
- c. What is the thermal resistance requirement for the assembly? If the heat resistance in excess of 300°F is needed then it is recommended that 3M™ Scotch-Weld™ 3497 be used.
- d. What threadlocker to use if the parts are oily? 3M™ Scotch-Weld™ 3495 works on slightly oily threaded parts.
- e. If I have bolts and nuts of different sizes, what threadlocker adhesive to use? The Technical Data Sheet contains the approximate, relevant guideline for the bolt size pertaining to threadlockers. In general, for small bolt/nut assemblies, a low or medium strength threadlocker is suggested over a high strength threadlocker, otherwise in the process of disassembly later the small bolts may break if the high strength adhesive is used.

When do I use a retaining compound?

Retaining compounds are used in cylindrical attachment applications such as securing a bearing on a shaft, press fits, slip fits and etc. to replace mechanical fasteners like set screws.

If an anaerobic adhesive cures in the absence of oxygen, how can it be stable in a closed container?

Oxygen is an inhibitor for anaerobic adhesives, what this means is that in the presence of oxygen in air, the product does not react to cure up/solidify. That is why the adhesive container is only filled half full and packaged by container material that is permeable to oxygen, ensuring that fresh supply of oxygen is always available.

Can I use a gasket maker adhesive to seal an assembly that originally used an O-ring gasket?

Yes, a gasket maker can be used but the gap space between the mated parts or thickness of the O-ring would have to be taken into consideration since the gasket adhesives have limits in their gap filling capability. Please refer to the Technical Data Sheet for details.

Are there any conditions where anaerobic adhesives should not be used?

Anaerobic adhesives are not recommended for use in systems that contain pure oxygen or oxygen-rich environment, chlorine or strong oxidizing substances.

How chemical resistant are Scotch-Weld Anaerobic Adhesives?

Scotch-Weld Anaerobic Adhesives have good chemical resistance and sealing against a variety of chemicals, substances, gases, fluids and environments. Please refer to Technical Data Sheets or contact 3M Customer/Technical Service for more information.

Is it possible to remove anaerobic adhesives once cured?

Products such as n-propyl bromide, chlorinated solvents or paint stripping solvents can be used to remove anaerobic adhesives. Use appropriate personal protection and follow the manufacturers' instructions for safe handling of solvents.

Helpful Anaerobic Adhesives Information

Flyer	3M Scotch-Weld™ Threadlockers	78-6901-2208-6
Flyer	3M Scotch-Weld™ Thread Sealants	78-6901-2209-4
Flyer	3M Scotch-Weld™ Retaining Compounds and Gasket Makers	78-6901-2210-2
TDS	3M Scotch-Weld Threadlockers	78-9236-7123-0
TDS	3M Scotch-Weld Thread Sealants	78-9236-7124-8
TDS	3M Scotch-Weld Retaining Compounds	78-9236-7122-2
TDS	3M Scotch-Weld Gasket Makers	78-9236-7125-5
TDS	3M Scotch-Weld™ Activator	78-9236-7126-3
	3M Scotch-Weld™ Anaerobic Adhesives Franklin Planner Chart	78-9236-7121-4
	3M Anaerobic Adhesives Cross Reference Sheet	3M Confidential
TDS	3M Scotch-Weld Instant Adhesives	78-6900-9916-9

Contact Information

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