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Technical Data Sheet

High Strength Threadlocker RED

INDUSTRIAL

PRODUCT DESCRIPTION **S.I.N.: 834-300**

Permatex® High Strength Threadlocker RED is a **high strength** anaerobic threadlocking material, which cures between engaged threads to form a unitized assembly that helps resist leakage, shock and vibration. The product is a single component, anaerobic liquid that cures when confined in the absence of air between close fitting metal surfaces. Ideal for all 1/4inch to 3/4inch diameter nut and bolt assemblies where future disassembly is improbable. Excellent chemical resistance and temperature resistance range of -54°C to +149°C (-65°F to +300°F). Meets or exceeds the requirements of Military Specification Mil-S-46163A Type II, Grade K.

PRODUCT BENEFITS

Improved Reliability

- Eliminates vibration issues
- Seals against leakage
- Prevents rusting of threads
- Cures without cracking or shrinking

Easy Application

- No mixing
- No curing outside of joint
- No torque compensation required during assembly

TYPICAL APPLICATIONS

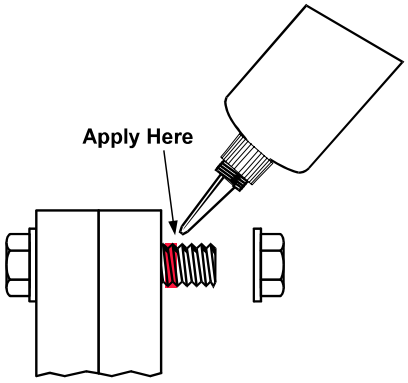
Prevents loosening and leakage of threaded fasteners. Particularly suitable for applications such as:

- Cylinder block
- Rocker arm studs
- Ring gear bolts
- Frame bolts
- Frame brackets
- Hydraulic press studs

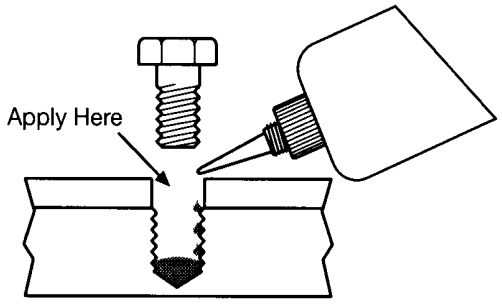
DIRECTIONS FOR USE

For assembly

1. Clean all threads (Bolt and Hole) with a cleaning solvent such as Permatex® Brake and Parts Cleaner and allow to dry.
2. Determine if the threads to be bonded are **Active** or **Inactive Metals** (Ref: Cure Speed vs. Substrate on the second page). If material is an **Inactive Metal**, spray all threads with Permatex® Surface Prep (24163) and allow 30 seconds to dry . Priming is not required if the material is an **Active Metal**. If unknown, it's always best to use the primer.
3. Shake the product thoroughly before use.
4. To prevent the product from clogging in the nozzle, do not allow the tip to touch metal surfaces during application.
5. **For Thru Holes**, apply several drops of product onto the bolt at the nut engagement area.



6. **For Blind Holes**, apply several drops down female threads into the bottom of the hole. As threads are engaged, compressed air forces the product upwards into the threads.



7. Assemble and tighten as usual. When tightening to established torque values, torque compensation is not required.

For Cleanup

1. Residual liquid films and/or fillets outside the joint are readily soluble in Permatex® Brake and Parts Cleaner.
2. Cured product can be removed with a combination of soaking in Permatex® Gasket Remover and mechanical abrasion such as a wire brush.

For Disassembly

1. Apply localized heat to nut or bolt to approximately 232°C (450°F). Disassemble while hot.

For Reassembly

1. Remove loose product from nut and bolt.
2. Apply primer to all threads, regardless of metal type.
3. Assemble and tighten as usual.

PROPERTIES OF UNCURED MATERIAL

	Typical Value
Chemical Type	Anaerobic Dimethacrylate Ester
Appearance	Opaque Red Fluorescent Liquid
Specific Gravity	1.10
Viscosity @ 25°C, mPa.s (cP)	400 to 600
Flash Point (TCC), °C (°F)	>93 (>200)

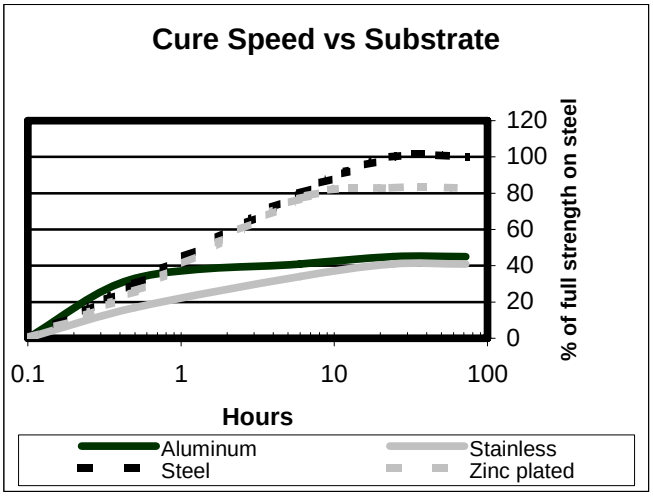
TYPICAL CURING PERFORMANCE

Cure speed vs. substrate

The rate of cure will depend on the material used. Permatex® High Strength Threadlocker RED will react faster and stronger with **Active Metals.** However, **Inactive Metals** will require the use of an activator (Surface Prep) to obtain maximum strength and cure speed at room temperature.

Active Metals	Inactive Metals
Soft Steel Iron	Bright Platings
Copper	Anodized Surfaces
Brass	Titanium
Manganese	Zinc
Bronze	Pure Aluminum
Nickel	Stainless Steel
Aluminum Alloy	Cadmium

The graph below shows the breakaway strength developed with time on 3/8" - 16 Grade 5 bolts and Grade 8 nuts compared to different materials.

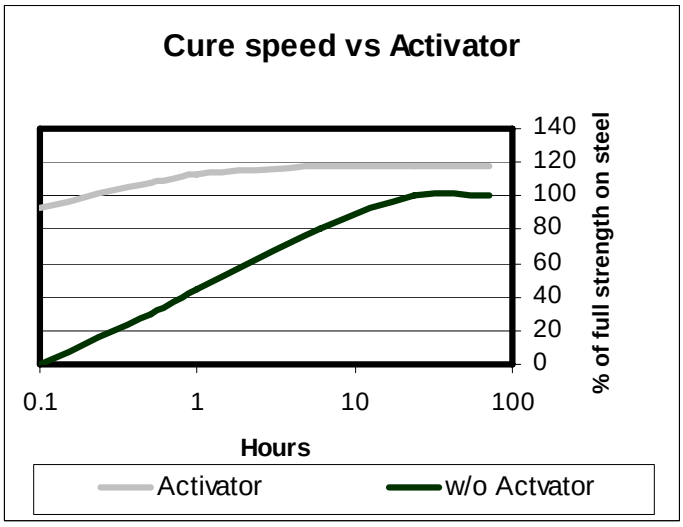


Cure speed vs. temperature

The rate of cure will depend on the ambient temperature. **Full cure** is attainable in 24 hours at room temperature, 22°C (72°F), or 1 hour at 93°C (200°F).

Cure speed vs. activator

To shorten cure time or if an inactive surface is present, applying an activator (Surface Prep) to the surface will improve cure speed. A 3/8-16 steel nut and bolt assembly will fixture in 5 minutes using an activator, while fixturing will occur in 20 minutes without an activator. Full cure in 24 hours for both procedures. The graph below shows the breakaway strength developed with time using Permatex® Surface Prep Activator.



PERFORMANCE OF CURED MATERIAL

(After 24 hr at 72°F on 3/8-16 steel Grade 8 Nuts and Grade 5 bolts)

	Typical Value	Range
Breakaway Torque, Nm,	28	17 to 40
(in.lbs)	(250)	(150 to 350)
Prevail Torque, Nm	31	23 to 40
(in.lbs)	(275)	(200 to 350)

Where Breakaway Torque is the force required to initiate the fastener movement and Prevail Torque is the force required to disassemble the fastener once Breakaway Torque has occurred.

TYPICAL ENVIRONMENTAL RESISTANCE

Temperature Resistance

Product temperature range from -54°C to +149°C (-65°F to +300°F). The breakaway and prevailing torque values decrease as temperature increases, however the assembly remains effective against vibration and leakage.

Chemical / Solvent Resistance

Aged under conditions and tested at 22°C(72°F)

% Initial Strength retained after time

	Temp	500hr	1000hr
Hot air	150°C		56%
Motor oil(SL)	125°C		48%
Gasoline	23°C	98%	
Antifreeze	87°C	85%	
Ethanol	23°C	105%	
Acetone	23°C	102%	

GENERAL INFORMATION

This product is not recommended for use in pure oxygen and/or oxygen rich systems and should not be selected as a sealant for chlorine or other strong oxidizing materials.

For safe handling information on this product, consult the Material Safety Data Sheet, (MSDS).

This product is not normally recommended for use on plastics (particularly thermoplastic materials where stress cracking of the plastic could result). It is recommended to confirm compatibility of the product with such substrates.

ORDERING INFORMATION

Part Number	Container Size
27110	10 ml bottle, carded
27150	50 ml bottle
27125	250 ml bottle
09179	1 ml pouches, display box
27101	1 liter bottle

STORAGE

Products shall be ideally stored in a cool, dry location in unopened containers at a temperature between 8° to 28°C (46° to 82°F) unless otherwise labeled. Optimal storage is at the lower half of this temperature range. To prevent contamination of unused product, do not return any material to its original container.

NOTE

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