



Toll Free: 87 PERMATEX
(877-376-2839)

10 Columbus Blvd., Hartford,
Connecticut 06106

6875 Parkland Boulevard, Solon
Ohio 44139

Technical Data Sheet

Large Diameter Threadlocker RED

INDUSTRIAL

PRODUCT DESCRIPTION

Permatex® Large Diameter Threadlocker RED is a **high strength** anaerobic threadlocking material, which cures between engaged threads to form a unitized assembly that resists virtually all 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 inch or larger 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 Military Specification Mil-S-46163A Type I, Grade L.

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

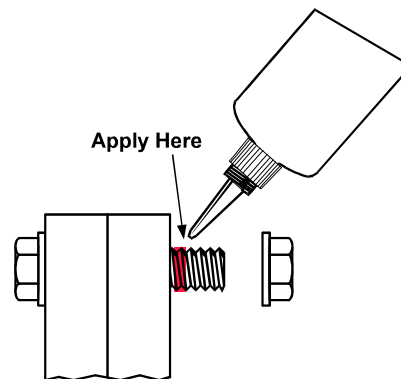
Prevents loosening and leakage of threaded fasteners. Particularly suitable for applications such as:

- Frame brackets
- Suspension fasteners
- Shock absorber mounts
- Wheel studs
- Frame bolts
- Large studs

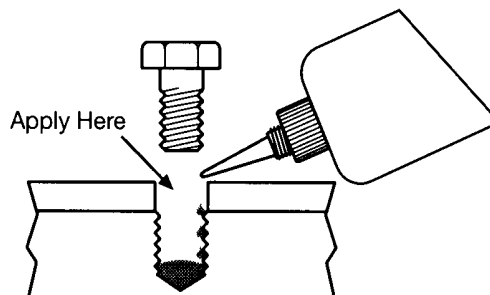
DIRECTIONS FOR USE

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 activator.
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 the 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.

NOT FOR PRODUCT SPECIFICATIONS.

THE TECHNICAL DATA CONTAINED HEREIN ARE INTENDED AS REFERENCE ONLY.

PLEASE CONTACT PERMATEX, INC., TECHNICAL SERVICE DEPARTMENT FOR ASSISTANCE AND RECOMMENDATIONS FOR YOUR SPECIFIC APPLICATION.
PERMATEX, INC., HARTFORD SQUARE NORTH, 10 COLUMBUS BOULEVARD, HARTFORD, CT 06106 PHONE - (1-87)PERMATEX Revised 03/03

PROPERTIES OF UNCURED MATERIAL

| | Typical Value |
|------------------------------|--------------------------------|
| Chemical Type | Anaerobic Dimethacrylate Ester |
| Appearance | Opaque Red Fluorescent Liquid |
| Specific Gravity | 1.12 |
| Viscosity @ 25°C, mPa.s (cP) | 6,000 to 7,000 |
| Flash Point (TCC), °C (°F) | >93 (>200) |

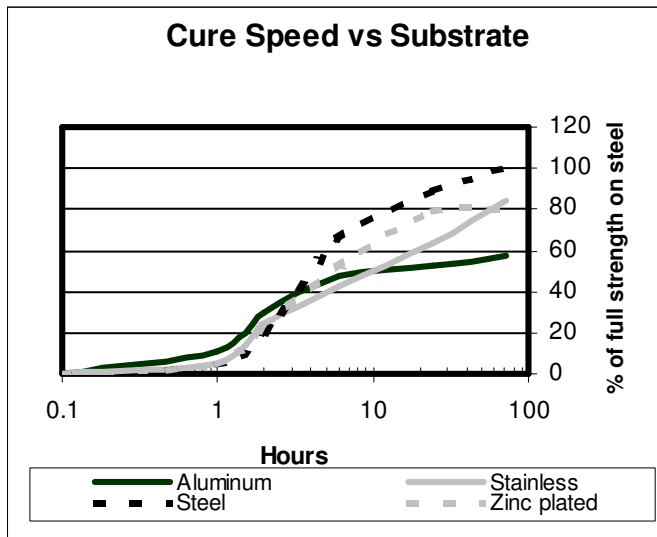
TYPICAL CURING PERFORMANCE

Cure speed vs. substrate

The rate of cure will depend on the material used. Permatex® Large Diameter 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 2 nuts compared to different materials.



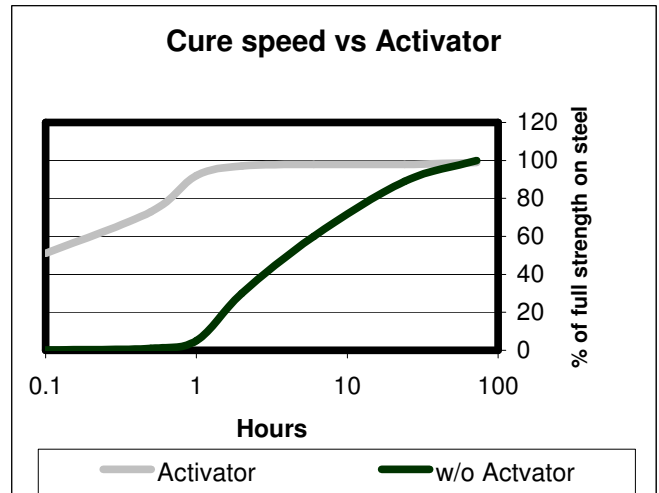
Cure speed vs. temperature

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

Where cure speed is unacceptably long, or large gaps are 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 2 Nuts and Grade 5 bolts)

| | Value | Typical Range |
|----------------------|-------|---------------|
| Breakaway Torque, Nm | 32 | 23 to 40 |
| (in.lbs) | (275) | (200 to 350) |
| Prevail Torque, Nm | 32 | 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 |
| Heat aged | 150°C | | 40% |
| Motor oil(SL) | 125°C | | 45% |
| Antifreeze | 87°C | 65% | |
| Gasoline | 23°C | 100% | |
| Ethanol | 23°C | 100% | |
| Acetone | 23°C | 90% | |

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 |
|-------------|----------------------|
| 27710 | 10 ml bottle, carded |
| 27750 | 50 ml bottle |
| 27725 | 250 ml 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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chemical-concepts.com

800.220.1966

410 Pike Road • Huntingdon Valley, PA 19006