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## Technical Data Sheet

# Permatex® High Strength Threadlocker RED Gel

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### PRODUCT DESCRIPTION

PERMATEX® High Strength Threadlocker RED Gel is a **high strength** anaerobic threadlocking gel conveniently packaged in a new Gel Twist™ or Gel Squeeze™ applicator. The product, like its liquid counterpart, is a single component, anaerobic gel that cures when confined in the absence of air between close fitting metal surfaces, ideal for all 3/8 inch to 1 inch (10mm to 25mm) and greater diameter threaded assemblies. Excellent chemical resistance and temperature resistance range of -65°F to +300°F (-54°C to +149°C). The assembly may require the use of heat to remove bolts. NSF Nonfood Components Program Listed (P1) (135870).

### PRODUCT BENEFITS

#### Improved Reliability

- Eliminates vibration issues
- Seals against leakage
- Prevents rusting of threads
- Designed for use on vertical or hard-to-reach applications
- Cures without cracking or shrinking
- Adjusts or disassembles with hand tools

#### Easy Application

- No mess Gel Twist™ or Gel Squeeze™ applicator
- Gel-type product does not drip when applied
- Single component
- No curing outside of joint
- Thixotropic: resists dripping from threads during assembly
- No torque compensation required during assembly

### TYPICAL APPLICATIONS

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

- Transmission shaft bolts
- Cylinder block
- Rocker arm studs
- Ring gear bolts
- Fan hub bolts
- Shock absorber bolts
- Frame brackets
- Frame bolts
- Hydraulic press studs
- Suspension fasteners
- Large studs
- Heavy equipment bolts
- Gear bolts
- Railroad assemblies
- Construction equipment

### 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. Remove the translucent protective cap by pulling off at an angle.
3. For Gel Twist™ turn the dial on the bottom of the container until 1/8" to 1/4" (3mm to 6mm) of material protrudes from the top of the application tip. Note: First time use may require 4 to 5 full turns of the dial before material appears in the tip. For Gel Squeeze™, remove cap and squeeze 1/8" to 1/4" (3mm to 6mm) of material beyond tip.
4. Apply threadlocker to the engagement area of the male fitting (usually the leading 5 to 6 threads).
5. Assemble parts and tighten to recommended torque.
6. If unused gel contacts metal threads, do not retract threadlocker back into the tube. Wipe off with a clean towel.
7. Replace protective cap.

#### 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 450°F (232°C). Disassemble while hot.

#### For Reassembly

1. Remove loose product from nut and bolt following cleanup procedure above.
2. Apply Surface Prep™ activator to all threads, regardless of metal type and allow to dry.
3. Apply threadlocker gel as above.
4. Assemble and tighten as usual.

### PROPERTIES OF UNCURED MATERIAL

|                            | Typical Value                  |
|----------------------------|--------------------------------|
| Chemical Type              | Anaerobic Dimethacrylate Ester |
| Appearance                 | Red Gel                        |
| Specific Gravity           | 1.13                           |
| Viscosity @ 25°C, cP       |                                |
| Brookfield RVF, spindle    | Gel                            |
| #3, @ 20 RPM               |                                |
| Flash Point (TCC), °F (°C) | >200 (>93)                     |

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.  
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**TYPICAL CURING PERFORMANCE**

**Cure speed vs. substrate**

The rate of cure will depend on the material used. Permatex® High Strength Threadlocker RED gel will react faster and stronger with **Active Metals**. However, **Inactive Metals** will require the use of a primer (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           |

**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. primer**

To shorten cure time or if an inactive surface is present, applying a primer (Surface Prep) to the surface will improve cure speed. A 3/8-16 steel nut and bolt assembly will fixture in 5 minutes using a primer, while fixturing will occur in 20 minutes without a primer. Full cure in 24 hours for both procedures.

**PERFORMANCE OF CURED MATERIAL**

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

|                                   | Typical Value |
|-----------------------------------|---------------|
| Breakaway Torque, Nm,<br>(in.lbs) | 20<br>(175)   |
| Prevail Torque, Nm<br>(in.lbs)    | 26<br>(230)   |

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 150°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**

The product retains effective properties in contact with automotive fluids, such as motor oil, gasoline, brake fluids, transmission fluids, alcohol, and antifreeze solutions.

**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 Safety Data Sheet, (SDS).**

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                       |
|-------------|--------------------------------------|
| 27005       | 5 gm Gel Squeeze™ Applicator, carded |
| 27010       | 10 gm Gel Twist™ Applicator, carded  |
| 27835       | 35 gm Gel Tube, carded               |

**STORAGE**

Products shall be ideally stored in a cool, dry location in unopened containers at a temperature between 8° and 28°C (46° and 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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