

# Permatex®

A Brand of ITW Devcon

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## Technical Data Sheet

### High Strength Threadlocker RED Gel

INDUSTRIAL

#### 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 10mm to 25mm (3/8 inch to 1 inch and greater) diameter threaded assemblies. Excellent chemical resistance and temperature resistance range of -54°C to +149°C (-65°F to +300°F). The assembly may require the use of heat to remove bolts. NSF White Book registered.

#### PRODUCT BENEFITS

##### Improved Reliability

- Eliminates vibration loosening
- Seals against leakage
- Prevents rusting of threads
- Designed for use on vertical or hard-to-reach applications
- Cures without cracking or shrinking

##### 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 reliably locks and seals all threaded fastener assemblies 10mm to 25mm (3/8" to 1") and greater where high strength is required.

#### DIRECTIONS FOR USE

##### For Assembly (Gel Twist™)

1. Clean all threads (bolt and hole) with a cleaning solvent such as Permatex® Brake & Parts Cleaner and allow to dry.
2. Remove the translucent protective cap by pulling off at an angle.
3. Turn the dial on the bottom of the container until 3mm to 6mm (1/8" to 1/4") 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.
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 (60% of recommended dry 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 Assembly (Gel Squeeze™)

1. Clean all threads (bolt and hole) with a cleaning solvent such as Permatex® Brake & Parts Cleaner.
2. Unscrew protective cap.
3. Gently squeeze tube to expose 3mm to 6mm (1/8" to 1/4") 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 (60% of recommended dry torque).
6. If unused gel contacts metal threads, 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 & 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 262°C (500°F). Disassemble while hot.

##### For Reassembly

1. Remove loose product from nut and bolt following cleanup procedure above.
2. Apply Permatex® Surface Prep Activator 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	Red Gel
Specific Gravity	1.13
Viscosity @ 25°C, cP	
Brookfield RVF, spindle	Gel
#3, @ 20 RPM	
Flash Point (TCC), °C (°F)	>93 (>200)

#### 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).

#### PERFORMANCE OF CURED MATERIAL

(After 24 hr at 72°F on 3/8-16 steel Grade 2 Nuts and Grade 5 bolts)

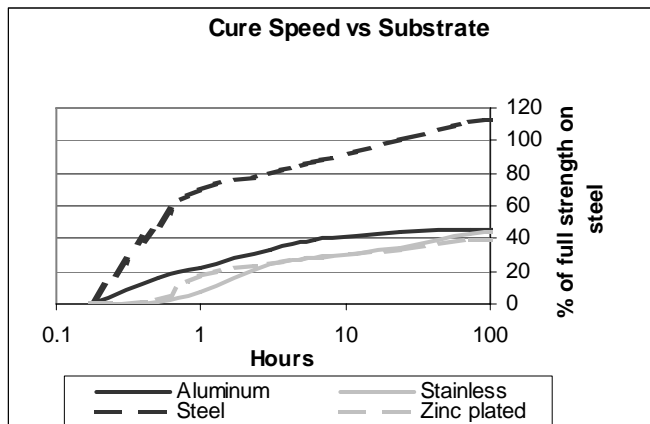
Typical

	Value	Range
Breakaway Torque, Nm, (in.lbs)	20 (175)	14 to 40 (125 to 350)
Prevail Torque, Nm (in.lbs)	26 (230)	23 to 40 (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 CURING PERFORMANCE**

The graph below shows the breakaway strength developed with time on 3/8" – 16 Grade 5 bolts and Grade 2 nuts for different materials.



**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)

3/8-16 steel nuts& bolts

% Initial Strength retained after time

	Temp °C(°F)	500hr	1000hr
Hot air	150(302)		45
Motor oil (SL)	125(257)		45
Antifreeze	87(189)	130	
Gasoline	RT	105	
Ethanol	RT	110	
Acetone	RT	135	

**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
27010	10 gm Gel Twist™ Applicator, carded
27005	5 gm Gel Squeeze™ Applicator, 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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