

## Technical Data Sheet Nuts N' Bolts® 427

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### Product Description

**Hernon® Nuts N' Bolts® 427** is a single component anaerobic thread locking material, which develops high strength. The product cures when confined in the absence of air between close fitting metal surfaces.

### Typical Applications

- Prevents loosening and leakage of threaded fasteners.
- Cylinder liner studs.
- Automotive front end suspension bolts.
- Hydraulic press studs, where difficult removal is desired.
- Air compressor fasteners
- Refrigeration safety valves

### UL Classification – File MH14222

Classified by Underwriters Laboratories Inc.® as to fire hazard only. Adhesive/Sealant 427 classed 20 to 30 between kerosene and paraffin oil in respect to fire hazard. Flash point (closed cup) 102.8°C (217°F). For use in devices handling gasoline petroleum oils, natural gas (pressure not over 300 psig), butane and propane not exceeding 2 in. pipe size. 29R9.

### Typical Properties (Uncured)

Property	Value
Chemical Type	Dimethacrylate ester
Appearance	Red fluorescent liquid
Viscosity @ 77°F (25°C), cP	400 to 600
Specific gravity	1.08
Flash point	See MSDS

### Typical Properties (Cured)

Property	Value
Coefficient of thermal expansion, ASTM D696 (K <sup>-1</sup> )	0.1
Coefficient of thermal conductivity, ASTM C 177, W/(m·K)	0.1
Temperature Range, °F	-65 to 300

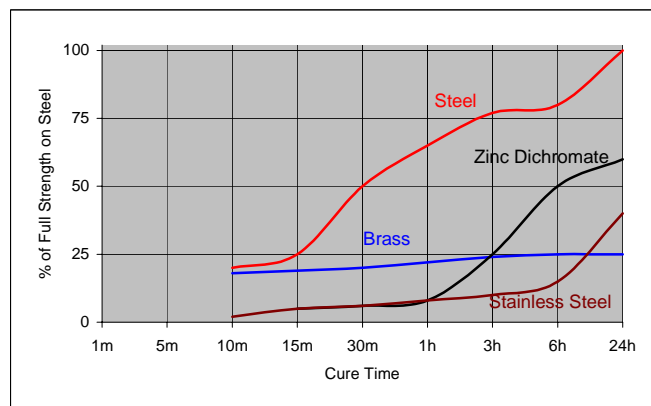
### Performance Testing

Each batch of **Nuts N' Bolts® 427** is tested to the lot requirements of MIL-S-46163A (Type I Grade K), and to the detail requirements of ASTM D5363 (AN0221).

### Typical Curing Performance

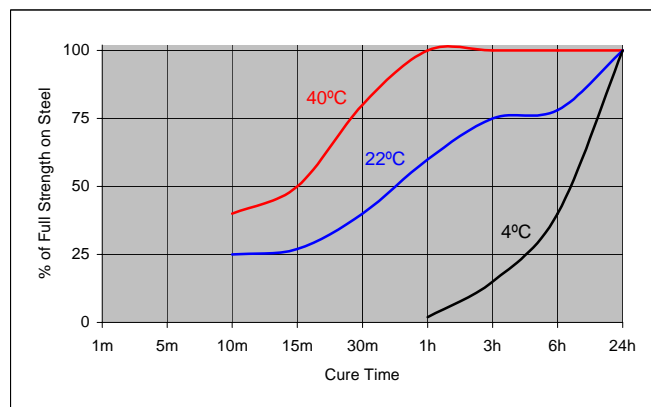
#### Cure Speed vs. Substrate

The rate of cure will depend on substrate used. The graph below shows the breakaway strength developed with time on M10 steel nuts and bolts compared to different materials and tested according to ISO 10964.



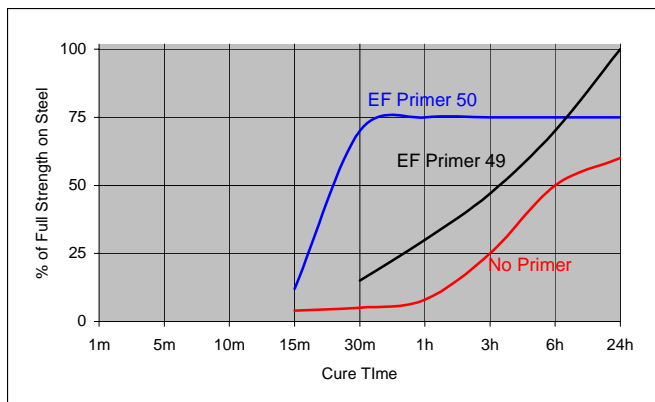
#### Cure Speed vs. Temperature

The rate of cure will depend on the ambient temperature. The graph shows the breakaway strength developed with time at different temperatures on M10 steel nuts and bolts and tested according to ISO 0964.



#### Cure Speed vs. Primer

When cure speed is unacceptably long (because of substrate, temperature or gap), performance may be improved by treating the surface with **Hernon® EF® Primer 49 or 50**. The graph below shows breakaway strength developed with time using **EF® Primer 49 and 50** on M10 zinc dichromate steel nuts and bolts and tested according to ISO 10964.



### Typical Cured Performance

Tested on 3/8 x 16 grade 2 nuts and grade 5 bolts according to ISO 10964.

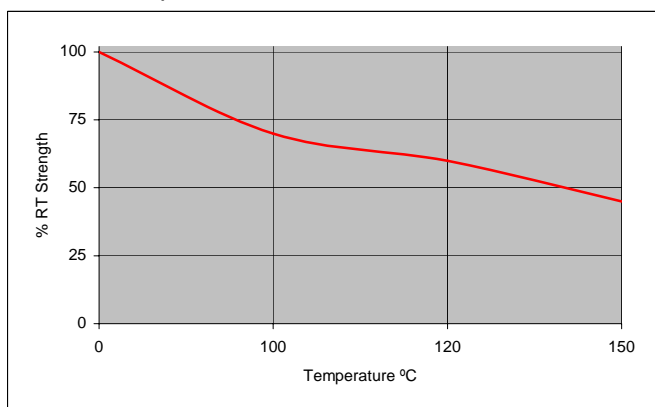
RT Cure	Substrate	Torque	N•m (in-lb)
90 Minutes	Steel	Breakaway	8.5 to 39.5 (75 to 350)
		Prevailing	8.5 to 56.5 (75 to 500)
24 Hours	Steel	Breakaway	16.9 to 39.5 (150 to 350)
		Prevailing	16.9 to 56.5 (150 to 500)
	Plated	Breakaway	4.5 to 39.5 (40 to 350)
		Prevailing	4.5 to 56.5 (40 to 500)

### Typical Environmental Resistance

Cured for 24 hours @ 22°C  
 Breakaway Torque, ISO 10964  
 M10 steel nuts and bolts

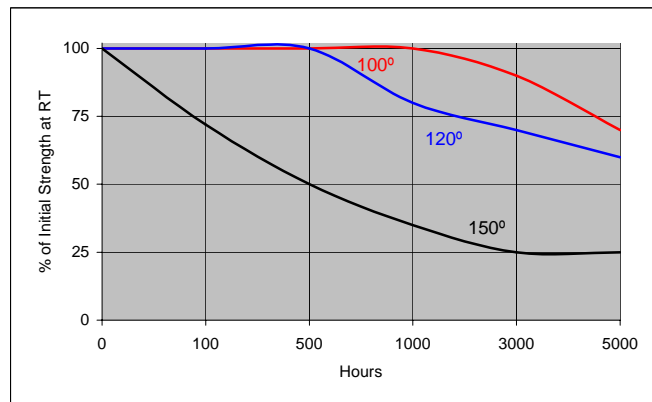
### Hot Strength

Tested at temperature



### Heat Aging

Aged at temperature indicated and tested at 22°C



### Chemical/Solvent Resistance

Aged under conditions indicated and tested at 22°C.

Chemical/Solvent	Temp (°C)	% of Initial Strength		
		100 h	500 h	1000 h
Water Glycol 50/50	87	100	85	85
Brake fluid	22	100	100	100
Ethanol	22	95	95	95
Leaded Gasoline	22	100	100	100
Unleaded Gasoline	22	100	100	95
Motor Oil	125	90	85	85
Acetone	22	95	95	95
1,1,1 Trichloroethane	22	100	85	85

### 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).

Where aqueous washing systems are used to clean the surfaces before bonding, it is important to check for compatibility of the washing solution with the adhesive. In some cases these aqueous washes can affect the cure and performance of the adhesive.

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.

### **Directions For Use**

For best performance surfaces should be clean and free of grease. **Nuts N' Bolts® 427** should be applied to the bolt in sufficient quantity to fill all engaged threads.

### **Disassembly and Cleanup**

To aid in disassembly anaerobic compounds can be weakened by heating to at least 500°F (260°C). Once disassembled, cured adhesive can be removed with **Hernon® Gasket Remover 30**.

### **Storage**

**Nuts N' Bolts® 427** should be stored in a cool, dry location in unopened containers at a temperature between 46°F to 82°F (8°C to 28°C) unless otherwise labeled. Optimal storage is at the lower half of this temperature range. To prevent contamination of unused material, do not return any material to its original container.

### **Dispensing Equipment**

**Hernon®** offers a complete line of semi and fully automated dispensing equipment. Contact **Hernon® Sales** for additional information.

These suggestions and data are based on information we believe to be reliable and accurate, but no guarantee of their accuracy is made. HERNON MANUFACTURING, INC. shall not be liable for any damage, loss or injury, direct or consequential arising out of the use or the inability to use the product. In every case, we urge and recommend that purchasers, before using any product in full scale production, make their own tests to determine whether the product is of satisfactory quality and suitability for their operations, and the user assumes all risk and liability whatsoever, in connection therewith. Hernon's Quality Management System for the design and manufacture of high performance adhesives and sealants is registered to the ISO9001:2000 Quality Standard.