

## Technical Data Sheet Nuts N' Bolts<sup>®</sup> 434

March 2006

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### Product Description

**Hernon<sup>®</sup> Nuts N' Bolts<sup>®</sup> 434** is a thixotropic, 100% active anaerobic compound which solidifies with reliable and expected strength upon application to most fasteners. Particularly suitable for applications on less active substrates such as stainless steel and plated surfaces, where disassembly with hand tools is required for servicing.

### Product Benefits

**Nuts N' Bolts<sup>®</sup> 434** is easily applied. No mixing (single component), no curing outside the joint and no torque adjustments are necessary. **Nuts N' Bolts<sup>®</sup> 434** offers increased profitability, having approximately 80% cost advantage over the cheapest mechanical methods as well as reducing inventories, maintenance, and the need for costly precision tolerances. **Nuts N' Bolts<sup>®</sup> 434** can be used on up to 3/4 inch bolts with light oil contamination.

### Typical Applications

- Shaft coupling bolts
- Drive shaft fasteners
- Gear box bolts
- Bearing cover cap screws
- Railroad bolts

### Typical Properties (Uncured)

Property	Value
Chemical Type	Dimethacrylate Ester
Appearance	Blue Fluorescent Liquid
Viscosity @ 77°F (25°C), cP	1500 to 3000
Specific gravity	1.05
Flash point	See MSDS

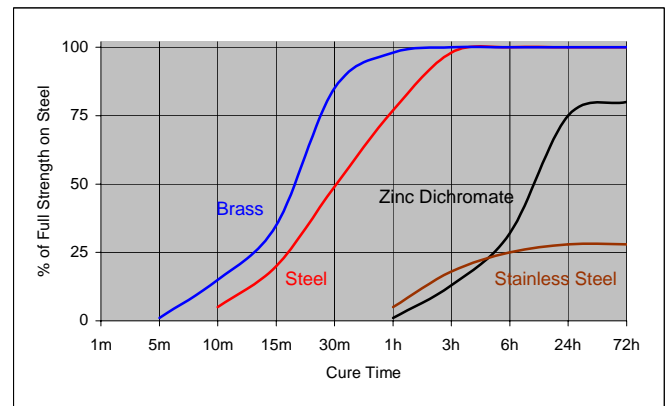
### Typical Properties (Cured)

Property	Value
Coefficient of thermal expansion, ASTM D696, K <sup>-1</sup>	80 x 10 <sup>-6</sup>
Coefficient of thermal conductivity, ASTM C 177, W/(m·K)	0.1
Specific Heat, kJ/(kg·K)	0.3
Temperature Range, °C (°F)	-55 to 150 (-65 to 300)

### Typical Curing Performance

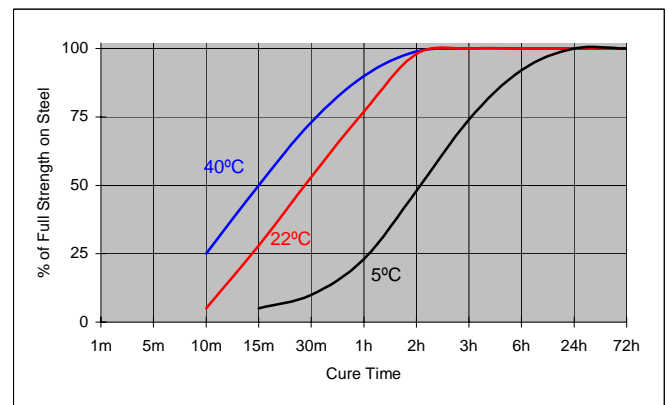
#### Cure Speed vs. Substrate

The rate of cure will depend on the 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.



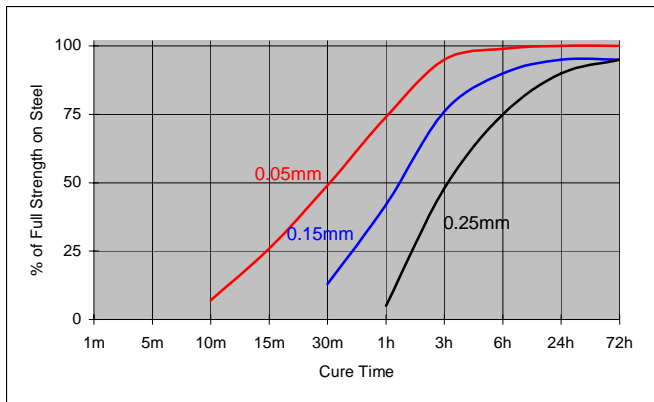
#### Cure Speed vs. Temperature

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.

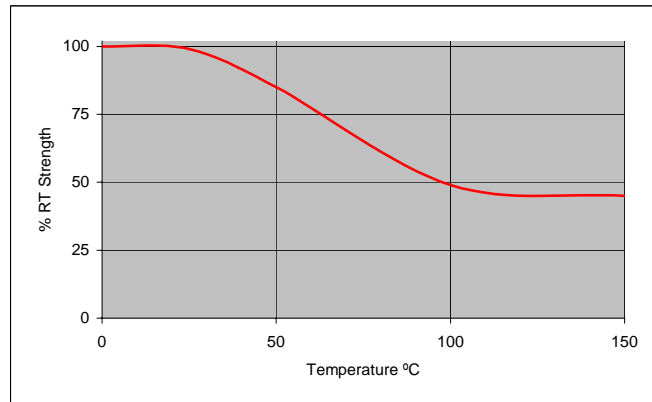


#### Cure Speed vs. Bond Gap

The rate of cure will depend on the bondline gap. Gaps in threaded fasteners depends on thread type, quality and size. The following graph shows shear strength developed with time on steel pins and collars at different controlled gaps and tested according to ISO 10123.

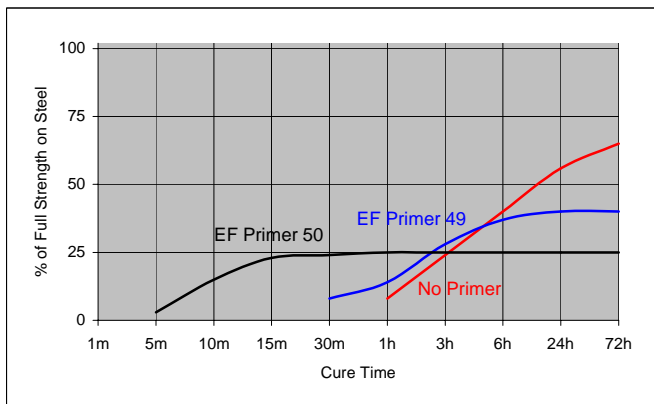


**Hot Strength**  
Tested at temperature

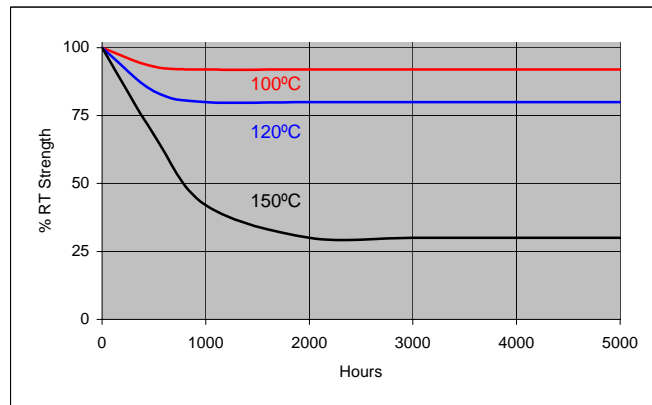


**Cure Speed vs. Primer**

When cure speed is unacceptably long or large gaps are present, applying primer to the surface will improve cure speed. The graph below shows breakaway strength developed with time using **Hernon® EF® Primer 49 and 50** on M10 zinc dichromate steel nuts and bolts and tested according to ISO 10964.



**Heat Aging**  
Aged at temperature indicated and tested @ 22°C



**Typical Cured Performance**

Cured for 24 hours at 22°C on M10 steel nuts and bolts  
Tested according to ISO 10964.

Torque Strength	Value, N•m (in-lb)
Breakaway	20.3 (180)
Prevailing	7.4 (65)
Breakloose - Pretorqued to 5 N•m	24.0 (210)
Max. Prevailing - Pretorqued to 5 N•m	24.0 (210)

**Typical Environmental Resistance**

Cured for 1 week @ 22°C  
Breakloose Torque, ISO 10964, pretorqued to 5 N•m  
M10 zinc phosphate nuts and bolts

**Chemical/Solvent Resistance**

Aged under conditions indicated and tested at 22°C.

Chemical / Solvent	Temp (°C)	% of Initial Strength			
		100h	500h	1000h	5000h
Water Glycol 50/50	87	95	80	80	80
Brake fluid	22	100	100	100	100
Ethanol	22	100	85	85	85
Motor Oil	125	95	95	95	95
Gasoline	22	100	100	95	95
Acetone	22	100	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**

Shake well prior to use. For best performance surfaces should be clean and free of grease. **Nuts N' Bolts® 434** 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® 434** 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.