HERNON®
High Performance Adhesives and Sealants
ISO 9001 Registered

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Technical Data Sheet
Nuts N' Bolts® 439

Product Description

Hernon® Nuts N' Bolts® 439 is a one component, high strength anaerobic adhesive. **Nuts N' Bolts® 439** cures when confined in the absence of air between close fitting metal surfaces and prevents loosening and leakage from shock and vibration. **Nuts N' Bolts® 439** is particularly fast curing thereby reducing or eliminating the need for activators. Particularly suited for heavy duty applications such as bolts used in transmissions, construction equipment or railroad assemblies where heavy shock and stress levels are required. The thixotropic nature of **Nuts N' Bolts® 439** reduces the migration of liquid product after application to the substrate.

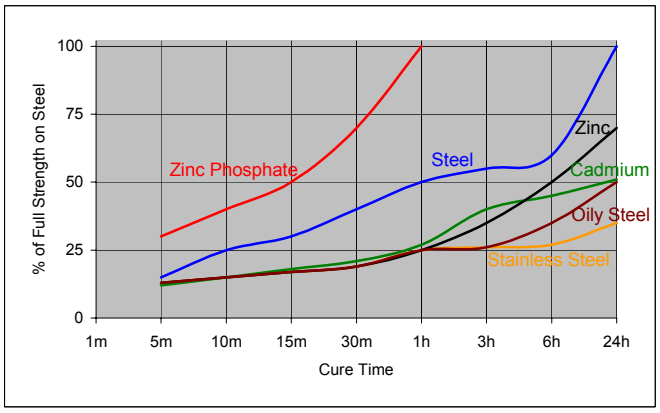
Typical Properties (Uncured)

Property	Value
Appearance	Red liquid
Viscosity @ 25°C, cP	1250 to 4250
Specific gravity	1.16
Flash point	See MSDS

Typical Curing Performance

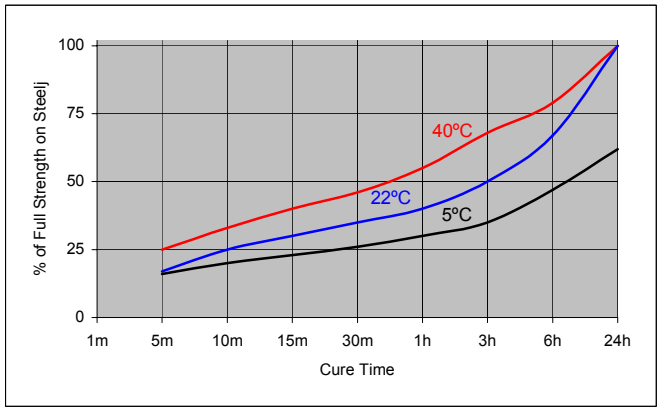
Cure Speed vs. Substrate

The rate of cure will depend on the substrate used. The graph below shows the breakloose strength developed with time for different materials on 3/8 x 16 nuts and bolts - tested according to ISO 10964. All samples pretorqued to 5 N•m.



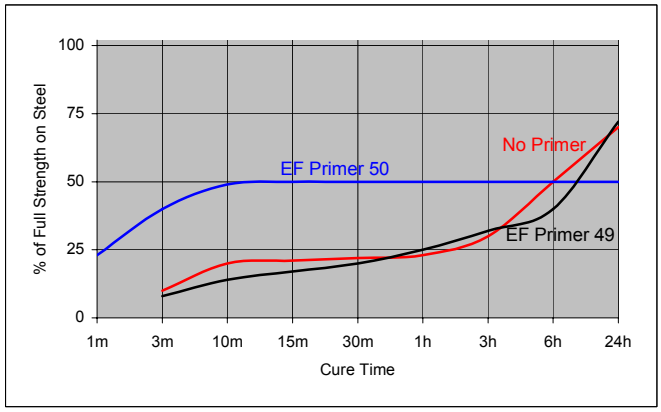
Cure Speed vs. Temperature

The rate of cure will depend on the temperature. The graph below shows the breakloose strength developed with time at different temperatures on 3/8 x 16 nuts and bolts - tested according to ISO 10964. All samples pretorqued to 5 N•m.



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 breakloose strength developed with time using **EF® Primer 49 and 50** on M10 zinc dichromate steel nuts and bolts and tested according to ISO 10964. All samples pretorqued to 5 N•m.



Typical Cured Performance

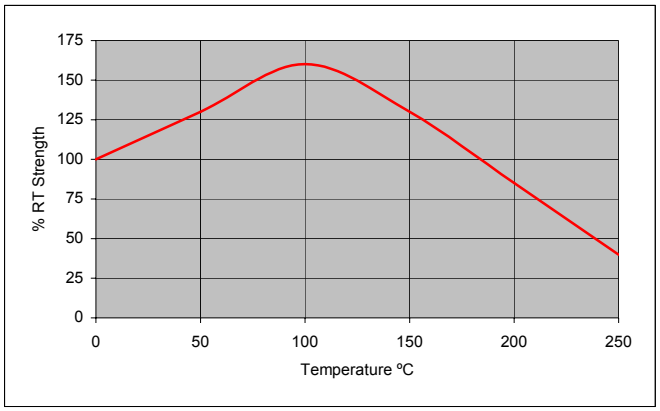
Cured and tested at 22ºC on 3/8 x 16 steel nuts and bolts according to ISO 10964.

Cure	Torque	N•m (in-lb)
4 Hrs.	Breakaway	≥8 (≥70)
	Prevailing	≥10.1 (≥90)
24 Hrs.	Breakaway	≥ 11.3 (≥ 100)
	Prevailing	≥ 14.1 (≥ 125)
	Breakloose Pretorqued to 5 N•m (45 in-lbs)	36.7 (325)
	Maximum Prevailing Pretorqued to 5 N•m (45 in-lbs)	36.1 (320)

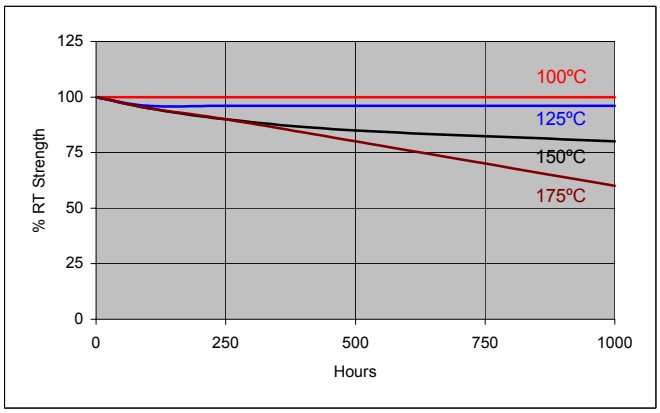
Typical Environmental Resistance

Cured for 24 hours at 22ºC
Breakloose Torque, ISO 10964, pretorqued to 5 N•m
3/8 x 16 zinc phosphate nuts and bolts

Hot Strength
Tested at temperature



Heat Aging
Aged at temperature indicated and tested at 22ºC



Chemical/Solvent Resistance
Aged under conditions indicated and tested at 22ºC.

Chemical/Solvent	Temp (ºC)	% of Initial Strength 100 hr	500 hr	1000 hr
Water Glycol 50/50	87	100	100	100
Brake fluid	22	100	100	100
Ethanol	22	100	100	100
Unleaded Gasoline	22	100	100	100
Motor Oil	125	100	95	95
Acetone	22	100	100	100

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 cue 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® 439** 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 500ºF (260ºC). Once disassembled, cured adhesive can be removed with **Hernon® Gasket Remover 30**.

Storage
Nuts N' Bolts® 439 should be stored in a cool, dry location in unopened containers at a temperature between 46ºF to 82ºF (8ºC to 28ºC) 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.