HERNON®
High Performance Adhesives and Sealants
ISO 9001 Registered

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# Technical Data Sheet
# UV Curable Cylinlock® 821



## Product Description

**Hernon® UV Curable Cylinlock® 821** is a fast curing, high strength anaerobic adhesive designed to retain and seal cylindrical assemblies. Curing occurs when adhesive is confined between mating surfaces. The cured adhesive is a thermoset plastic suitable for exposure to most solvents and withstands temperatures up to 300°F (149°C). Augments or replaces press fits, set screws, pins and other mechanical retaining methods. Avoids heavy press fits due to rapid cure.

**Cylinlock® 821** cures quickly at room temperature without the need for surface activators or heat to join cylindrical assemblies. Fixturing strength develops in five minutes, or within 15 seconds by exposing the edge fillets to high intensity long wavelength UV light (365 nm). Full strength will be reached in 24 hours. Cure fillets at UV light irradiances above 60 milliwatts/cm² to insure proper cure.

## Typical Properties (Uncured)

| Property | Value |
|---|---|
| Chemical Type | Methacrylate Ester |
| Appearance | Amber Liquid |
| Viscosity @ 77°F (25°C), cP | 400 to 600 |
| Specific gravity | 1.09 |
| Flash point | See MSDS |

## Typical Properties (Cured)

| Property | Value |
|---|---|
| Thermal Conductivity | 0.1 W/(m·K) |
| Coefficient of Thermal Expansion | 80 x $10^{-6}$ $K^{-1}$ |
| Temperature Range, °F | -65 to 300 |

## Typical Curing Performance

### Curing Specifications

Curing occurs when the resin is confined between metallic surfaces. The metal acts as a catalyst for the curing process. Hot air oven heat or induction heat will fully cure these compounds. To insure proper cure of UV fillets, UV light intensities above 60 milliwatts/$cm^2$ is recommended.

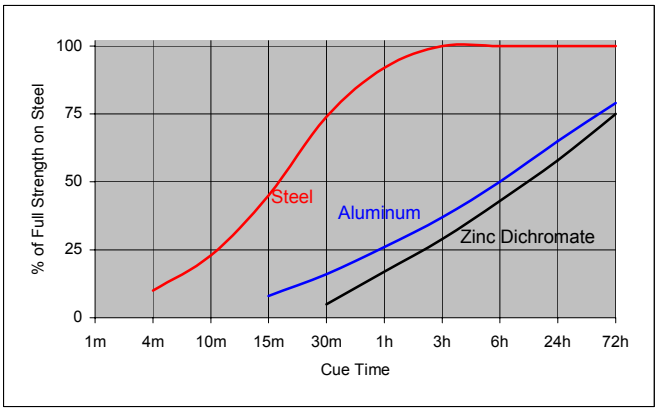
### Fixture Time and Surface Cure

UV fixture time is defined as the light exposure time required to develop a shear strength of 0.1 N/mm². When curing with sufficient UV light irradiance, exposed material cures dry to the touch in seconds.

| Test | Irradiance | Result |
|---|---|---|
| Fixture time, glass microscope slides | 6 mW/cm² | ≤14 seconds. |
| Surface cure, medium pressure mercury arc light source (undoped) | 100 mW/cm² @ 365 nm | 45 seconds |
| | 60 mW/cm² @ 260 nm | 45 seconds |

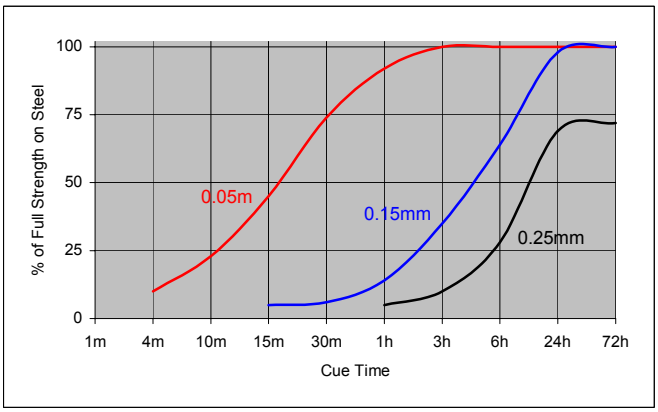
### Cure Speed vs. Substrate

The rate of cure will depend on substrate used. The graph below shows the shear strength developed with time on steel pins and collars compared to different materials and tested according to ISO 10123.



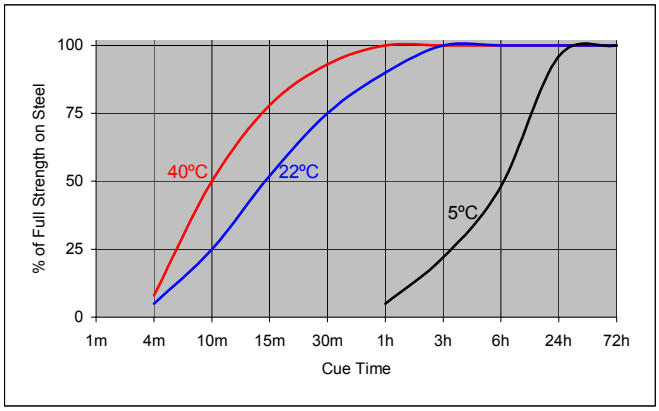

### Cure Speed vs. Bond Gap

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.



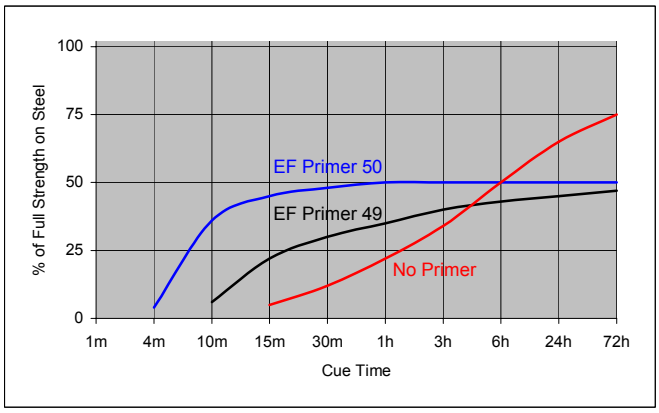
### Cure Speed vs. Temperature

The rate of cure will depend on the ambient temperature. The graph shows the breakaway strength developed with time at different temperatures on steel pins and collars and tested according to ISO 10123.




### 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 shear strength developed with time using **EF® Primer 49 and 50** on zinc dichromate steel pins and collars and tested according to ISO 10123.




## Typical Cured Performance

### Shear Strength

Tested on steel pins and collars according to ISO 10123

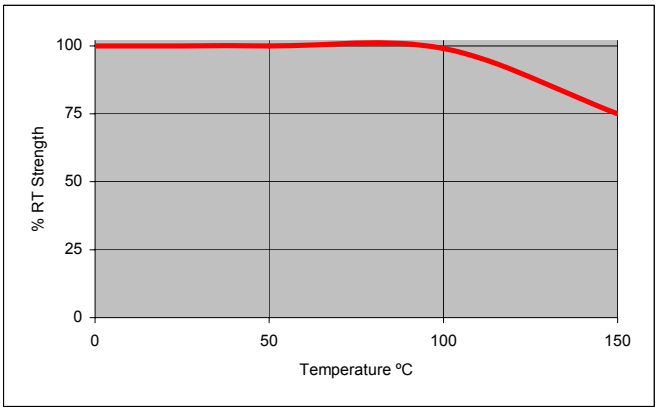
| RT Cure | N/mm² (psi) |
|---|---|
| 24 Hours | ≥ 20.7 (≥ 3000) |

## Typical Environmental Resistance

Cured for 1 week @ 22ºC
Shear strength, ISO 10123, steel pins and collars

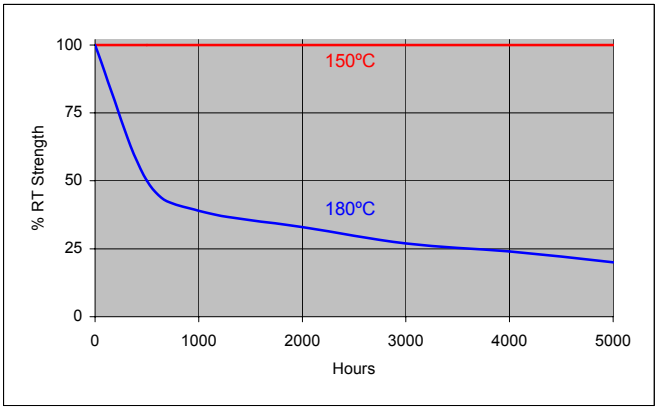
### Hot Strength

Tested at temperature




### Heat Aging

Aged at temperature indicated - Tested at (22ºC).




### Chemical/Solvent Resistance

Aged under condition indicated - Tested at 72ºF (22ºC).

| | Temp | % of Initial Strength | | |
|---|---|---|---|---|
| **Chemical/Solvent** | **(ºC)** | **100h** | **500h** | **1000h** |
| Water Glycol 50/50 | 87 | 100 | 90 | 75 |
| Brake fluid | 22 | 100 | 100 | 100 |
| Ethanol | 22 | 100 | 100 | 100 |
| Unleaded Gasoline | 22 | 100 | 100 | 100 |
| Motor Oil | 125 | 100 | 100 | 100 |
| 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 results, clean all surfaces (external and internal) with a **Hernon**® cleaning solvent and allow to dry. If the material is an inactive metal or the cure speed is to slow, apply **EF**® **Activator 49 or 50** and allow to dry.

**For Slip Fitted Assemblies**, apply adhesive around the leading edge of the pin and the inside of the collar and use a rotating motion during assembly to ensure good coverage.

**For Press Fitted Assemblies**, apply adhesive thoroughly to both bond surfaces and assemble at high press on rates.

**For Shrink Fitted Assemblies** the adhesive should be coated onto the pin, the collar should then be heated to create sufficient clearance for free assembly.
Parts should not be disturbed until sufficient handling strength is achieved.

**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**
**Cylinlock**® **821** 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.