HERNON®
High Performance Adhesives and Sealants
ISO 9001 Registered

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Technical Data Sheet
Quantum® 135

Product Description

Quantum® 135 is a single-component, cyanoacrylate instant adhesive specifically formulated for difficult to bond substrates or where low humidity causes slow curing of standard industrial grade instant adhesives.

Typical Applications

- Bonds wood, leather and foamed plastic or rubber.
- Acidic surfaces such as on dichromate or freshly plated surfaces.
- Rapid bonding of a wide range of metal, plastic or elastomeric materials.

Product Benefits

- Single component.
- 100% Solventless.
- Instant setting.
- Improved adhesion to difficult to bond surfaces.

Performance Requirements

Quantum® 135 meets the requirements of MIL-A-46050C, Type II Class 2, and CID A-A-3097 Type II Class 2.

Typical Properties (Uncured)

Property	Value
Chemical Type	Ethyl cyanoacrylate
Appearance	Transparent, colorless liquid
Viscosity @ 25ºC, cP	100
Specific gravity	1.10
Flash point	See MSDS

Typical Properties (Cured)

Cured 24 Hours @ 22ºC

Physical Properties

Property	Value
Coefficient of thermal expansion, K^{-1}, ASTM D696	80×10^{-6}
Coefficient of thermal conductivity, W/(m·K), ASTM C177	0.1
Glass Transition Temperature, ºC, ASTM E 228	120
Gap Fill, mm (in.)	0.127 (0.005)

Electrical Properties

Property		Value
Dielectric Strength, kV/mm ASTM D149		25
Dielectric Constant @ ASTM D150	100 Hz 1 kHz 10 kHz	2.75 2.75 2.75
Dissipation Factor @ ASTM D150	100 Hz 1 kHz 10 kHz	< 0.02 < 0.02 < 0.02
Volume Resistivity, Ω·cm ASTM D257		1×10^{16}
Surface Resistivity, Ω ASTM D257		1×10^{16}

Typical Curing Performance

Cure Speed vs. Substrate

The rate of cure will depend on the substrate used. The table below shows the fixture time achieved on different materials at 22ºC / 50% relative humidity. Fixture time is defined as the time to develop a shear strength of 0.1 N/mm².

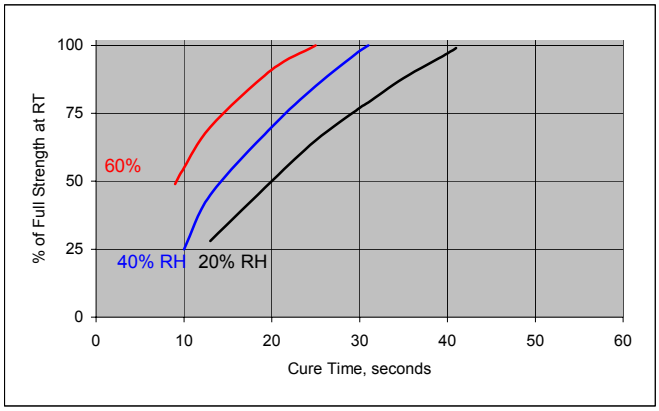
Substrate	Fixture Time (seconds)
Steel	5 to 20
Aluminum	2 to 10
Zinc Dichromate	10 to 20
Neoprene	< 5
Nitrile Rubber	< 5
ABS	2 to 10
PVC	2 to 10
Polycarbonate	10 to 40
Phenolic	2 to 10
Wood, Balsa	2 to 5
Wood, Oak	90 to 180
Chipboard	30 to 90
Fabric	2 to 20
Leather	5 to 15
Paper	1 to 10

Cure Speed vs. Bond Gap

The rate of cure will depend on the bond line gap. Thin bond lines result in high cure speeds, increasing the bond gap will decrease the rate of cure.

Cure Speed vs. Humidity

The rate of cure will depend on the ambient relative humidity. The following graph shows the tensile strength developed with time on Buna N rubber at different levels of humidity.



Cure Speed vs. Accelerator

Where cure speed is unacceptably long due to large gaps, applying accelerator to the surface will improve cure speed. However, this can reduce ultimate strength of the bond and therefore testing is recommended to confirm effect.

Typical Cured Performance

Shear Strength

Cured 24 Hours @ 22ºC - tested according to ISO 4587

Substrate	Shear Strength N/mm² (psi)
Steel, grit blasted	17.9 to 26.2 (2600 to 3800)
Aluminum, etched	11.0 to 19.3 (1600 to 2800)
Zinc Dichromate	4.1 to 10.3 (600 to 1500)
ABS	6.2 to 20.0 (900 to 2900)
PVC	6.2 to 20.0 (900 to 2900)
Polycarbonate	5.2 to 20.0 (750 to 2900)
Phenolic	5.2 to 15.2 (750 to 2200)
Neoprene	4.8 to 15.2 (700 to 2200)
Nitrile	4.8 to 15.2 (700 to 2200)

Tensile Strength

Tested according to ISO 6922

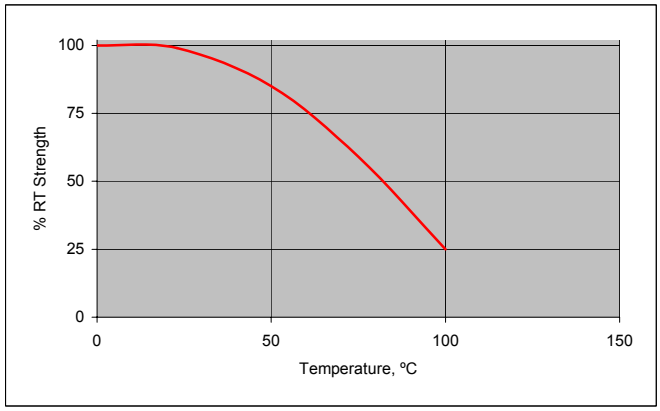
Substrate	Cure Time @ 22ºC	Tensile Strength N/mm² (psi)
Buna-N	10 seconds	≥ 6.9 (≥ 1000)
	24 hours	4.8 to 15.2 (700 to 2200)
Steel	24 hours	12.1 to 24.8 (1750 to 3600)

Typical Environmental Resistance

Cured for 1 week @ 22ºC
Shear Strength, ISO 4587
Grit blasted steel lap-shear specimens

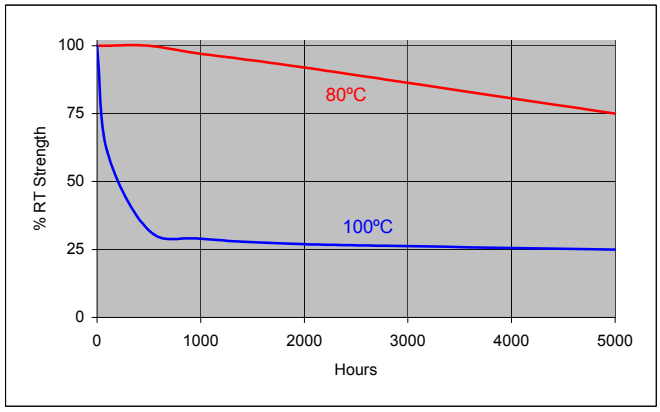
Hot Strength

Tested at temperature



Heat Aging

Aged at temperature indicated and tested at 22°C



Chemical/Solvent Resistance

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

Chemical/Solvent	Temp (ºC)	% of Initial Strength 100h	500h	1000h
Motor Oil	40	95	95	95
Gasoline	22	100	100	100
Ethanol	22	100	100	100
Isopropanol	22	100	100	100
Freon TA	22	100	100	100
Heat / Humidity 95% RH	40	70	50	40
Heat / Humidity 95% RH on Polycarbonate	40	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).

Directions for Use

Surface Preparation

To insure a good bond, the surface must be clean and free from rust inhibitors, mold release agents, grease, oil and other contaminants. Bond strength on painted parts may be determined by how well the paint adheres to the substrates.

Adhesive Application

Optimum results with cyanoacrylate adhesives are obtained with the minimum quantity of adhesive needed to fill the joint. In general, one free-falling drop spreads over one square inch. Apply firm pressure to mated surfaces until adhesive sets.

Bond Durability

Bond durability is affected by surface conditions, bond areas, service temperatures, environment and stress. Each application must be evaluated individually. Moisture and temperature resistance are dependent on the surfaces bonded.

Polyolefin Bonding

Hernon® Primers are single component materials, which dry rapidly at room temperature and make polyolefin and other low energy surfaces suitable for bonding with **Hernon®** cyanoacrylate adhesives. Primer may be applied by brushing, spraying or dipping. Excess primer should be avoided. When polyolefin substrates are bonded to other substrates only the polyolefin should be primed.

Disassembly and Cleanup

Equipment may be cleaned by flushing with **Cleaning Solvent 11.** Excessive adhesive can be dissolved with **CA Remover 14,** nitromethane or acetone.

Storage

Cyanoacrylate adhesives must be stored under refrigeration at a temperature of 40ºF ± 5ºF for extended shelf life. Before opening, the containers must be warmed to room temperature; otherwise, water may condense into the bottle and cause hardening of the adhesive. To prevent contamination of unused adhesive, do not return product to its original container.

Dispensing Equipment

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