

Technical Data Sheet Quantum[®] 131

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Product Description

Hernon[®] Quantum[®] 131 is a single-component cyanoacrylate adhesive formulated for impact, thermal shock and peel resistance.

Product Benefits

- Single-component: no mixing
- Good shock and impact resistance
- Cures at room temperature
- Easy to apply

Typical Applications

- For bonding parts that require a higher humidity resistance than regular cyanoacrylates
- For parts subjected to shock and vibration
- For parts subjected to thermal cycling
- For most rubber, plastic or metal substrates

Typical Properties (Uncured)

| Property | Value |
|------------------|---------------------|
| Chemical Type | Ethyl Cyanoacrylate |
| Appearance | Clear-Colorless |
| Viscosity, cP | 5,000 |
| Specific gravity | 1.06 |
| Flash point | See MSDS |

Typical Properties (Cured)

Cured 24 Hours @ 22°C

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, ASTM E 228, °C | 120 |
| Gap Fill, mm (in.) | 0.203 (0.008) |

Electrical Properties

| Property | Value |
|---|-----------------------|
| Dielectric Strength, kV/mm ASTM D149 | 25 |
| Dielectric Constant @ 0.05 kHz ASTM D150 | 2.3 |
| | 1 kHz 2.3 |
| | 1000 kHz 2.3 |
| Dissipation Factor @ 0.05 kHz ASTM D150 | < 0.02 |
| | 1 kHz < 0.02 |
| | 1000 kHz < 0.02 |
| Volume Resistivity, Ω·cm ASTM D257 | 10 × 10 ¹⁵ |

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 22°C / 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, degreased | 20 to 50 |
| Aluminum | 10 to 30 |
| Neoprene | < 5 |
| Nitrile Rubber | < 5 |
| ABS | 15 to 40 |
| PVC | 20 to 50 |
| Polycarbonate | 30 to 70 |
| Phenolic | 10 to 40 |

Cure Speed vs. Bond Gap

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

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 @ 22°C - tested according to ISO 4587

| Substrate | Shear Strength N/mm ² (psi) |
|--|--|
| Steel, gritblasted | 17.9 to 26.2 (2600 to 3800) |
| Steel, gritblasted, exposed to 121°C for 24 h, tested at 121°C | >8.3 (>1200) |
| Aluminum, etched | 11.0 to 19.3 (1600 to 2800) |
| ABS | >6 (>870) |
| PVC | >6 (>870) |
| Polycarbonate | >5 (>725) |
| Phenolic | 4.8 to 15.2 (700 to 2200) |
| Neoprene | >10 (>1450) |
| Nitrile | >10 (>1450) |

Tensile Strength

Tested according to ISO 6922

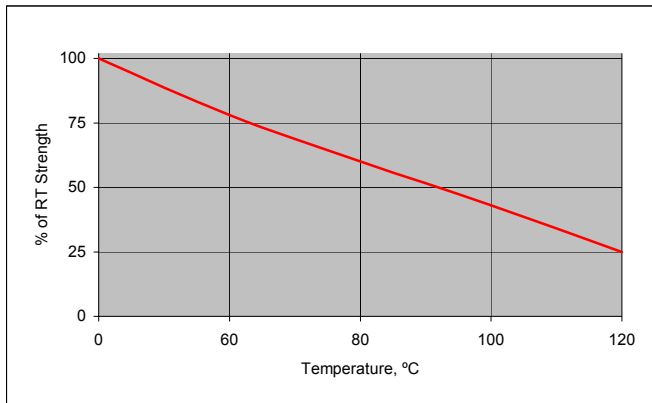
| Substrate | Cure Time @ 22°C | Tensile Strength N/mm ² (psi) |
|-----------|------------------|--|
| Buna-N | 30 seconds | ≥ 7 (≥ 1015) |
| Steel | 24 hours | 11.7 to 24.8 (1700 to 3600) |

Typical Environmental Resistance

Cured for 1 week @ 22°C
Shear Strength, ISO 4587
Steel lap-shear specimens

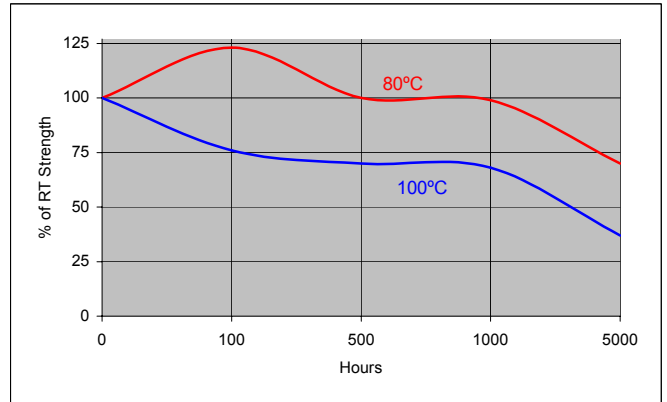
Hot Strength

Tested at temperature



Heat Aging

Aged at temperature indicated and tested at 22°C



Chemical/Solvent Resistance

Aged under condition indicated - Tested at 72°F (22°C).

| Chemical/Solvent | Temp (°C) | % of Initial Strength | | |
|-------------------------|-----------|-----------------------|------|-------|
| | | 100h | 500h | 1000h |
| Motor Oil | 40 | 100 | 100 | 95 |
| Gasoline | 22 | 100 | 100 | 100 |
| Isopropanol | 22 | 100 | 100 | 100 |
| Ind. Methylated Spirits | 22 | 100 | 100 | 100 |
| 1,1,1 Trichloroethane | 22 | 100 | 100 | 100 |
| Freon TA | 22 | 100 | 100 | 100 |
| Heat/Humidity 95% RH | 40 | 100 | 100 | 95 |

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

For best performance bond surfaces should be clean and free from grease. This product performs best in thin bond gaps (0.05 mm).

Disassembly and Cleanup

Liquid Cyanoacrylate should not be wiped with rags or tissue. The fabric will cause polymerization and large quantities of adhesive will heat or cure causing smoke and strong irritating vapors. Always flood with excess water to clean up spill conditions.

Storage

Cyanoacrylate adhesives must be stored under refrigeration at a temperature of 40°F ± 5°F 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.

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 ISO 9001 Quality Standard.