



LOCTITE® 312™

July 2005

PRODUCT DESCRIPTION

LOCTITE® 312™ provides the following product characteristics:

Technology	Acrylic
Chemical Type	Modified acrylic ester
Appearance (uncured)	Clear amber liquid ^{LMS}
Components	One component - requires no mixing
Viscosity	Medium
Cure	Anaerobic with activator
Cure Benefit	Room temperature cure
Application	Bonding

LOCTITE® 312™ typical applications include bonding dissimilar materials such as metals, glass or ceramics and where fast fixturing is required between close fitting parts. The product cures when confined between close fitting parts with the aid of Activator 736™.

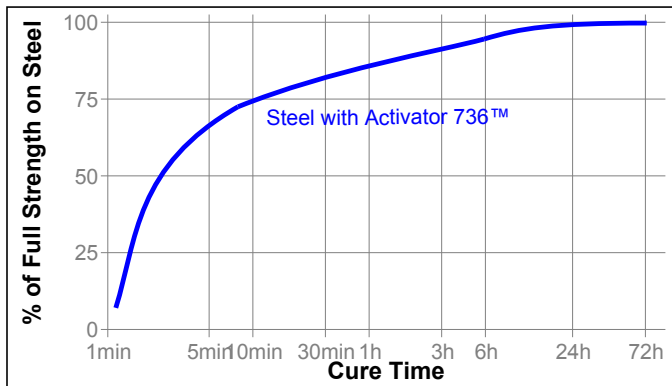
TYPICAL PROPERTIES OF UNCURED MATERIAL

Specific Gravity @ 25 °C 1.1
 Flash Point - See MSDS
 Viscosity, Brookfield - RVT, 25 °C, mPa·s (cP):
 Spindle 2, speed 20 rpm 850 to 1,200^{LMS}

TYPICAL CURING PERFORMANCE

Cure Speed vs. Substrate

The rate of cure will depend on the substrate used. The graph below shows the shear strength developed with time on grit blasted steel lap shears and tested according to ISO 4587. (Activator 736™ applied to one surface)



Cure Speed vs. Bond Gap

Performance of this adhesive is adversely affected by increased gap and therefore is not recommended in such applications

TYPICAL PROPERTIES OF CURED MATERIAL

Physical Properties:

Coefficient of Thermal Expansion, ASTM D 696, K⁻¹ 100×10⁻⁶
 Coefficient of Thermal Conductivity, ASTM C177, W/(m·K) 0.1
 Specific Heat, kJ/(kg·K) 0.3

TYPICAL PERFORMANCE OF CURED MATERIAL

Adhesive Properties

After 2 minutes @ 22 °C, Activator 736™ on 2 sides

Lap Shear Strength, ISO 4587:
 Steel (grit blasted) N/mm² ≥9.8^{LMS}
 (psi) (≥1,421)

After 1 hour @ 22 °C, Activator 736™ on 2 sides

Lap Shear Strength, ISO 4587:
 Steel (grit blasted) N/mm² ≥13.8^{LMS}
 (psi) (≥2,000)

After 24 hours @ 22 °C, Activator 736™ on 2 sides

Lap Shear Strength, ISO 4587:
 Steel (grit blasted) N/mm² ≥17.2^{LMS}
 (psi) (≥2,490)

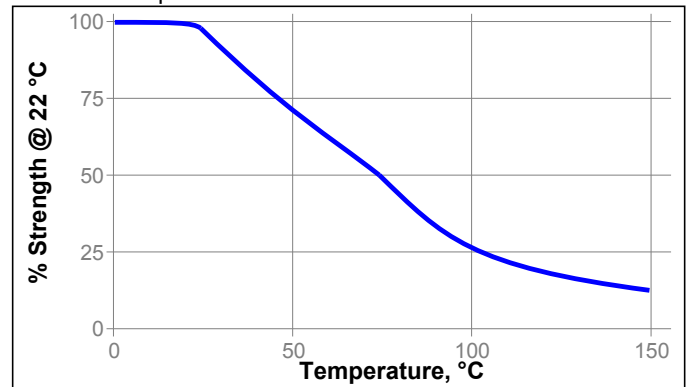
TYPICAL ENVIRONMENTAL RESISTANCE

Cured for 1 week @ 22 °C, Activator 736™ on 1 side

Lap Shear Strength, ISO 4587:
 Steel (grit blasted)

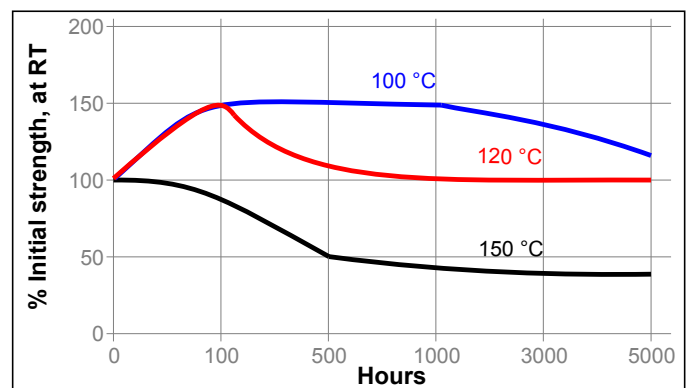
Hot Strength

Tested at temperature



Heat Aging

Aged at temperature indicated and tested @ 22 °C



Chemical/Solvent Resistance

Aged under conditions indicated and tested @ 22 °C.

Environment	°C	% of initial strength
		720 h
Acetone	22	15
Trichlorethylene	22	40
Aircraft fuel (JP-4)	93	60
Water	93	60
Water/glycol 50/50	93	10
Humidity, 100% RH	82	60

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). Users are recommended to confirm compatibility of the product with such substrates.

Directions for use

1. For best performance bond surfaces should be clean and free from grease.
2. To ensure a fast and reliable cure, Activator 736™ should be applied to one of the bond surfaces and the adhesive to the other surface. Parts should be assembled within 15 minutes.
3. The recommended bondline gap is 0.1 mm. Where bond gaps are large (up to a maximum of 0.5 mm), or faster cure speed is required, Activator 736™ should be applied to both surfaces. Parts should be assembled immediately (within 1 minute).
4. Excess adhesive can be wiped away with organic solvent.
5. Bond should be held clamped until adhesive has fixtured.
6. Product should be allowed to develop full strength before subjecting to any service loads (typically 24 to 72 hours after assembly, depending on bond gap, materials and ambient conditions).

Loctite Material Specification^{LMS}

LMS dated November 4, 2002. Test reports for each batch are available for the indicated properties. LMS test reports include selected QC test parameters considered appropriate to specifications for customer use. Additionally, comprehensive controls are in place to assure product quality and consistency. Special customer specification requirements may be coordinated through Henkel Quality.

Storage

Store product in the unopened container in a dry location. Storage information may be indicated on the product container labeling.

Optimal Storage: 8 °C to 21 °C. Storage below 8 °C or greater than 28 °C can adversely affect product properties. Material removed from containers may be contaminated during use. Do not return product to the original container. Henkel Corporation cannot assume responsibility for product which has been contaminated or stored under conditions other than those previously indicated. If additional information is required, please contact your local Technical Service Center or Customer Service Representative.

Conversions

$(^{\circ}\text{C} \times 1.8) + 32 = ^{\circ}\text{F}$
 $\text{kV/mm} \times 25.4 = \text{V/mil}$
 $\text{mm} / 25.4 = \text{inches}$
 $\mu\text{m} / 25.4 = \text{mil}$
 $\text{N} \times 0.225 = \text{lb}$
 $\text{N/mm} \times 5.71 = \text{lb/in}$
 $\text{N/mm}^2 \times 145 = \text{psi}$
 $\text{MPa} \times 145 = \text{psi}$
 $\text{N}\cdot\text{m} \times 8.851 = \text{lb}\cdot\text{in}$
 $\text{N}\cdot\text{m} \times 0.738 = \text{lb}\cdot\text{ft}$
 $\text{N}\cdot\text{mm} \times 0.142 = \text{oz}\cdot\text{in}$
 $\text{mPa}\cdot\text{s} = \text{cP}$

Note

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Reference 1.3