



Product 312

March 2003

PRODUCT DESCRIPTION

LOCTITE® Speedbonder™ 312 Structural Adhesive 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	High
Cure	Anaerobic with Activator
Cure Benefit	Room temperature cure
Application	Bonding
Operating Temperature	-54°C to +150°C

Product 312 applications include bonding dissimilar materials such as metals, glass or ceramics and where fast fixturing is required between close fitting parts.

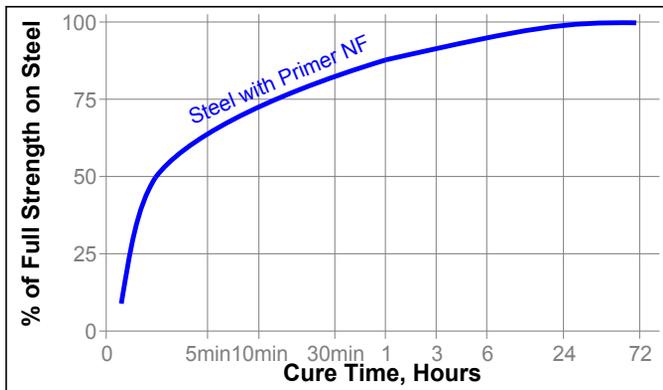
TYPICAL PROPERTIES OF UNCURED MATERIAL

Specific Gravity @ 25°C	1.10
Flash Point (TCC), °C	>93
Viscosity @ 25°C, mPa·s:	
Brookfield RVT:	
Spindle 2 @ 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. Cure speed will vary with different materials, but curing will normally be completed in 24 hours (primer 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	0.10
Coefficient of Thermal Conductivity, ASTM C177, W.m ⁻¹ K ⁻¹	0.10
Specific Heat, kJ.kg ⁻¹ K ⁻¹	0.30

PERFORMANCE OF CURED MATERIAL

Samples cured for 24 hours at 22°C.

Adhesive Properties:

Shear Strength, ASTM D 1002, N/mm ² : Grit Blasted Mild Steel (GBMS)	≥17.20
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Cured for 2 minutes @ 22°C, Primer NF on 2 sides.

Adhesive Properties:

Tensile Shear, N/mm ² : Grit Blasted Mild Steel (GBMS)	≥9.80 ^{LMS}
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Cured for 1 hour @ 22°C, Primer NF on 2 sides.

Adhesive Properties:

Tensile Shear, N/mm ² : Grit Blasted Mild Steel (GBMS)	≥13.80 ^{LMS}
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Cured for 24 hours @ 22°C, Primer NF on 2 sides.

Adhesive Properties:

Tensile Shear, N/mm ² : Grit Blasted Mild Steel (GBMS)	≥17.20 ^{LMS}
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TYPICAL ENVIRONMENTAL RESISTANCE

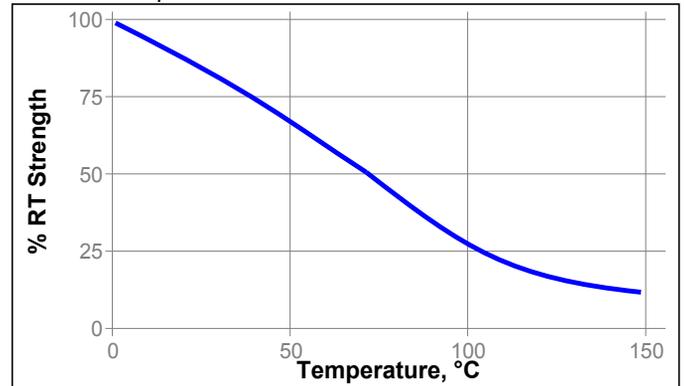
Cured 1 week @ 22°C.

Adhesive Properties:

Shear Strength, ASTM D 1002, N/mm ² : Grit Blasted Mild Steel (GBMS)	
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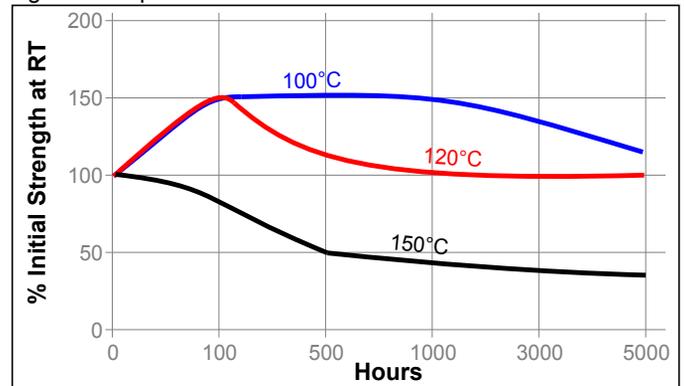
Hot Strength

Tested at temperature



Heat Aging

Aged at temperature indicated and tested at 22°C



Chemical/Solvent Resistance

Aged under conditions indicated and tested at 22°C.

Environment	°C	% of initial strength
		720 hr
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 the 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 should be applied to one of the bond surfaces and the adhesive to the other surface.
3. The recommended bondline gap is 0.1mm. Where bond gaps are large (up to a maximum of 0.5mm), or faster cure speed is required, activator should be applied to both surfaces.
4. Parts should be assembled immediately (within 15 minutes).
5. Excess adhesive can be wiped away with organic solvent.
6. Bond should be held clamped until adhesive has fixtured.
7. Joint should be allowed to develop full strength before subjecting to any service loads (typically 24 to 72 hours after assembly depending on bond gap and materials).

Storage

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

Products shall be maintained at temperatures between 8°C to 28°C unless otherwise labeled, or, specified. Storage, at temperatures below 8°C, or, greater than 28°C, is not recommended. Temperatures below 8°C and above 28°C can adversely affect product properties

Material removed from containers may be contaminated during use. Do not return product to the original container. Loctite 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.

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 Loctite Quality.

Conversions

(°C x 1.8) + 32 = °F
 kV/mm x 25.4 = V/mil
 mm x 0.039 = inches
 mPas = cP
 N/mm² x 145 = psi
 N x 0.225 = lbs

Note

The data contained herein are furnished for information only and are believed to be reliable. We cannot assume responsibility for the results obtained by others over whose methods we have no control. It is the user's responsibility to determine suitability for the user's purpose of any production methods mentioned herein and to adopt such precautions as may be advisable for the protection of property and of persons against any hazards that may be involved in the handling and use thereof. In light of the foregoing, **Henkel Loctite Corporation specifically disclaims all warranties expressed or implied, including warranties of merchantability or fitness for a particular purpose, arising from sale or use of Henkel Loctite Corporation's products. Henkel Loctite Corporation specifically disclaims any liability for consequential or incidental damages of any kind, including lost profits.** The discussion herein of various processes or compositions is not to be interpreted as representation that they are free from domination of patents owned by others or as a license under any Henkel Loctite Corporation patents that may cover such processes or compositions. We recommend that each prospective user test his proposed application before repetitive use, using this data as a guide. This product may be covered by one or more United States or foreign patents or patent applications.

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 Speedbonder is a trademark of Henkel Loctite

Reference 0.0