



LOCTITE® 330

July 2004

PRODUCT DESCRIPTION

LOCTITE® 330 provides the following product characteristics:

Technology	Acrylic
Chemical Type	Urethane methacrylate ester
Appearance (uncured)	Slightly cloudy, colorless to pale yellow liquid ^{LMS}
Components	One component - requires no mixing
Viscosity	High
Cure	Anaerobic with activator
Application	Bonding

LOCTITE® 330 is a general purpose adhesive is used to bond metal, wood, ferrite, ceramic and plastic materials. Applications include tool handles, appliances, sporting goods and decorative trim.

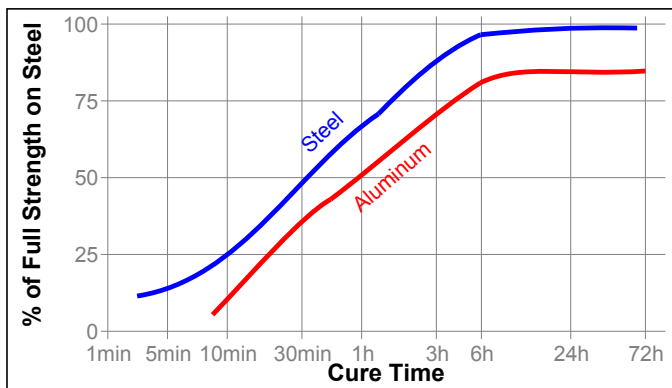
TYPICAL PROPERTIES OF UNCURED MATERIAL

Specific Gravity @ 25 °C	1.05
Flash Point - See MSDS	
Viscosity, Brookfield - RVT, 25 °C, mPa·s (cP):	
Spindle 7, speed 20 rpm	45,000 to 90,000 ^{LMS}
Viscosity, EN 12092 - SV, 25 °C, after 180 s, mPa·s (cP):	
Shear rate 20 s ⁻¹	30,000 to 70,000

TYPICAL CURING PERFORMANCE

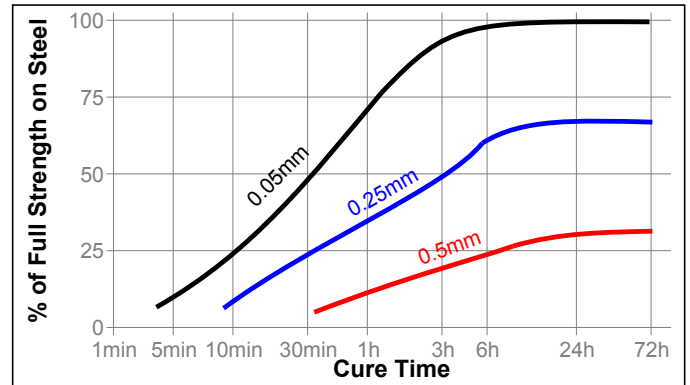
Cure Speed vs. Substrate

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 7387 applied to one surface)



Cure Speed vs. Bond Gap

The rate of cure will depend on the bondline gap. The following graph shows shear strength developed with time on grit blasted steel lap shears at different controlled gaps and tested according to ISO 4587. (Activator 7387 applied to one surface.)



TYPICAL PROPERTIES OF CURED MATERIAL

Physical Properties:

Coefficient of Thermal Expansion, ASTM D 696, K ⁻¹	8×10 ⁻⁶
Coefficient of Thermal Conductivity, ASTM C 177, W/(m·K)	0.10
Specific Heat, kJ/(kg·K)	0.30

TYPICAL PERFORMANCE OF CURED MATERIAL

Adhesive Properties

After 24 hours @ 22 °C, Activator 7387 on 1 side

Lap Shear Strength, ISO 4587:

Mild steel (grit blasted)	N/mm ²	15 to 30
	(psi)	(2,175 to 4,350)

Tensile Strength, ISO 6922:

Mild steel (grit blasted)	N/mm ²	12 to 22
	(psi)	(1,740 to 3,190)

After 24 hours @ 22 °C, Activator 7387 or 7386 on 2 sides

Tensile Strength, ISO 6922:

Mild steel (grit blasted)	N/mm ²	≥16.50 ^{LMS}
	(psi)	(≥2,390)

TYPICAL ENVIRONMENTAL RESISTANCE

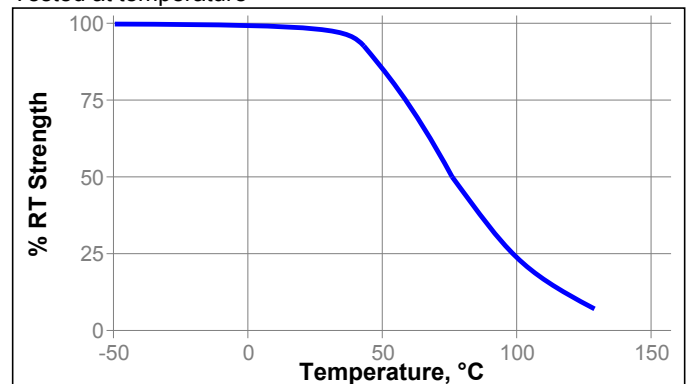
Cured for 1 week @ 22 °C, Activator 7387 on 1 side

Lap Shear Strength, ISO 4587:

Mild steel (grit blasted):	
0.25 mm gap	

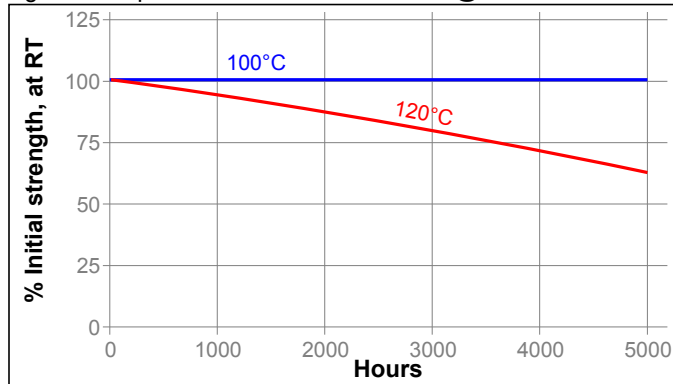
Hot Strength

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	
		350 hr	720 hr
Acetone	22	10	10
Motor Oil	87	90	66
Unleaded Gasoline	22	20	20
Phosphate ester	87	93	75
Water Glycol 50/50	87	60	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.

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 7387 or 7386 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 0.1mm. Where bond gaps are large (up to a maximum of 0.5 mm), or faster cure speed is required, Activator 7387 or 7386 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 March 11, 1996. 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.

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

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

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 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 Corporation's products. Henkel 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 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.

Trademark usage

LOCTITE is a trademark of Henkel Corporation

Reference 1