

LOCTITE® AA 331

Known as LOCTITE® 331
December 2020

PRODUCT DESCRIPTION

LOCTITE® AA 331 provides the following product characteristics:

Technology	Acrylic
Chemical Type	Modified acrylic
Appearance (uncured)	light yellow to sand yellow paste
Components	One component - requires no mixing
Viscosity	Medium
Cure	Activator
Secondary Cure	Heat
Application	Bonding
Specific Benefits	<ul style="list-style-type: none"> • non-corrosive • Rapid room temperature cure • High temperature resistance • High shear & impact strength

LOCTITE® AA 331 is a toughened acrylic adhesive with medium viscosity. This adhesive is designed for bonding metal substrates and is well suited for DC motor assembly, magnet bonding, and bonding of pre-coated sheet metal. The cured product provides high shear and impact strength with excellent environmental and chemical resistance.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Specific Gravity @ 23°C	1.08
Viscosity, Cone & Plate, 25°C, PHYSICA MK22 @ 5 s ⁻¹	19,000

TYPICAL CURING PERFORMANCE

Fixture Time

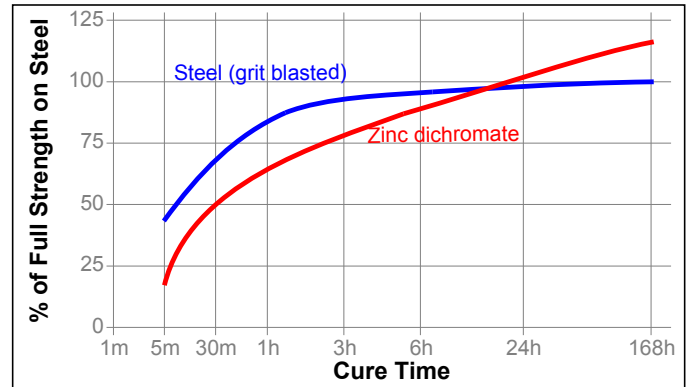
Fixture time is defined as the time to develop a shear strength of 0.1 N/mm².

Fixture Time @ 23°C, ISO 4587, seconds:

Grit Blasted Mild Steel, with Activator 7387™ on 1 side:	
0.05 mm gap	17
0.127 mm gap	67
0.25 mm gap	142

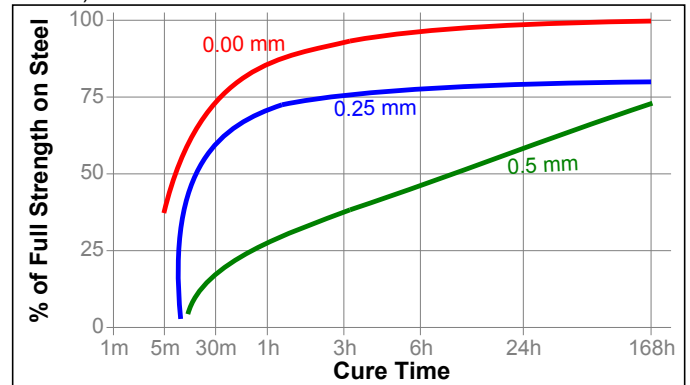
Cure Speed vs. Substrate

The rate of cure will depend on the substrate used. The graph below shows the shear strength developed with time @ 23°C on grit blasted steel lap shears compared to different materials 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 bond-line gap. The graph below shows the shear strength developed with time @ 23°C on grit blasted steel lap shears compared to different controlled gaps and tested according to ISO 4587. (Activator 7387™ applied to one surface).



TYPICAL PERFORMANCE OF CURED MATERIAL

Physical Properties

Cured for 48 hours @ 23°C then 3 hours @ 80°C; tested @ 23°C:

Glass Transition Temperature (Tg) by TMA, °C	64
Shore Hardness, ISO 868, Durometer D	86
Water Absorption, ISO 62, %:	
2 hours in boiling water	0.78
Linear Shrinkage, ISO 1675, %	2.4
Volume Shrinkage, ISO 1675 %	7.1
Elongation, at break, ISO 527-3, %	3.0

Tensile Strength, at break, ISO 527-3	N/mm ² 11 (psi) (1,600)
Tensile Modulus, ISO 527-3	N/mm ² 900 (psi) (130,000)

Adhesive Properties

Cured for 24 hours @ 23°C, Activator 7387™ on 1 side:

Lap Shear Strength, ISO 4587:

Steel :

0.05 mm gap	N/mm ² 13.8 (psi) (2,000)
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Cured for 48 hours @ 23°C, Activator 7387™ on 1 side

Lap Shear Strength, ISO 4587:

Steel (grit blasted):

0.127 mm gap	N/mm ² 17 (psi) (2,500)
0.25 mm gap	N/mm ² 14 (psi) (2,000)
0.38 mm gap	N/mm ² 11 (psi) (1,600)

180° Peel Strength, ISO 8510-2:

Steel (grit blasted)

N/mm	3.3
(lb/in)	(19)

"T" Peel Strength, ISO 11339:

Aluminum (grit blasted)

N/mm	1.7
(lb/in)	(10)

Cured for 48 hours @ 23°C, Activator 7387™ on 2 sides:

Lap Shear Strength, ISO 4587:

Steel (grit blasted):

0.127 mm gap	N/mm ² 21 (psi) (3,000)
0.25 mm gap	N/mm 18 (lb/in) (2,700)
0.38 mm gap	N/mm 16 (lb/in) (2,300)

Block Shear Strength, ISO 13445:

Ferrite Magnet to Mild steel:

0.05 mm gap	N/mm ² 12 (psi) (1,700)
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Impact Strength, ISO 9653, J:

Ferrite Magnet to Mild steel

2.3

TYPICAL ENVIRONMENTAL RESISTANCE

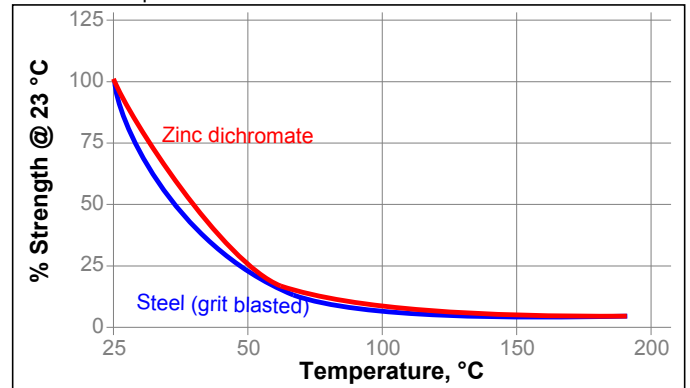
Cured for 1 week @ 23°C, Activator 7387™ on 1 side

Lap Shear Strength, ISO 4587:

Steel (grit blasted)

Hot Strength

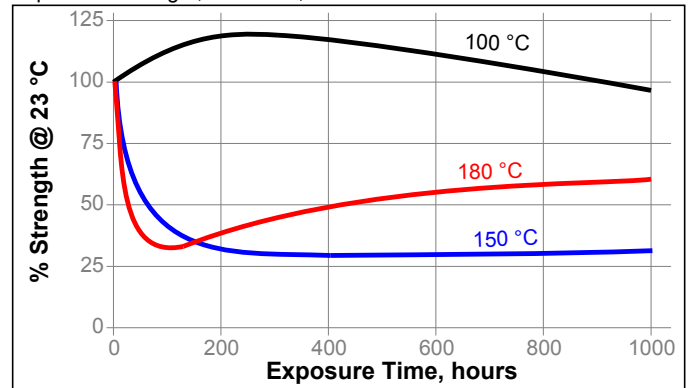
Tested at temperature



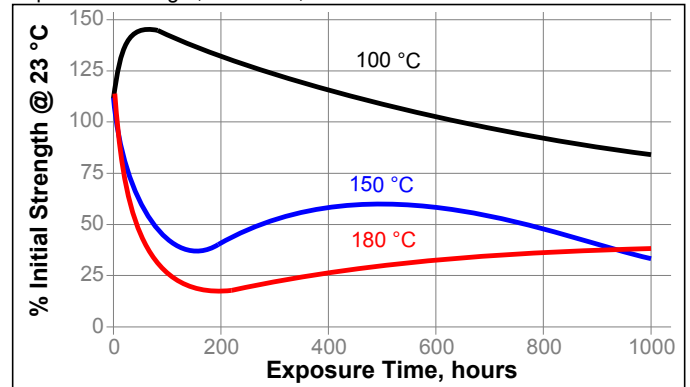
Heat Aging

Aged at temperature indicated and tested @ 23°C.

Lap Shear Strength, ISO 4587, Grit blasted steel



Lap Shear Strength, ISO 4587, Zinc dichromate



Chemical/Solvent Resistance

Aged under conditions indicated and tested @ 23 °C.

Environment	°C	% of initial strength		
		100 h	500 h	1000 h
Motor oil	87	157	138	130
Air	40	110	100	99
ATF	87	85	118	138
Water/glycol 50/50	87	148	63	42



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 Safety Data Sheet (SDS).

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 and other contaminants.
2. To ensure a fast and reliable cure, Activator 7387™ should be applied to one of the bond surfaces and the adhesive to the other surface. Parts should be assembled within two hours.
3. Where bond gaps are large (up to a maximum of 0.5 mm), or faster cure speed is required, Activator 7387™ 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).

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 Henkel representative.

Product Specification

The technical data contained herein are intended as reference only and are not considered specifications for the product. Product specifications are located on the Certificate of Analysis or please contact Henkel representative.

Approval and Certificate

Please contact Henkel representative for related approval or certificate of this product.

Data Ranges

The data contained herein may be reported as a typical value. Values are based on actual test data and are verified on a periodic basis.

Temperature/Humidity Ranges: 23°C / 50% RH = 23±2°C / 50±5% RH

Conversions

(°C x 1.8) + 32 = °F

kV/mm x 25.4 = V/mil

mm / 25.4 = inches

µm / 25.4 = mil

N x 0.225 = lb

N/mm x 5.71 = lb/in

N/mm² x 145 = psi

MPa x 145 = psi

N·m x 8.851 = lb·in

N·m x 0.738 = lb·ft

N·mm x 0.142 = oz·in

mPa·s = cP

Disclaimer

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