Technical Data Sheet

LOCTITE® AA 3510™

September 2024

Product description

LOCTITE® AA 3510™ provides the following product characteristics:

Technology	Acrylic
Chemical type	Urethane methacrylate
Appearance (uncured)	Amber liquid
Viscosity	Medium
Cure	Anaerobic
Secondary cure	Ultraviolet (UV)
Application	Bonding
Specific benefits	Room temperature cure

LOCTITE® AA 3510™ typical applications include bonding ferrites to plated materials in electric motors, loudspeaker hardware and jewelry where fast fixturing is required and where product outside the bondline must be completely cured. LOCTITE® AA 3510™ provides robust curing performance in bond gaps of up to 0.25mm.

Typical properties of uncured material

Specific gravity @ 25°C	1.1
Viscosity, Cone & Plate, 25°C, mPa·s (cP): Shear rate 129s^{-1}	550

Typical curing performance

This product is cured when exposed to UV radiation of 365nm. To obtain a full cure on surfaces exposed to air, radiation at 250nm is also required. The speed of cure will depend on the UV intensity as measured at the product surface. Typical cure condition is 20 - 30 seconds at 100mW/cm² using a medium pressure, quartz envelope, mercury vapor lamp.

Fixture time

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

UV Fixture time, Glass microscope slides, seconds:	
LED flood light, CL42:	
514 mW/cm^2, measured @ 405 nm,	20
100 mW/cm^2, measured @ 365 nm,	15
Black light, Zeta® 7500 light source:	
6 mW/cm^2, measured @ 365 nm,	30

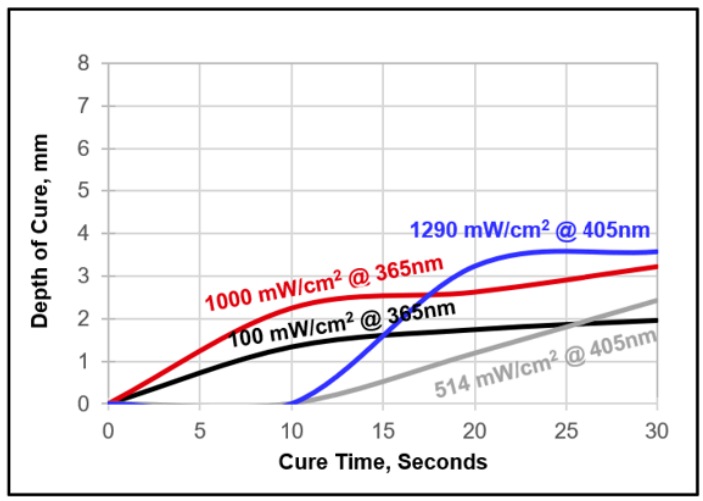
Tack Free Time

Tack Free Time is the time required to achieve a tack free surface.

Tack Free Time, seconds:	
LED flood light, CL42:	
514 mW/cm², measured @ 405 nm,	60
1290 mW/cm², measured @ 405 nm,	60
100 mW/cm², measured @ 365 nm,	60
1000 mW/cm², measured @ 365 nm,	60

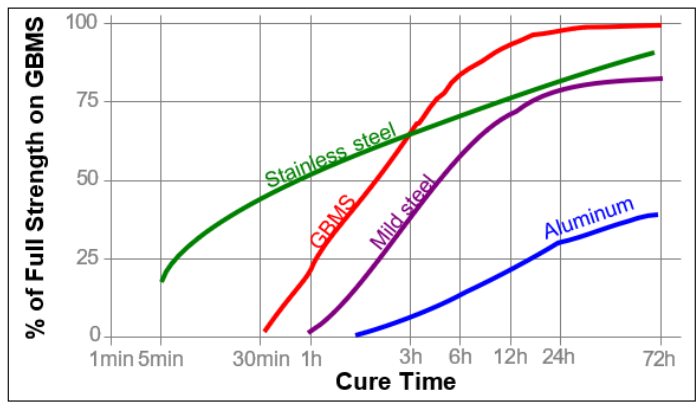
Depth of Cure vs. Irradiance (LED)

The graph below shows the increase in depth of cure with time at various light intensities as measured from the thickness of the cured product formed.

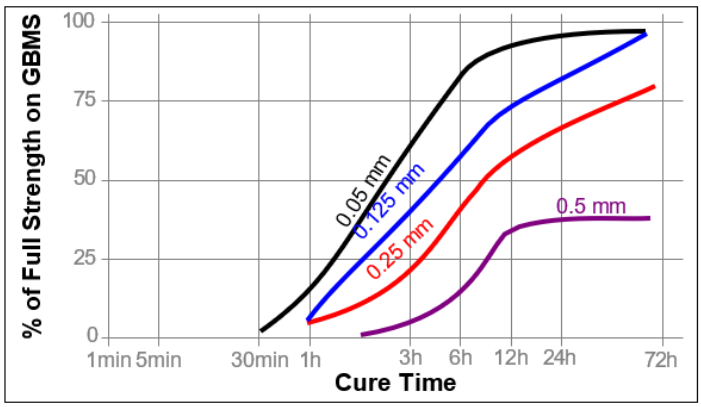


Cure Speed vs. Substrate

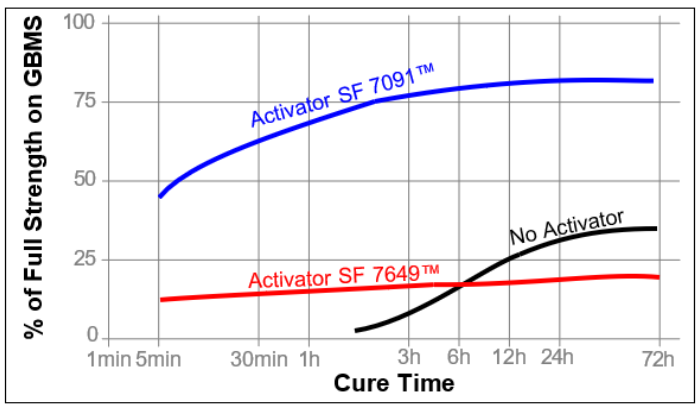
The rate of cure will depend on the substrate used. The graph below shows the shear strength developed with time on grit blasted steel lap shears compared to different materials and tested according to ISO 4587.



Cure speed vs. bond gap
The rate of cure will depend on the bondline gap. The following graph shows the shear strength developed with time on grit blasted steel lap shears at different controlled gaps and tested according to ISO 4587.



Cure speed vs. activator
Where cure speed is unacceptably long, or large gaps are present, applying activator to the surface will improve cure speed. The graph below shows the shear strength developed with time on aluminum lap shears using Activator SF 7649 and SF 7091 and tested according to ISO 4587.



Typical properties of cured material
Cured for 24 hours @ 22 °C

Physical properties	
Shore Hardness, ISO 868, Durometer D	64
Glass Transition Temperature, ISO 11359-2, °C:	80
Coefficient of Thermal Expansion, ISO 11359-2, K^{-1}:	
Pre Tg	165×10^{-6}
Post Tg	239×10^{-6}
Electrical properties	
Surface resistivity, IEC 60093, Ω	5×10^{12}
Surface resistivity, IEC 60093, Ω·cm	1.5×10^{11}

Typical performance of cured material
Adhesive properties
Cured for 24 hours @ 22 °C
Lap Shear Strength, ISO 4587:

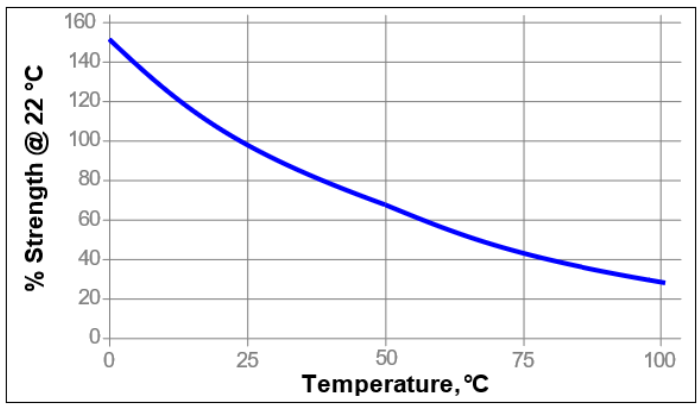
Mild steel (grit blasted)	N/mm^2 (psi)	5 (725)

Cured for 1 week @ 22 °C
Lap Shear Strength, ISO 4587:

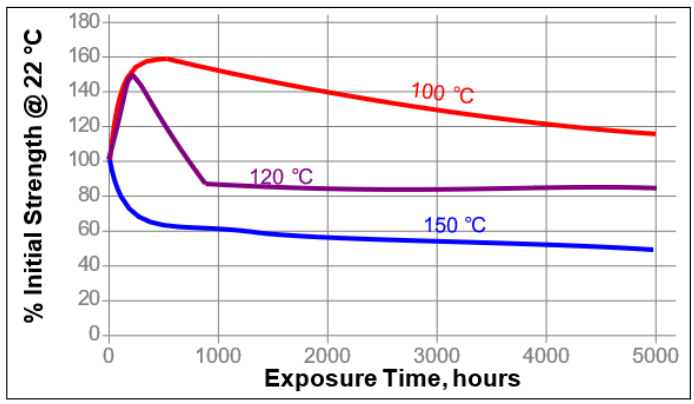
Mild steel (grit blasted)	N/mm^2 (psi)	23 (3,300)
Aluminum (Alclad)	N/mm^2 (psi)	8.3 (1,200)
Stainless steel	N/mm^2 (psi)	19 (2,750)
Stainless steel to phenolic	N/mm^2 (psi)	8.1 (1,170)

Typical environmental resistance
Cured for 1 week @ 22 °C
Lap Shear Strength, ISO 4587:
Mild 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.

		% of initial strength		
Environment	°C	100 h	500 h	1000 h
Motor oil	87	155	160	120
Humidity, 98% RH	40	110	90	70
Water/glycol 50/50	87	10	10	10
Unleaded petrol	22	110	95	95
ATF	87	150	160	155

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.

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. LOCTITE® AA 3510™ is UV sensitive. Exposure to daylight, UV light and artificial lighting should be kept to a minimum during storage and handling.
2. The product should be dispensed from applicators with black feedlines.
3. For best performance bond surfaces should be clean and free from grease and other contaminants.
4. Cure rate is dependent on lamp intensity, distance from light source, depth of cure needed or bondline gap and light transmittance of the substrate through which the radiation must pass.
5. Cooling should be provided for temperature sensitive substrates such as thermoplastics.
6. Crystalline and semi-crystalline thermoplastics should be checked for risk of stress cracking when exposed to liquid adhesive.
7. Excess adhesive can be wiped away with organic solvent.
8. Bonds should be allowed to cool before subjecting to any service loads.

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 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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