Technical Data Sheet

LOCTITE® AA 3494™

Known as LOCTITE® 3494™
January 2015

PRODUCT DESCRIPTION

LOCTITE® AA 3494™ provides the following product characteristics:

Technology	Acrylic
Chemical Type	Modified acrylic
Appearance (uncured)	Transparent liquid[LMS]
Components	One component - requires no mixing
Viscosity	Medium
Cure	Ultraviolet (UV)/ visible light
Cure Benefit	Production - high speed curing
Application	Bonding, Potting or Sealing

LOCTITE® AA 3494™ cures in seconds upon exposure to ultraviolet radiation of 365nm to form an impact resistant bond which exhibits excellent resistance to prolonged humidity or water immersion. Typical applications include bonding and sealing or potting applications of glass to itself or other materials, such as rough surface decorative glass, molded glass tableware items or automotive lighting components.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Specific Gravity @ 25 °C	1.02
Refractive Index	1.48
Flash Point - See SDS	
Viscosity, Brookfield - RVT, 25 °C, mPa·s (cP):	
Spindle 4, speed 20 rpm,	5,000 to 7,000[LMS]

TYPICAL CURING PERFORMANCE

LOCTITE® AA 3494™ can be cured by exposure to ultraviolet and/or visible light of sufficient intensity. Surface cure is enhanced by exposure to UV light in the 220 to 260 nm range. Cure rate and ultimate depth of cure depend on light intensity, spectral distribution of the light source, exposure time and light transmittance of the substrate through which the light must pass.

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:	
Black light, Zeta® 7500 light source:	
6 mW/cm² , measured @ 365 nm	≤10[LMS]
Electrodeless, D bulb:	
50 mW/cm² , measured @ 365 nm,	<5
Electrodeless, D bulb:	
30 mW/cm² , measured @ 365 nm:	
0.05 mm gap	<5
0.5 mm gap	<5
100 mW/cm² , measured @ 365 nm:	
0 gap	<5
0.5 mm gap	<5

Surface Cure

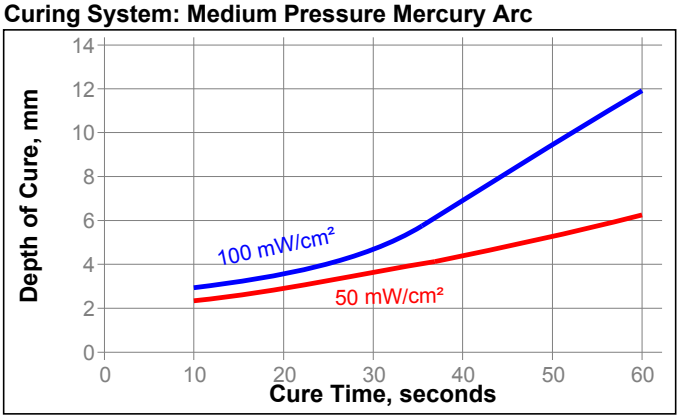
Tack Free Time is the time required to achieve a tack free surface

Tack Free Time, seconds:	
Medium pressure mercury arc:	
50 mW/cm² , measured @ 365 nm	75 to 90
100 mW/cm² , measured @ 365 nm	45 to 60
Electrodeless, D bulb:	
50 mW/cm² , measured @ 365 nm	210 to 240
100 mW/cm² , measured @ 365 nm	150 to 180
Electrodeless, V bulb:	
50 mW/cm² , measured @ 365 nm	>300
100 mW/cm² , measured @ 365 nm	210 to 240

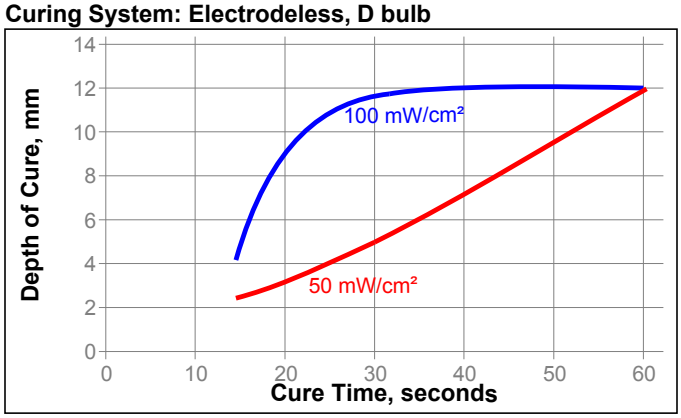
Depth of Cure vs. Irradiance (365 nm)

The following graphs show the effect of light source, light intensity and exposure time on depth of cure for LOCTITE® AA 3494™

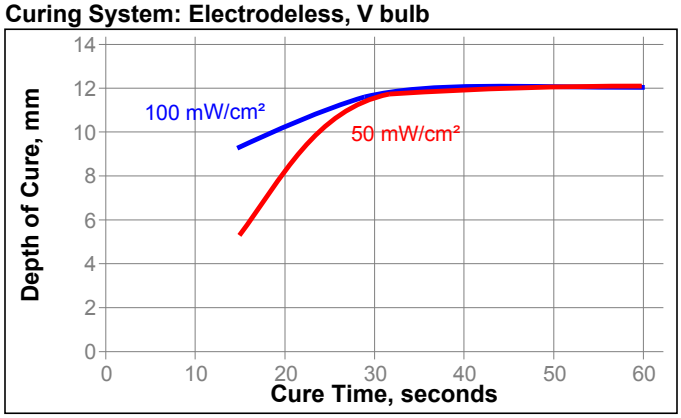
Curing System: Medium Pressure Mercury Arc



Curing System: Electrodeless, D bulb



Curing System: Electrodeless, V bulb



TYPICAL PROPERTIES OF CURED MATERIAL

Cured @ 100 mW/cm² , measured @ 365 nm, for 30 seconds per side using an Electrodless system, D bulb plus 24 hours @ 22 °C

Physical Properties:

Coefficient of Thermal Expansion, ISO 11359-2, K^{-1}:		
Pre Tg		87×10^{-6}
Post Tg		250×10^{-6}
Glass Transition Temperature, ISO 11357-2, °C		31
Shore Hardness, ISO 868, Durometer D		65
Refractive Index		1.5
Water Absorption, ISO 62, %:		
2 hours in boiling water		4.08
Elongation, at break, ISO 527-3, %		190
Tensile Strength, at break, ISO 527-3	N/mm² (psi)	22.5 (3,270)
Tensile Modulus, ISO 527-3	N/mm² (psi)	520 (75,400)

Electrical Properties:

Dielectric Constant / Dissipation Factor, IEC 60250:	
1 kHz	3.99 / 0.02
10 kHz	3.88 / 0.02
100 kHz	3.76 / 0.02
Volume Resistivity, IEC 60093, Ω·cm	3.3×10^{15}
Surface Resistivity, IEC 60093, Ω	3.0×10^{15}
Dielectric Breakdown Strength, , kV/mm	32.3

TYPICAL PERFORMANCE OF CURED MATERIAL

Adhesive Properties

Cured @ 100 mW/cm² , measured @ 365 nm, for 30 seconds per side using an Electrodless system, D bulb plus 24 hours @ 22 °C

Block Shear Strength, ISO 13445:

Steel to Glass	N/mm² (psi)	16.8 (2,440)
Aluminum to Glass	N/mm² (psi)	13.8 (2,000)
G-10 Epoxyglass to Glass	N/mm² (psi)	7.4 (1,080)
Polycarbonate to Glass	N/mm² (psi)	4.7 (680)
PVC to Glass	N/mm² (psi)	6.5 (940)
ABS to Glass	N/mm² (psi)	5.3 (770)

Cured @ 50 mW/cm² , measured @ 365 nm, for 30 seconds using an Electrodeless system, D bulb

Torsional Shear Strength, ASTM D 3658:

Aluminum hex button to Glass	N·m (lb·ft)	≥67.8[LMS] (≥50)

TYPICAL ENVIRONMENTAL RESISTANCE

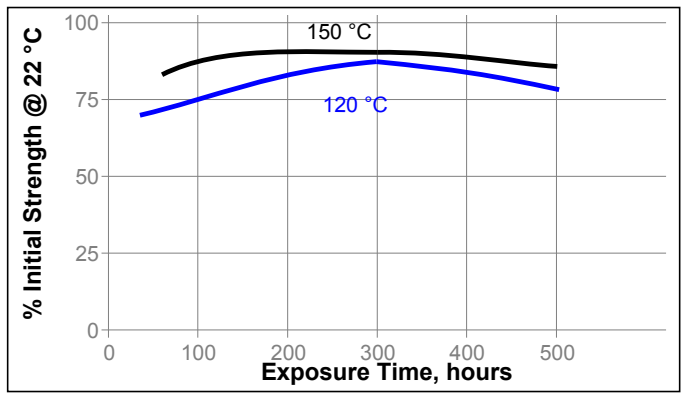
Cured @ 100 mW/cm² , measured @ 365 nm, for 30 seconds per side using an Electrodless system, D bulb plus 24 hours @ 22 °C

Block Shear Strength, ISO 13445:

Steel to Glass

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**	**300 h**	**500 h**	**1000 h**
Condensing Humidity	49	75	75	60
Motor oil (10W30)	22	75	60	90
Unleaded gasoline	22	70	65	55
Salt fog	22	90	80	75

		% of initial strength		
Environment	**°C**	**2 h**	**24 h**	**170 h**
Boiling water	100	85	----------	----------
Water immersion	49	----------	----------	70
Isopropanol immersion	25	----------	85	----------

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).

Directions for use:

1. This product is light 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.
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. Recommended intensity for cure in an adhesive application (between substrates) is 40mW/cm² minimum (measured at the bondline) with an exposure time of 5-6 times the fixture time at this same intensity.
6. For dry curing of exposed surfaces, higher intensity UV is required (100 mW/cm²).
7. Cooling should be provided for temperature sensitive substrates such as thermoplastics.
8. Plastic grades should be checked for risk of stress cracking when exposed to liquid adhesive.
9. Excess uncured adhesive can be wiped away with organic solvent (e.g. Acetone).
10. Bonds should be allowed to cool before subjecting to any service loads.

Loctite Material Specification[LMS]

LMS dated March 4, 1998. 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

(°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

Reference 2.1