

LOCTITE[®] AA 3751[™]

Known as LOCTITE[®] 3751[™]
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PRODUCT DESCRIPTION

LOCTITE[®] AA 3751[™] provides the following product characteristics:

Technology	Acrylic
Chemical Type	Modified acrylic ester
Appearance (uncured)	Transparent amber to yellow liquid ^{LMS}
Components	One component - requires no mixing
Viscosity	Medium
Cure	Ultraviolet (UV) light
Cure Benefit	Production - high speed curing
Application	Bonding, Coating, Encapsulating or Sealing

LOCTITE[®] AA 3751[™] is designed for tacking, bonding, encapsulating, coating and sealing. The product is solvent free and cures in seconds when exposed to most types of ultraviolet lights ranging from low intensity black lights to high intensity mercury lamps.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Solids/Non-Volatile Content, %	100
Flash Point - See SDS	
Viscosity, Brookfield - RVT, 25 °C, mPa·s (cP):	
Spindle 4, speed 2.5 rpm,	8,000 to 15,000 ^{LMS}
Viscosity, Brookfield - RVT, 25 °C, mPa·s (cP):	
Spindle 4, speed 20 rpm	3,600 to 7,000 ^{LMS}

TYPICAL CURING PERFORMANCE

LOCTITE[®] AA 3751[™] is cured by exposure to ultraviolet 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.

Tack Free Time

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

Tack Free Time, seconds:	
Zeta [®] 7400:	
30 mW/cm ² , measured @ 365 nm	≤60

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/cm ² , measured @ 365 nm	≤10 ^{LMS}

TYPICAL PROPERTIES OF CURED MATERIAL

Cured @ 30 mW/cm², measured @ 365 nm, for 2 minutes per side using a Zeta[®] 7400 light source, cured films 0.6 - 0.8 mm thick

Physical Properties:

Shore Hardness, ISO 868, Durometer D	73
Elongation, at yield, ISO 527-3, %	50
Elongation, at break, ISO 527-3, %	50
Tensile Strength, at yield, ISO 527-3	N/mm ² 22.7
	(psi) (3,300)
Tensile Strength, at break, ISO 527-3	N/mm ² 11
	(psi) (1,600)
Tensile Modulus, ISO 527-3	N/mm ² 634
	(psi) (92,000)

UV Depth of Cure, mm:

25 mW/cm ² , measured @ 365 nm, for 10 seconds, using a Zeta [®] 7400 light source	3.5
80 mW/cm ² , measured @ 365 nm, for 10 seconds, using an Electrodeless system, H bulb	3.8

Electrical Properties:

Surface Resistivity, IEC 60093, Ω	1.3×10 ¹⁶
Volume Resistivity, IEC 60093, Ω·cm	5.4×10 ¹⁴
Dielectric Breakdown Strength, IEC 60243-1, kV/mm	29
Dielectric Constant / Dissipation Factor, IEC 60250:	
100 Hz	5.48 / 0.05
1 kHz	5.29 / 0.05
10 kHz	4.27 / 0.05

TYPICAL PERFORMANCE OF CURED MATERIAL

Adhesive Properties

Cured @ 30 mW/cm², measured @ 365 nm, for 2 minutes using a Zeta[®] 7400 light source

Lap Shear Strength, ISO 4587:	
Epoxyglass	N/mm ² ≥5.2 ^{LMS}
	(psi) (≥754)
Glass to Glass	N/mm ² *5.1
	(psi) (740)

Steel to Glass	N/mm ²	*5.2
	(psi)	(750)
Epoxyglass to Glass	N/mm ²	*4.8
	(psi)	(700)
Phenolic to Glass	N/mm ²	*5.2
	(psi)	(750)
Polycarbonate to Glass	N/mm ²	*4.6
	(psi)	(670)
Polycarbonate to Polycarbonate	N/mm ²	*4.8
	(psi)	(700)
Polycarbonate to Epoxyglass	N/mm ²	*5.6
	(psi)	(820)

* substrate failure

Torsional Shear Strength, ASTM D 3658:

Aluminum hex button (grit blasted) to Glass	N·m	81.3
	(lb·ft)	(60)

TYPICAL ENVIRONMENTAL RESISTANCE

Cured @ 30 mW/cm², measured @ 365 nm, for 2 minutes

Cross Hatch Test, ASTM D3359, % adhesion retained:

Epoxy panels coated with 0.127mm of adhesive:

Conditioned for 200 hours @ 25 °C except where noted:

Automatic transmission fluid	100
Gasohol	95
Motor oil (10W-30)	100
Water glycol 50/50	100
Acetone	0
Condensing Humidity @ 49 °C	100
Salt fog @ 38 °C	100

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 bondline situation is 5 mW/cm² minimum (measured at the bondline) with an exposure time of 4-5 times the fixture time at the 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 December 12, 2000. 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

Note:

The information provided in this Technical Data Sheet (TDS) including the

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Reference 1.1