LOCTITE® 352™

January 2009

PRODUCT DESCRIPTION

LOCTITE® 352™ provides the following product characteristics:

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

LOCTITE® 352™ is suitable for bonding a wide range of materials. When cured, it is highly resistant to vibration and impact forces. LOCTITE® 352™ is used to bond, seal or coat metal and glass components in industrial applications. Typical uses include unitizing electrical devices, appliance parts and decorative components.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Specific Gravity @ 25 °C	1.06
Refractive Index, ASTM D542	1.48
Flash Point - See MSDS	
Viscosity, Brookfield - RVT, 25 °C, mPa·s (cP):	
Spindle 6, speed 20 rpm	15,000 to 26,000[LMS]

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

Tack Free Time

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

Tack Free Time, seconds:	
Zeta® 7200:	
50 mW/cm² , measured @ 365 nm,	<20
100 mW/cm² , measured @ 365 nm,	<10
Electrodeless, D bulb:	
50 mW/cm² , measured @ 365 nm,	<90
100 mW/cm² , measured @ 365 nm,	<45
Tack Free Time, minutes:	
Zeta® 7400:	
30 mW/cm² , measured @ 365 nm,	>5
50 mW/cm² , measured @ 365 nm,	>5

Fixture Time

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

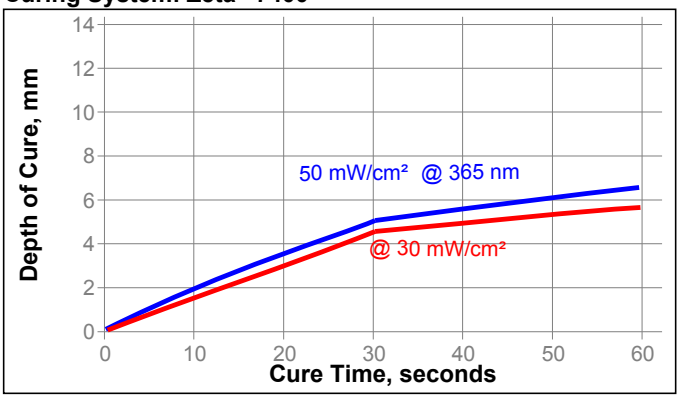
UV Fixture Time, Glass microscope slides, seconds:	
Black light, Zeta® 7500 light source:	
6 mW/cm² , measured @ 365 nm	≤12[LMS]

Depth of Cure

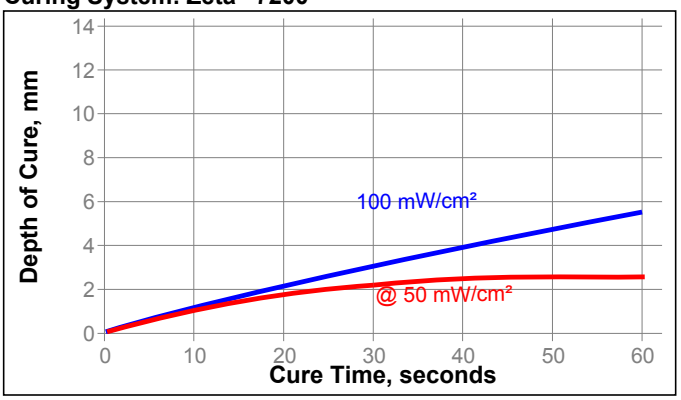
Cure depth depends both on external factors including the type of light source, light intensity and exposure time and on internal factors including composition of the adhesive

The following graphs show the effect of light source, light intensity and exposure time on depth of cure for LOCTITE® 352™

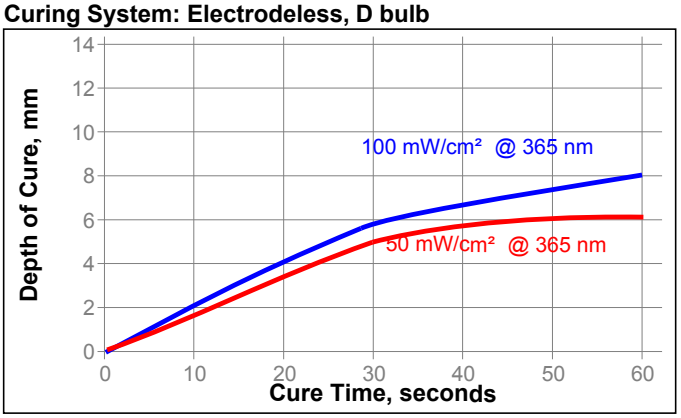
Curing System: Zeta® 7400



Curing System: Zeta® 7200



Curing System: Electrodeless, D bulb



Heat Cure

This product may be cured with heat. The bond area should be heated to 121°C and maintained at that temperature for 30 minutes.

Activator Cure

Apply LOCTITE® Activator 7075™ to one surface and the adhesive to the other, mate and clamp. The assembly will reach handling strength in approximately 4 minutes if the gap is small, full cure in 72 hours

TYPICAL PROPERTIES OF CURED MATERIAL

Cured @ 100 mW/cm² , measured @ 365 nm, for 30 seconds per side plus 24 hours @ 22 °C

Physical Properties

Glass Transition Temperature, ISO 11357-2, °C		45
Water Absorption, %		8.7
Refractive Index, ASTM D542		1.51
Shore Hardness, ISO 868, Durometer D		60
Elongation, at break, ISO 527-3, %		290
Tensile Strength, at break, ISO 527-3	N/mm² (psi)	24.4 (3,540)
Tensile Modulus, ISO 527-3	N/mm² (psi)	255 (37,000)

Electrical Properties

Dielectric Breakdown Strength, IEC 60243-1, kV/mm	25
Volume Resistivity, IEC 60093, Ω·cm	8×10^{12}
Dielectric Constant / Dissipation Factor, IEC 60250:	
1 kHz	5.2 / 0.03

TYPICAL PERFORMANCE OF CURED MATERIAL

Adhesive Properties

Cured @ 100 mW/cm² , measured @ 365 nm, for 30 seconds using a medium pressure mercury arc light source

Block Shear Strength, ISO 13445:

Steel to Glass	N/mm² (psi)	16.5 (2,400)
Aluminum to Glass	N/mm² (psi)	10.2 (1,485)
Polycarbonate to Glass	N/mm² (psi)	8.2 (1,200)
PVC to Glass	N/mm² (psi)	8.8 (1,290)
ABS to Glass	N/mm² (psi)	7.9 (1,150)
G-10 Epoxyglass to Glass	N/mm² (psi)	13.5 (1,960)

Cured for 24 hours @ 22 °C, Activator 7075™ on 1 side

Lap Shear Strength, ISO 4587:

Steel (grit blasted)	N/mm² (psi)	≥15.2[LMS] (≥2,200)

Cured @ 121 °C for 45 minutes

Lap Shear Strength, ISO 4587:

Steel to Glass	N/mm² (psi)	20.6 (3,000)

Cured @ 121 °C for 35 minutes

Lap Shear Strength, ISO 4587:

Aluminum to Glass	N/mm² (psi)	18.6 (2,710)

Cured @ 121 °C for 25 minutes

Block Shear Strength, ISO 13445:

Steel	N/mm² (psi)	13.1 (1,910)
Aluminum	N/mm² (psi)	10.6 (1,540)

TYPICAL ENVIRONMENTAL RESISTANCE

Cured @ 100 mW/cm² , measured @ 365 nm, for 30 seconds using a medium pressure mercury arc light source

Block Shear Strength, ISO 13445:

Steel to Glass

Chemical/Solvent Resistance

Aged under conditions indicated and tested @ 22 °C.

		% of initial strength	
Environment	**°C**	**300 h**	**500 h**
Air	121	75	80
Air	150	50	55
Motor oil (10W30)	22	90	85
Unleaded gasoline	22	70	80
Heat/humidity 90% RH	50	45	30

		% of initial strength		
Environment	**°C**	**2 h**	**24 h**	**170 h**
Isopropanol	22	----	80	----
Boiling water	100	85	----	----
Water	50	----	----	75

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).

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 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 September 1, 1995. 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
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For reuse

Reference 1.1