

LOCTITE® 3703™

January 2009

PRODUCT DESCRIPTION

LOCTITE® 3703™ provides the following product characteristics:

Technology	Acrylic
Chemical Type	Acrylated urethane
Appearance (uncured)	Bone-white to beige translucent paste ^{LMS}
Components	One component - requires no mixing
Viscosity	Medium, thixotropic
Cure	Ultraviolet (UV)/ visible light
Cure Benefit	Production - high speed curing
Application	Bonding

LOCTITE® 3703™ is primarily designed for bonding rigid and flexible PVC to polycarbonate where large gap filling capabilities (0.25mm) and a flexible joint are desired. Its flexibility enhances the load bearing and shock absorbing characteristics of the bond area. The product has shown excellent adhesion to a wide variety of substrates including glass, many plastics and most metals. The thixotropic nature of LOCTITE® 3703™ reduces the migration of liquid product after application to the substrate.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Specific Gravity @ 25 °C 1.12
 Viscosity, Brookfield - HBT, 25 °C, mPa·s (cP):
 Spindle TB, speed 10 rpm, Helipath 18,000 to 35,000^{LMS}

TYPICAL CURING PERFORMANCE

LOCTITE® 3703™ can be cured by exposure to UV 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

UV fixture time is defined as the light exposure time required to develop a shear strength of 0.1 N/mm².

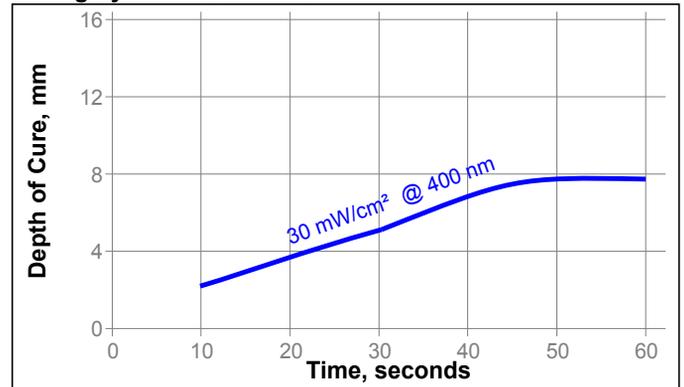
UV Fixture Time, Glass microscope slides, seconds:
 6 mW/cm², measured @ 365 nm ≤10^{LMS}

Depth of Cure

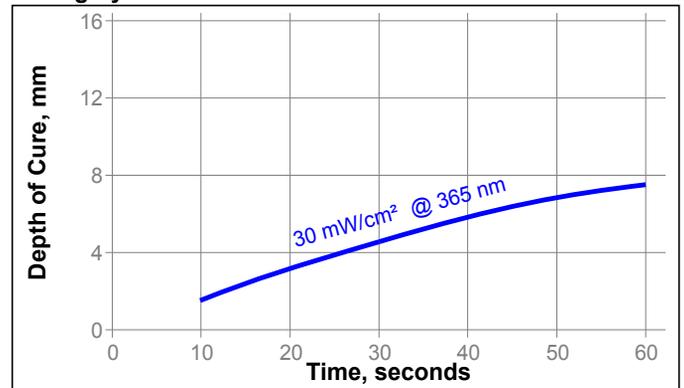
Cure depth depends both on external factors including the type

of light source, light intensity and exposure time and on internal factors including composition of the adhesive. The graphs below show the increase in depth of cure with time as measured from the thickness of the cured product formed in a 15mm diameter PTFE die.

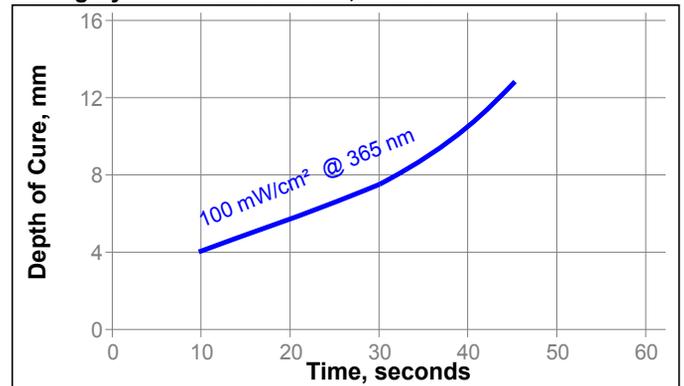
Curing System: Zeta® 7420



Curing System: Zeta® 7410



Curing System: Electrodeless, D bulb



TYPICAL PROPERTIES OF CURED MATERIAL

Cured @ 30 mW/cm², measured @ 365 nm, for 80 seconds using a Zeta® 7410 light source

Physical Properties

Elongation, ISO 527-3, %		85
Tensile Modulus, ISO 527-3	N/mm ²	490
	(psi)	(71,000)
Tensile Strength, ISO 527-3	N/mm ²	13
	(psi)	(1,900)

TYPICAL PERFORMANCE OF CURED MATERIAL**Adhesive Properties**

Cured @ 30 mW/cm², measured @ 365 nm, for 80 seconds using a Zeta® 7410 light source

Shear Strength

Block Shear Strength, ISO 13445:		
Polycarbonate to Polycarbonate	N/mm ²	18
	(psi)	(2,600)
Polycarbonate to PVC	N/mm ²	16
	(psi)	(2,300)
Polycarbonate to Aluminum	N/mm ²	7
	(psi)	(1,000)

TYPICAL ENVIRONMENTAL RESISTANCE

Cured @ 30 mW/cm², measured @ 365 nm, for 80 seconds using a Zeta® 7410 light source

Heat Aging

Heat aged for 1 week @ 49°C / 100% RH, tested @ 22 °C

Block Shear Strength, ISO 13445, % of initial strength:

Polycarbonate to Polycarbonate	85
Polycarbonate to PVC	75
Polycarbonate to Aluminum	80

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. Apply adhesive to one of the bond surfaces and assemble immediately.
5. 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.
6. Cooling should be provided for temperature sensitive substrates such as thermoplastics.

7. Crystalline and semi-crystalline thermoplastics should be checked for risk of stress cracking when exposed to liquid adhesive.
8. Excess uncured adhesive can be wiped away with organic solvent (e.g. Acetone).
9. Bonds should be allowed to cool before subjecting to any service loads.

Loctite Material Specification^{LMS}

LMS dated September 15, 2003. 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.

Products shall be maintained at temperatures between 8°C to 28°C unless otherwise labeled, or, specified. Storage, at temperatures below 8°C, or, greater than 28°C, is not recommended. Temperatures below 8°C and above 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 recommendations for use and application of the product are based on our knowledge and experience of the product as at the date of this TDS. The product can have a variety of different applications as well as differing application and working conditions in your environment that are beyond our control. Henkel is, therefore, not liable for the suitability of our product for the production processes and conditions in respect of which you use them, as well as the intended applications and results. We strongly recommend that you carry out your own prior trials to confirm such suitability of our product.

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Reference 1.2