Technical Data Sheet

LOCTITE® AA 3979™

Known as LOCTITE® 3979™
July 2022

PRODUCT DESCRIPTION

LOCTITE® AA 3979™ provides the following product characteristics:

Technology	Acrylic
Chemical Type	UV acrylic
Appearance (uncured)	Translucent to hazy yellow gel, Free of undissolved solids[LMS]
Fluorescence	Positive under UV light[LMS]
Components	One component - requires no mixing
Viscosity	Gel
Cure	Ultraviolet (UV) / Visible light
Application	Bonding

LOCTITE® AA 3979™ is a one component UV/Visible light cure acrylic designed for medical bonding applications where the fluorescent properties of substrates interferes with the detection of the adhesives. This adhesive fluoresces red under UV light. Rapid cure is achieved by exposure to ultraviolet light or visible light of the appropriate wavelength.

ISO-10993

LOCTITE® AA 3979™ has been tested to Henkel's test protocols based on ISO 10993 biocompatibility standards, as a means to assist in the selection of products for use in the medical device industry.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Specific Gravity @ 25 °C 1.1

Viscosity, Cone & Plate, 25 °C, mPa·s (cP):
Physica MC100, Cone MK 22, CP50, shear rate 2 s^{-1} 35,000 to 78,000[LMS]

Viscosity, Cone & Plate, 25 °C, mPa·s (cP):
Physica MC100, Cone MK 22, CP50, shear rate 20 s^{-1} 7,000 to 14,000[LMS]

Refractive Index, ASTM D542 1.48

Flash Point - See SDS

TYPICAL CURING PERFORMANCE

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:
Medium Pressure mercury arc :
100 mW/cm² , measured @ 365 nm ≤5

Electrodeless, D bulb:
100 mW/cm² , measured @ 365 nm 10 to 20

LED Cure Jet :
100 mW/cm² , measured @ 405 nm 10 to 20

Tack Free Time

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

Tack Free Time, minutes:
Medium Pressure mercury arc :
100 mW/cm² , measured @ 365 nm >2

Electrodeless, D bulb:
100 mW/cm² , measured @ 365 nm >2

LED Cure Jet :
100 mW/cm² , measured @ 405 nm >2

Stress Cracking

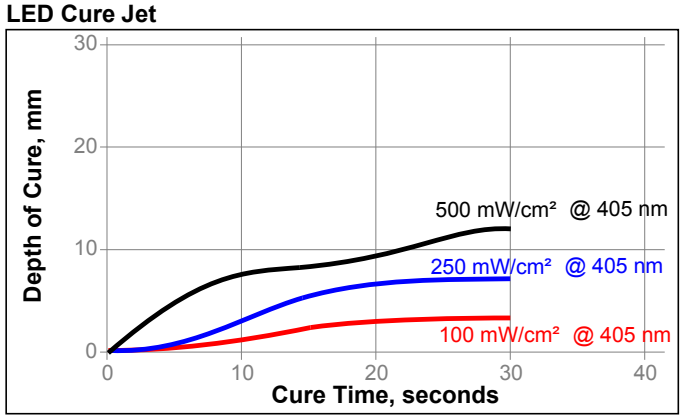
Liquid adhesive is applied to a medical grade polycarbonate bar 10.2 cm by 2.6 cm by 3 mm which is then flexed to induce a known stress level.

Stress Cracking, ASTM D 3929, minutes:
13.8 N/mm² stress on bar 5
17.2 N/mm² stress on bar 4

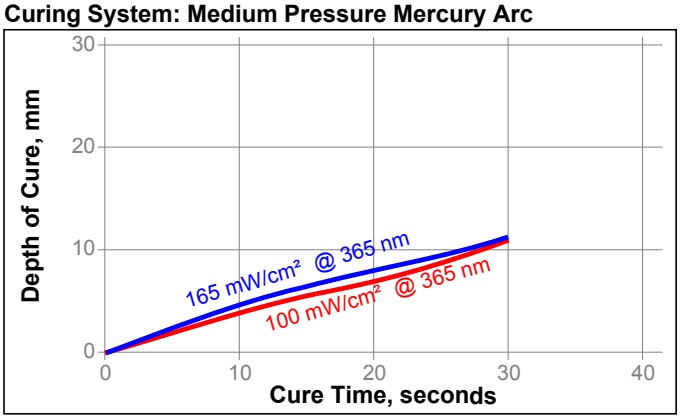
Depth of Cure

The following graphs show the effect of light source, light intensity and exposure time on depth of cure for LOCTITE® AA 3979™

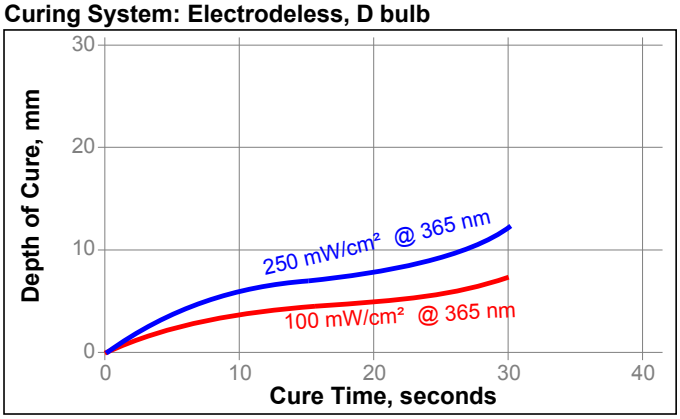
LED Cure Jet



Curing System: Medium Pressure Mercury Arc



Curing System: Electrodeless, D bulb



TYPICAL PROPERTIES OF CURED MATERIAL

Cured @ 100 mW/cm² , measured @ 365 nm, for 30 seconds per side using an Electrodless system, D bulb

Physical Properties:

Water Absorption, ISO 62, %:		
2 hours in water @ 100 °C		5.8
Linear Shrinkage, in/in		2.0
Volume Shrinkage, %		6.0
Shore Hardness, ISO 868 , Durometer D		56
Refractive Index, ASTM D542		1.5
Elongation, at break, ISO 527-3, %		227
Tensile Strength, ISO 527-3	N/mm²	18
	(psi)	(2,620)
Tensile Modulus, ISO 527-3	N/mm²	378
	(psi)	(54,780)

Electrical Properties:

Surface Resistivity, IEC 60093, Ω	2.37×10^{12}
Volume Resistivity, IEC 60093, Ω·cm	1.9×10^{11}
Dielectric Breakdown Strength, IEC 60243-1, kV/mm	24
Dielectric Constant / Dissipation Factor, IEC 60250:	
1 kHz	4.63 / 0.04
100 KHz	4.52 / 0.02
1 MHz	4.25 / 0.03

TYPICAL PERFORMANCE OF CURED MATERIAL

Adhesive Properties

Cured @ 280 mW/cm² , for 10 seconds using a LOCTITE® Indigo™ 7418 Visible Flood Source , plus 1 hour @ 25 °C

Block Shear Strength, ISO 13445:

Polycarbonate (UV Transmitting)	N/mm²	≥12.41[LMS]
	(psi)	(≥1,800)

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:

Polycarbonate to Polycarbonate	N/mm²	30
	(psi)	(4,320)
Nylon to Polycarbonate	N/mm²	13
	(psi)	(1,880)
ABS to Polycarbonate	N/mm²	22
	(psi)	(3,180)
PVC to Polycarbonate	N/mm²	12
	(psi)	(1,685)

Lap Shear Strength :

Stainless steel to Polycarbonate	N/mm²	9
	(psi)	(1,320)

TYPICAL ENVIRONMENTAL RESISTANCE

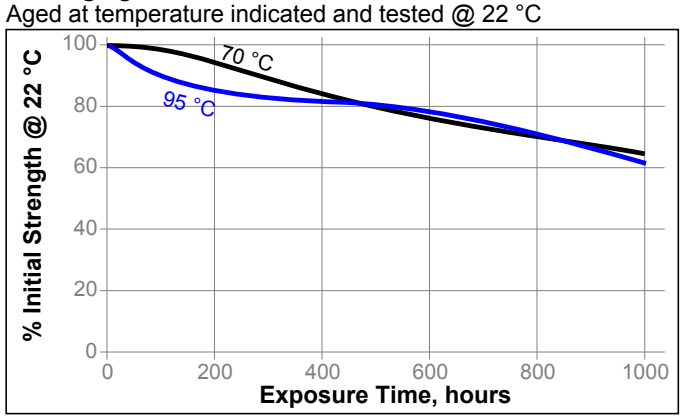
Cured @ 100 mW/cm² , measured @ 365 nm, for 30 seconds per side using an Electrodless system, D bulb.

Block Shear Strength, ISO 13445:

Polycarbonate to Polycarbonate

Heat Aging

Aged at temperature indicated and tested @ 22 °C



Chemical/Solvent Resistance

Aged under conditions indicated and tested @ °C

		% of initial strength		
Environment	**°C**	**170 h**	**500 h**	**1000 h**
Water immersion	50	60	50	40
Isopropanol	22	75	55	35
95% RH	38	80	50	50

Sterilization Resistance

Block Shears sterilized as indicated and tested @ 22°C

% of initial strength:

	Gamma	ETO	Autoclave	
	30kGy	1 Cycle	1 Cycle	5 Cycles
Polycarbonate	80	80	80	60

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. Cooling should be provided for temperature sensitive substrates such as thermoplastics.
6. Plastic grades should be checked for risk of stress cracking when exposed to liquid adhesive.
7. Excess uncured adhesive can be wiped away with organic solvent (e.g. Acetone).
8. Bonds should be allowed to cool before subjecting to any service loads.

Loctite Material Specification[LMS]

LMS dated April 22, 2010. 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 Henkel 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

Disclaimer

Reference 0.2