Technical Data Sheet

LOCTITE® AA 3971™

Known as known as LOCTITE® 3971
May 2024

PRODUCT DESCRIPTION

LOCTITE® AA 3971™ provides the following product characteristics:

Technology	Acrylic
Chemical Type	UV acrylic
Appearance (uncured)	Transparent liquid
Fluorescence	Positive under UV light
Components	One component – requires no mixing
Viscosity	Low
Cure	Ultraviolet (UV)/ visible light
Application	Bonding
Specific Benefits	Production - high speed curing

LOCTITE® AA 3971™ is suitable for a wide variety of applications that require fast cure and high adhesion to plasticized materials. LOCTITE® AA 3971™ cures in seconds when exposed to light of the proper wavelength and intensity. The ability of this product to fluoresce under black light facilitates inspection of bonded assemblies for adhesive presence. LOCTITE® AA 3971™ was specifically designed for bonding stainless steel cannulae into hubs, syringes and lancets for needle assemblies. Suitable for use in the assembly of **disposable medical devices**. The viscosity of this product makes the adhesive well suited for applications where the adhesive will be dispensed in the well after the cannulae and the hub have been assembled.

ISO-10993

LOCTITE® AA 3971™ 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	1.05
Viscosity, Brookfield RVT, @25°C, mPa·s (cP) Spindle 2, Speed 20 rpm	315

TYPICAL CURING PERFORMANCE

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:

LED flood light, CL42:	
100 mW/cm², measured @ 405 nm,	5
100 mW/cm², measured @ 365 nm,	5
UV Fixture Time, Glass microscope slides, seconds:	
Black light:	
6 mW/cm², measured @ 365 nm,	7
Zeta® 7410 light source:	
30 mW/cm², measured @ 365 nm,	5
Electrodeless, D bulb:	
100 mW/cm², measured @ 365 nm,	5

Tack Free Time

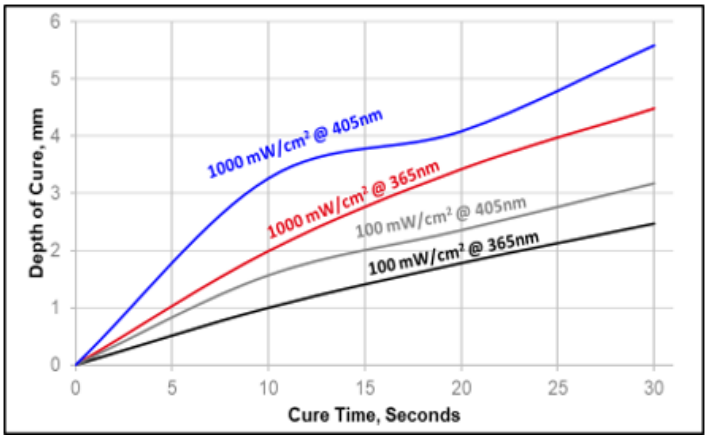
Tack free time is the time required to achieve a tack free surface.

Tack Free Time, seconds:	
LED flood light, CL42:	
100 mW/cm², measured @ 405 nm,	40
1000 mW/cm², measured @ 405 nm,	5
100 mW/cm², measured @ 365 nm,	5
1000 mW/cm², measured @ 365 nm,	5
Zeta® 7410 light source:	
30 mW/cm², measured @ 365 nm,	8
Electrodeless system, D bulb:	
100 mW/cm², measured @ 365 nm,	5

Depth of Cure vs. Irradiance (LED)

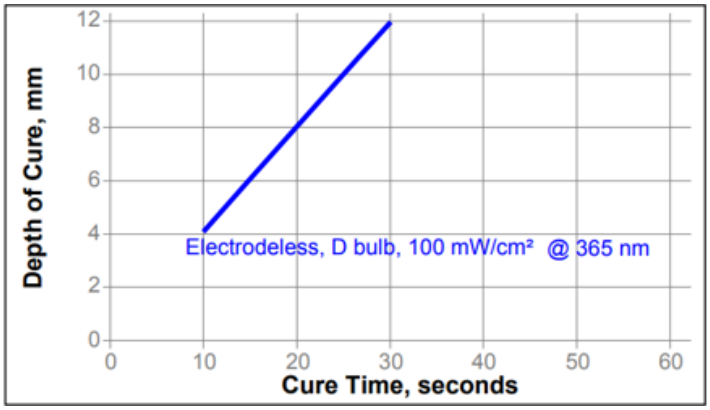
The graph below shows the increase in depth of cure with time at various light intensities as measured from the thickness of the cured product formed.

Curing System: LED flood light, CL42



Depth of Cure vs. Irradiance (365 nm)
The graph below shows the increase in depth of cure with time at 100 mW/cm² as measured from the thickness of the cured product formed in an aluminum weighing dish.

Curing System: Metal Halide (Iron)



TYPICAL PERFORMANCE OF CURED MATERIAL
Cured @ 1,000 mW/cm², measured @ 365 nm, for 10 seconds using an Electrodeless system, D bulb

Needle Pullout Strength:

Material	22 Gauge Cannula		27 Gauge Cannula	
ABS	N (lb)	182 (41)	N (lb)	93 (21)
Acrylic	N (lb)	192 (43)	N (lb)	102 (23)
Polycarbonate	N (lb)	178 (40)	N (lb)	80 (18)
Polyethylene	N (lb)	13 (3)	N (lb)	13 (3)
Polyethylene (plasma treated)	N (lb)	125 (28)	N (lb)	111 (25)
Polypropylene	N (lb)	22 (5)	N (lb)	9 (2)
Polypropylene (plasma treated)	N (lb)	31 (7)	N (lb)	22 (5)
Polystyrene	N (lb)	205 (46)	N (lb)	120 (27)
Polyurethane	N (lb)	182 (41)	N (lb)	111 (25)

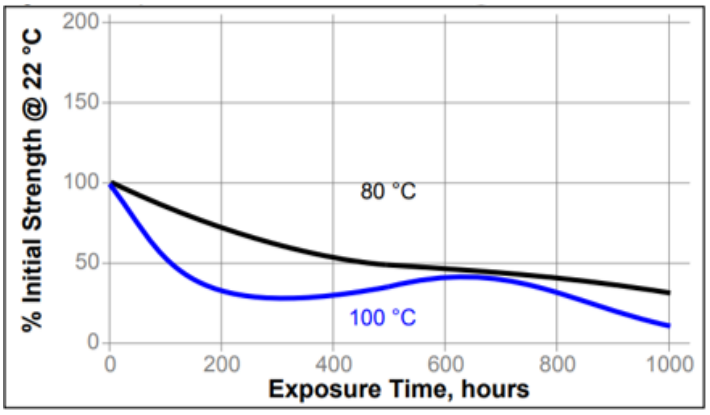
Cured @ 100 mW/cm², measured @ 365 nm, for 30 seconds.
Block Shear Strength, ISO 13445:

Acrylic to Glass	N/mm² (psi)	3.0 (440)
Acrylic to Acrylic	N/mm² (psi)	12 (1,740)
G-10 Epoxyglass to Glass	N/mm² (psi)	7.0 (1,020)
Nylon to Glass	N/mm² (psi)	2.5 (360)
Polybutylene Terephthalate to Glass	N/mm² (psi)	4.4 (640)
Polycarbonate to Polycarbonate	N/mm² (psi)	22 (3,200)
Polyvinylchloride to Glass	N/mm² (psi)	5.5 (800)
Aluminum (grit blasted) to Glass	N/mm² (psi)	17 (2,500)
Steel (grit blasted) to Glass	N/mm² (psi)	13 (1,900)

TYPICAL ENVIRONMENTAL RESISTANCE
Cured @ 30 mW/cm², measured @ 365 nm, for 30 seconds.

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 @ 23 °C.

		% of initial strength			
Environment	°C	24 h	100 h	500 h	1000 h
95% RH	40	--	95	45	55
Water Immersion	22	--	100	65	85
Isopropanol	22	75	--	--	--
Heptane	22	85	--	--	--

Thermal Stability of Needle Assemblies
Aged @ 60°C and tested @ 22 °C

Needle Pullout Strength, % of initial strength:	**4 weeks**	**8 weeks**
Polycarbonate:		
22 Gauge Cannula	50	40
27 Gauge Cannula	65	45
Polypropylene (plasma treated):		
22 Gauge Cannula	85	40
27 Gauge Cannula	60	60
Polystyrene:		
22 Gauge Cannula	60	45
27 Gauge Cannula	55	45

Sterilization Resistance of Needle Assemblies
Sterilized as indicated and tested @ 22 °C
Needle Pullout Strength, % of initial strength:

	Gamma	ETO	Autoclave	
	30 kGy	1 Cycle	1 Cycle	5 Cycles
Polycarbonate				
22 Gauge Cannula	95	45	30	5
27 Gauge Cannula	90	55	55	5
Polypropylene (plasma treated)				
22 Gauge Cannula	90	70	70	60
27 Gauge Cannula	100	80	120	80
Polystyrene				
22 Gauge Cannula	100	55	---	---
27 Gauge Cannula	110	65	---	---

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 application 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 transmission 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.

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.

Product specification
The technical data contained herein are intended as reference only and are not considered specifications for the product. Product specifications are located on the Certificate of Analysis or please contact Henkel representative.

Approval and certificate
Please contact Henkel representative for related approval or certificate of this product.

Data ranges
The data contained herein may be reported as a typical value. Values are based on actual test data and are verified on a periodic basis.

Temperature/Humidity Ranges: 23°C / 50% RH = 23±2°C / 50±5% RH

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
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