Technical Data Sheet

LOCTITE® AA 3942™

November 2014

PRODUCT DESCRIPTION

LOCTITE® AA 3942™ provides the following product characteristics:

Technology	Acrylic
Chemical Type	UV Acrylic
Appearance (uncured)	Transparent to hazy liquid, free of undissolved solids[LMS]
Fluorescence	Positive under UV light[LMS]
Components	One component – requires no mixing
Viscosity	Medium
Cure	Ultraviolet (UV) / visible light
Application	Bonding
Specific Benefits	Production - high speed curing

LOCTITE® AA 3942™ is suitable for a wide variety of applications that require fast cure, flexibility, high adhesion and autoclave resistance. LOCTITE® AA 3942™ cures in seconds when exposed to light of the proper wavelength and intensity and achieves excellent adhesion to glass, plastics and metal. The ability of this product to fluoresce under black light facilitates inspection of bonded assemblies for adhesive presence. LOCTITE® AA 3942™ 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.** LOCTITE® AA 3942™ achieves exceptional needle pull strengths on most hub substrates, particularly on high gauge sizes.

ISO-10993

An ISO 10993 Test Protocol is an integral part of the Quality Program for LOCTITE® AA 3942™. LOCTITE® AA 3942™ has been qualifed to Henkel's ISO 10993 Protocol as a means to assist in the selection of products for use in the medical device industry. Certificates of Compliance are available on Henkel's website or through the Henkel Quality Department.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Specific Gravity @ 25 °C	1.03
Gardner color	≤ 3[LMS]
Flash point - see SDS	
Viscosity, Brookfield RVT, @25°C, mPa·s (cP) Spindle 2, Speed 20 rpm	900 - 1,600[LMS]
Infrared spectroscopy	To match standard[LMS]

TYPICAL CURING PERFORMANCE

Fixture Time

The fixture time is the UV exposure time required to cure a drop of adhesive between glass microscope slides so that they cannot be moved without breaking the slides.

Zeta® 7410 light source:	
6 mW/cm², measured @ 365 nm,	≤15[LMS]
30 mW/cm², measured @ 365 nm,	<5
Electrodeless, D bulb:	
100 mW/cm², measured @ 365 nm,	<5

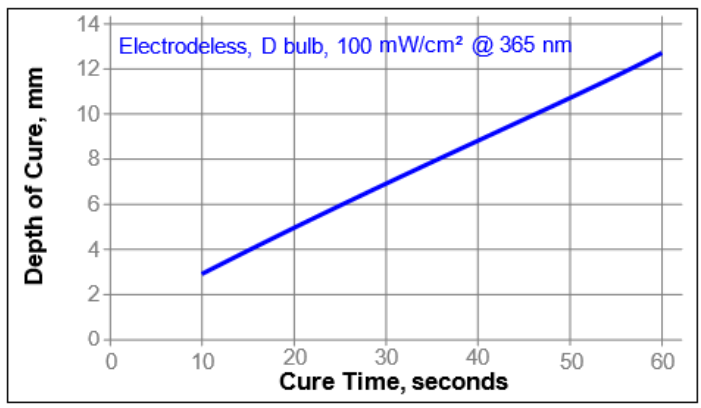
Tack Free Time

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

Tack Free Time, seconds:	
Zeta® 7410 light source:	
30 mW/cm², measured @ 365 nm,	45 - 60
Electrodeless system, D bulb:	
100 mW/cm², measured @ 365 nm,	5 - 10

Depth of Cure

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.



TYPICAL PERFORMANCE OF CURED MATERIAL

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

Physical Properties:

Shore hardness, ISO 868, Durometer D		76
Linear shrinkage, %		2.0
Elongation, at break, ISO 527-3, %		15
Glass transition temperature, ASTM E 228, °C		55
Coefficient of Thermal Expansion, ISO 11359-2, K^{-1}:		
Pre Tg		72
Post Tg		231
Water absorption, ISO 62, %:		
2 hours in boiling water		5.0
7 days in water @ 22 °C		4.8
UV Depth of Cure, mm:		
Cured @ 100 mW/cm², measured @ 365 nm, for 10 seconds, using an Electrodeless system, D bulb		≥1.5[LMS]
Tensile Strength, ISO 527-3	N/mm² (psi)	29 (4,200)
Tensile Modulus, ISO 527-3	N/mm² (psi)	986 (143,000)

Adhesive properties

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)	276 (62)	N (lb)	156 (35)
Acrylic	N (lb)	254 (57)	N (lb)	165 (37)
Polycarbonate	N (lb)	271 (61)	N (lb)	165 (37)
Polyethylene	N (lb)	27 (6)	N (lb)	85 (19)
Polyethylene (plasma treated)	N (lb)	231 (52)	N (lb)	133 (30)
Polypropylene	N (lb)	93 (21)	N (lb)	62 (14)
Polypropylene (plasma treated)	N (lb)	205 (56)	N (lb)	147 (33)
Polystyrene	N (lb)	262 (59)	N (lb)	160 (36)
Polyurethane	N (lb)	187 (42)	N (lb)	142 (32)

Cured @ 100 mW/cm², measured @ 365 nm, for 10 seconds.

Block Shear Strength, ISO 13445:

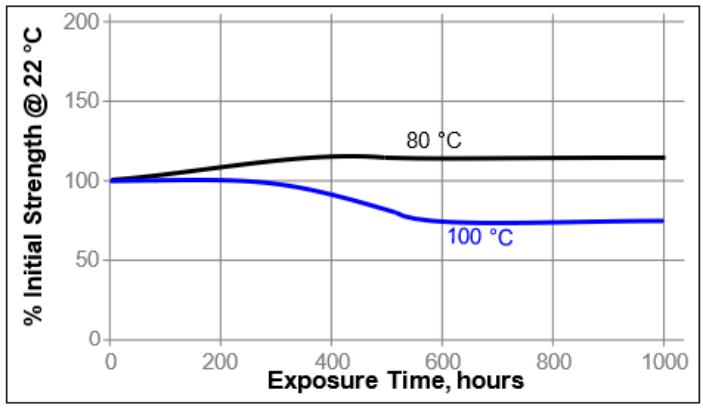
Acrylic to Glass:	N/mm² (psi)	2.3 (330)
Acrylic to Acrylic	N/mm² (psi)	3.7 (530)
G-10 Epoxy glass to Glass	N/mm² (psi)	5.0 (720)
Nylon to Glass	N/mm² (psi)	3.4 (500)
Polybutylene Terephthalate to Glass	N/mm² (psi)	4.7 (680)
Polycarbonate to polycarbonate	N/mm² (psi)	11.1 (1,610)
Polyvinylchloride to Glass	N/mm² (psi)	5.0 (720)
Aluminum (grit blasted) to Glass	N/mm² (psi)	12.7 (1,840)
Steel (grit blasted) to Glass	N/mm² (psi)	14.6 (2,110)

TYPICAL ENVIRONMENTAL RESISTANCE

Block Shear Strength, ISO 13445:
Polycarbonate

Heat Aging

Aged at temperature indicated and tested @ 22 °C.



Chemical/Solvent Resistance
Aged under conditions indicated and tested @ 22°C.

		% of initial strength			
Environment	°C	24 h	100 h	500 h	1000 h
95% RH	40	--	150	115	90
Water Immersion	22	--	100	120	80
Isopropanol	22	40	--	--	--
Heptane	22	90	--	--	--

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	105	75
27 Gauge Cannula	90	90
Polypropylene (plasma treated):		
22 Gauge Cannula	95	30
27 Gauge Cannula	75	45
Polystyrene:		
22 Gauge Cannula	105	60
27 Gauge Cannula	85	100

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	85	90	90	80
27 Gauge Cannula	105	95	75	55
Polypropylene (plasma treated)				
22 Gauge Cannula	110	90	90	55
27 Gauge Cannula	80	80	90	55
Polystyrene				
22 Gauge Cannula	90	85	---	---
27 Gauge Cannula	90	85	---	---

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 adhesive can be wiped away with organic solvent.
8. Bonds should be allowed to cool before subjecting to any service loads.

Loctite material specification[LMS]
LMS dated September 9, 2004. 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
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Reference 1.2