Technical Data Sheet

LOCTITE® AA 3943™

Known as LOCTITE® 3943™
September 2014

PRODUCT DESCRIPTION

LOCTITE® AA 3943™ 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
Cure Benefit	Production - high speed curing
Application	Bonding

LOCTITE® AA 3943™ is suitable for a wide variety of applications that require fast cure, flexibility, high adhesion and autoclave resistance. LOCTITE® AA 3943™ 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 3943™ was specifically designed for bonding stainless steel cannulae into hubs, syringes and lancets for needle assemblies. The viscosity of this product makes the adhesive well suited for applications where the adhesive will be dispensed on the cannulae before assembly with the hub, needles with large gaps, or cannulae that end in the core pinbore to minimize the potential for blocking cannulae. LOCTITE® AA 3943™ achieves exceptional needle pull strengths on most hub substrates, particularly on high gauge sizes. Suitable for use in the assembly of **disposable medical devices**.

ISO-10993

An ISO 10993 Test Protocol is an integral part of the Quality Program for LOCTITE® AA 3943™. LOCTITE® AA 3943™ has been qualified 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	1.04
Gardner Color	≤3[LMS]
Flash Point - See SDS	
Viscosity, Brookfield - RVT, 25 °C, mPa·s (cP):	
Spindle 4, speed 20 rpm	6,000 to 7,500[LMS]

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, seconds:	
Black light:	
6 mW/cm² , measured @ 365 nm	≤10[LMS]
Zeta® 7410 light source:	
30 mW/cm² , measured @ 365 nm	<5
Electrodeless, D bulb:	
100 mW/cm² , measured @ 365 nm	<5

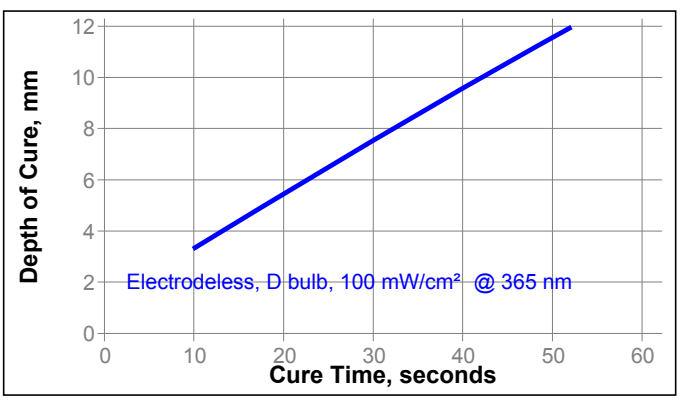
Tack Free Time

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

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

Depth of Cure

The graph below shows the increase in depth of cure with time at 100mW/cm² as measured from the thickness of the cured product formed in an aluminum weighing dish.



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:

Coefficient of Thermal Expansion, ISO 11359-2, K^{-1}:		
Pre Tg		96
Post Tg		276
Glass Transition Temperature, ASTM E 228, °C		55
Water Absorption, ISO 62, %:		
2 hours in boiling water		4.4
7 days in water @ 22 °C		4.2
Linear Shrinkage, %		2.0
Shore Hardness, ISO 868, Durometer D		69
Elongation, at break, ISO 527-3, %		271
Tensile Strength, ISO 527-3	N/mm² (psi)	24 (3,480)
Tensile Modulus, ISO 527-3	N/mm² (psi)	441 (64,000)
UV Depth of Cure, mm:		
Cured @ 100 mW/cm² , measured @ 365 nm, for 10 seconds, using an Electrodeless system, D bulb		≥1.5[LMS]

TYPICAL PERFORMANCE OF CURED MATERIAL

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 245 (lb) (55)	N 151 (lb) (34)
Acrylic	N 222 (lb) (50)	N 147 (lb) (33)
Polycarbonate	N 262 (lb) (59)	N 147 (lb) (33)
Polyethylene	N 13 (lb) (3)	N 53 (lb) (12)
Polyethylene (plasma treated)	N 173 (lb) (39)	N 116 (lb) (26)
Polypropylene	N 26 (lb) (8)	N 44 (lb) (10)
Polypropylene (plasma treated)	N 116 (lb) (26)	N 116 (lb) (26)
Polystyrene	N 191 (lb) (43)	N 142 (lb) (32)
Polyurethane	N 191 (lb) (43)	N 120 (lb) (27)

Cured @ 100 mW/cm² , measured @ 365 nm, for 30 seconds

Block Shear Strength, ISO 13445:

Acrylic to Glass	N/mm² (psi)	2.6 (380)
Acrylic to Acrylic	N/mm² (psi)	5.6 (870)
G-10 Epoxyglass to Glass	N/mm² (psi)	7.0 (1,020)
Nylon to Glass	N/mm² (psi)	5.0 (720)
Polybutylene Terephthalate to Glass	N/mm² (psi)	4.6 (670)
Polycarbonate to Polycarbonate	N/mm² (psi)	9.7 (1,410)
Polyvinylchloride to Glass	N/mm² (psi)	8.6 (1,240)
Aluminum (grit blasted) to Glass	N/mm² (psi)	11.0 (1,600)
Steel (grit blasted) to Glass	N/mm² (psi)	9.8 (1,420)

TYPICAL ENVIRONMENTAL RESISTANCE

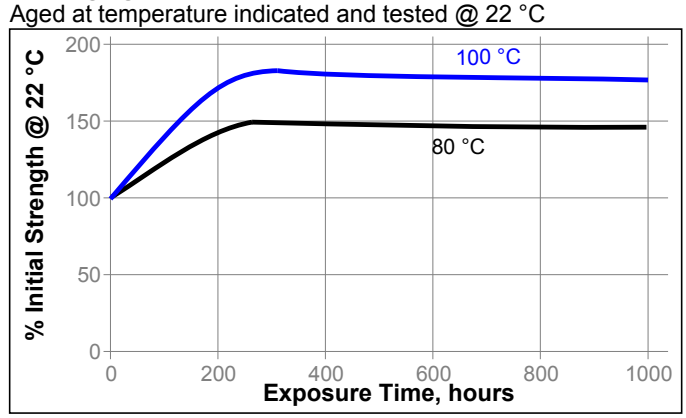
Cured @ 100 mW/cm² , measured @ 365 nm, for 30 seconds

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	-----	145	100	115
Water immersion	22	-----	125	130	105
Isopropanol	22	110	-----	-----	-----
Heptane	22	110	-----	-----	-----

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	95	95
27 Gauge Cannula	110	75
Polypropylene (plasma treated):		
22 Gauge Cannula	90	155
27 Gauge Cannula	70	70
Polystyrene:		
22 Gauge Cannula	110	140
27 Gauge Cannula	120	100

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

	Gamma	ETO	Autoclave	
	30kGy	1 Cycle	1 Cycle	5 Cycles
Polycarbonate:				
22 Gauge Cannula	95	80	75	65
27 Gauge Cannula	90	105	85	65
Polypropylene (plasma treated):				
22 Gauge Cannula	155	130	120	90
27 Gauge Cannula	100	105	95	95
Polystyrene:				
22 Gauge Cannula	115	100	----	----
27 Gauge Cannula	100	105	----	----

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 March 24, 2008. 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:
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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