



# LOCTITE® 3942™

December 2008

## PRODUCT DESCRIPTION

LOCTITE® 3942™ provides the following product characteristics:

<b>Technology</b>	Acrylic
<b>Chemical Type</b>	UV acrylic
<b>Appearance (uncured)</b>	Transparent to hazy liquid, Free of undissolved solids <sup>LMS</sup>
<b>Fluorescence</b>	Positive under UV light <sup>LMS</sup>
<b>Components</b>	One component - requires no mixing
<b>Viscosity</b>	Medium
<b>Cure</b>	Ultraviolet (UV)/ visible light
<b>Cure Benefit</b>	Production - high speed curing
<b>Application</b>	Bonding

LOCTITE® 3942™ is suitable for a wide variety of applications that require fast cure, flexibility, high adhesion and autoclave resistance. LOCTITE® 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® 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® 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® 3942™. LOCTITE® 3942™ has been qualified to Loctite'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 at [www.loctite.com](http://www.loctite.com) or through the Henkel Loctite Quality Department.

## TYPICAL PROPERTIES OF UNCURED MATERIAL

Specific Gravity @ 25 °C	1.03
Gardner Color	≤3 <sup>LMS</sup>
Flash Point - See MSDS	
Viscosity, Brookfield - RVT, 25 °C, mPa·s (cP):	
Spindle 2, speed 20 rpm	900 to 1,600 <sup>LMS</sup>
Infrared Spectroscopy	To match standard <sup>LMS</sup>

## 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.

UV Fixture Time, Glass microscope slides, seconds:

Zeta® 7410 light source:	
6 mW/cm², measured @ 365 nm	≤15 <sup>LMS</sup>
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:

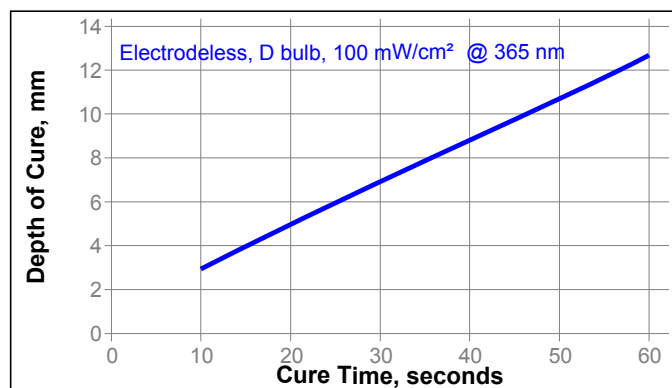
Zeta® 7410:  
30 mW/cm², measured @ 365 nm, 45 to 60

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 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:

100 mW/cm², measured @ 365 nm, for 10 seconds, using an Electrodeless system, D bulb ≥1.5<sup>LMS</sup>

Tensile Strength, ISO 527-3	N/mm²	29
	(psi)	(4,200)
Tensile Modulus, ISO 527-3	N/mm²	986
	(psi)	(143,000)



**TYPICAL PERFORMANCE OF CURED MATERIAL****Adhesive Properties**

Cured @ 1,000 mW/cm<sup>2</sup>, measured @ 365 nm, for 10 seconds using an Electrodeless system, D bulb

Needle Pullout Strength:

Material	22 Gauge Cannula	27 Gauge Cannula
ABS	N 276 (lb) (62)	N 156 (lb) (35)
Acrylic	N 254 (lb) (57)	N 165 (lb) (37)
Polycarbonate	N 271 (lb) (61)	N 165 (lb) (37)
Polyethylene	N 27 (lb) (6)	N 85 (lb) (19)
Polyethylene (plasma treated)	N 231 (lb) (52)	N 133 (lb) (30)
Polypropylene	N 93 (lb) (21)	N 62 (lb) (14)
Polypropylene (plasma treated)	N 205 (lb) (46)	N 147 (lb) (33)
Polystyrene	N 262 (lb) (59)	N 160 (lb) (36)
Polyurethane	N 187 (lb) (42)	N 142 (lb) (32)

Cured @ 100 mW/cm<sup>2</sup>, measured @ 365 nm, for 30 seconds

Block Shear Strength, ISO 13445:

Acrylic to Glass	N/mm <sup>2</sup> 2.3 (psi) (330)
Acrylic to Acrylic	N/mm <sup>2</sup> 3.7 (psi) (530)
G-10 Epoxyglass to Glass	N/mm <sup>2</sup> 5.0 (psi) (720)
Nylon to Glass	N/mm <sup>2</sup> 3.4 (psi) (500)
Polybutylene Terephthalate to Glass	N/mm <sup>2</sup> 4.7 (psi) (680)
Polycarbonate to Polycarbonate	N/mm <sup>2</sup> 11.1 (psi) (1,610)
Polyvinylchloride to Glass	N/mm <sup>2</sup> 5.0 (psi) (720)
Aluminum (grit blasted) to Glass	N/mm <sup>2</sup> 12.7 (psi) (1,840)
Steel (grit blasted) to Glass	N/mm <sup>2</sup> 14.6 (psi) (2,110)

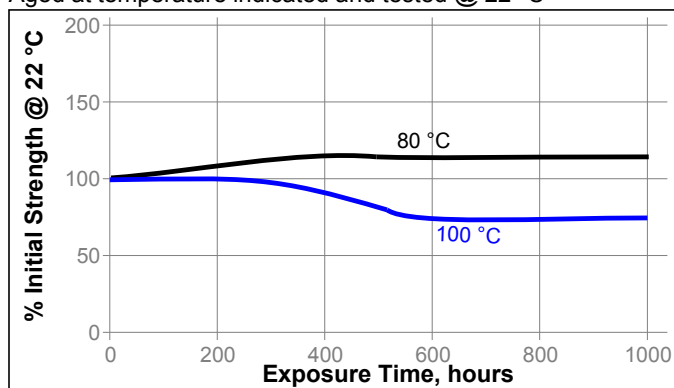
**TYPICAL ENVIRONMENTAL RESISTANCE**

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.

Environment	°C	% of initial strength			
		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 30kGy	ETO 1 Cycle	Autoclave	
			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 Material Safety Data Sheet (MSDS).**

**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<sup>LMS</sup>

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 Technical Service Center or Customer Service Representative.

#### Conversions

$(^{\circ}\text{C} \times 1.8) + 32 = ^{\circ}\text{F}$   
 $\text{kV/mm} \times 25.4 = \text{V/mil}$   
 $\text{mm} / 25.4 = \text{inches}$   
 $\mu\text{m} / 25.4 = \text{mil}$   
 $\text{N} \times 0.225 = \text{lb}$   
 $\text{N/mm} \times 5.71 = \text{lb/in}$   
 $\text{N/mm}^2 \times 145 = \text{psi}$   
 $\text{MPa} \times 145 = \text{psi}$   
 $\text{N}\cdot\text{m} \times 8.851 = \text{lb}\cdot\text{in}$   
 $\text{N}\cdot\text{m} \times 0.738 = \text{lb}\cdot\text{ft}$   
 $\text{N}\cdot\text{mm} \times 0.142 = \text{oz}\cdot\text{in}$   
 $\text{mPa}\cdot\text{s} = \text{cP}$

#### Note

The data contained herein are furnished for information only and are believed to be reliable. We cannot assume responsibility for the results obtained by others over whose methods we have no control. It is the user's responsibility to determine suitability for the user's purpose of any production methods mentioned herein and to adopt such precautions as may be advisable for the protection of property and of persons against any hazards that may be involved in the handling and use thereof. In light of the foregoing, **Henkel Corporation specifically disclaims all warranties expressed or implied, including warranties of merchantability or fitness for a particular purpose, arising from sale or use of Henkel Corporation's products. Henkel Corporation specifically disclaims any liability for consequential or incidental damages of any kind, including lost profits.** The discussion herein of various processes or compositions is not to be interpreted as representation that they are free from domination of patents owned by others or as a license under any Henkel Corporation patents that may cover such processes or compositions. We recommend that each prospective user test his proposed application before repetitive use, using this data as a guide. This product may be covered by one or more United States or foreign patents or patent applications.

#### Trademark usage

Except as otherwise noted, all trademarks in this document are trademarks of Henkel Corporation in the U.S. and elsewhere. ® denotes a trademark registered in the U.S. Patent and Trademark Office.

For reuse

Reference 1.1