Technical Data Sheet

# LOCTITE® AA 3921™

Known as LOCTITE® 3921™
January 2015

## PRODUCT DESCRIPTION

LOCTITE® AA 3921™ 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 | Low |
| **Cure** | Ultraviolet (UV)/ visible light |
| Cure Benefit | Production - high speed curing |
| **Application** | Bonding |

LOCTITE® AA 3921™ is suitable for a wide variety of applications that require fast cure, flexibility, high adhesion and autoclave resistance. LOCTITE® AA 3921™ 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 3921™ 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 in the well after the cannulae and the hub have been assembled. 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 3921™. LOCTITE® AA 3921™ 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 1.03

Flash Point - See SDS

Viscosity, Brookfield - RVT, 25 °C, mPa·s (cP):
Spindle 2, speed 20 rpm, 80 to 220[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 microscope slides, seconds:
Black light, Zeta® 7500 light source:
6 mW/cm² , measured @ 365 nm ≤5[LMS]

### Tack Free Time

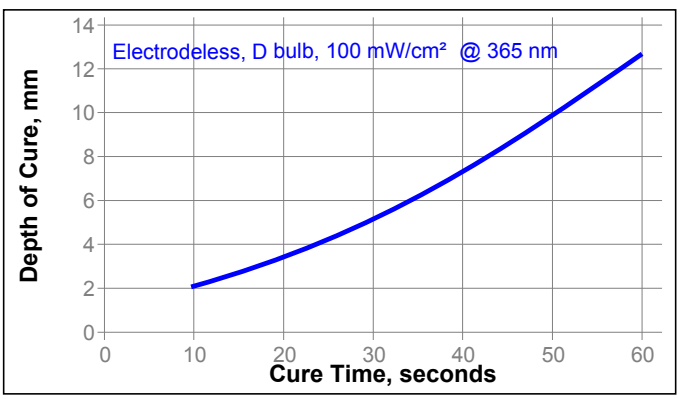
Tack Free Time is the time required to achieve a tack free surface

Tack Free Time, seconds:
Zeta® 7410:
30 mW/cm² , measured @ 365 nm, >60

Electrodeless, D bulb:
100 mW/cm² , measured @ 365 nm >60

### 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 pellet formed in a 15mm diameter PTFE die.



## 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 | | $108\times10^{-06}$ |
| Post Tg | | $255\times10^{-06}$ |
| Glass Transition Temperature, ASTM E 228, °C | | 82 |
| Water Absorption, ISO 62, %: | | |
| 2 hours in water @ 100 °C | | 5.9 |
| 7 days in water @ 22 °C | | 8.8 |
| Linear Shrinkage, % | | 2.0 |
| Shore Hardness, ISO 868, Durometer D | | 67 |
| Elongation, at break, ISO 527-3, % | | 32 |
| Tensile Strength, ISO 527-3 | N/mm² | 19.5 |
| | (psi) | (2,830) |
| UV Depth of Cure, mm: | | |
| 100 mW/cm² , measured @ 365 nm, for 10 seconds, using an Electrodeless system, D bulb | | ≥1.8[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, N (lb) | **22 Gauge Cannula** | **27 Gauge Cannula**: |
|---|---|---|
| ABS | 271 (61) | 120 (27) |
| Acrylic | 249 (56) | 120 (27) |
| Polycarbonate | 222 (50) | 107 (24) |
| Polyethylene | 45 (10) | 40 (9) |
| Polyethylene (plasma treated) | 156 (35) | 98 (22) |
| Polypropylene | 53 (12) | 31 (7) |
| Polypropylene (plasma treated) | 200 (45) | 125 (28) |
| Polystyrene | 200 (45) | 89 (20) |
| Polyurethane | 151 (34) | 102 (23) |

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

| Block Shear Strength, ISO 13445: | | |
|---|---|---|
| Acrylic to Glass | N/mm² | 3.9 |
| | (psi) | (570) |
| Acrylic to Acrylic | N/mm² | 7.7 |
| | (psi) | (1,120) |
| G-10 Epoxyglass to Glass | N/mm² | 7.8 |
| | (psi) | (1,130) |
| Nylon to Glass | N/mm² | 3.4 |
| | (psi) | (490) |
| Polybutylene Terephthalate to Glass | N/mm² | 5.5 |
| | (psi) | (800) |
| Polycarbonate to Polycarbonate | N/mm² | 21.1 |
| | (psi) | (3,060) |
| Polyvinylchloride to Glass | N/mm² | 5.2 |
| | (psi) | (750) |
| Aluminum (grit blasted) to Glass | N/mm² | 14.8 |
| | (psi) | (2,150) |
| Steel (grit blasted) to Glass | N/mm² | 16.5 |
| | (psi) | (2,390) |

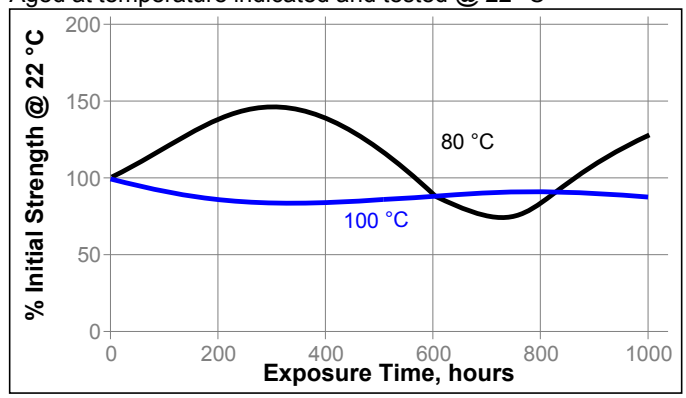
## TYPICAL ENVIRONMENTAL RESISTANCE

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 | ----- | 130 | 90 | 65 |
| Water immersion | 22 | ----- | 100 | 110 | 105 |
| Isopropanol | 22 | 110 | ----- | ----- | ----- |
| Heptane | 22 | 95 | ----- | ----- | ----- |

### 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 | 150 | 155 |
| 27 Gauge Cannula | 130 | 115 |
| Polypropylene (plasma treated): | | |
| 22 Gauge Cannula | 105 | 100 |
| 27 Gauge Cannula | 115 | 100 |
| Polystyrene: | | |
| 22 Gauge Cannula | 175 | 175 |
| 27 Gauge Cannula | 180 | 165 |

### 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 | 120 | 120 | 105 | 95 |
| 27 Gauge Cannula | 125 | 115 | 80 | 105 |
| Polypropylene (plasma treated): | | | | |
| 22 Gauge Cannula | 95 | 105 | 100 | 95 |
| 27 Gauge Cannula | 110 | 115 | 105 | 90 |
| Polystyrene: | | | | |
| 22 Gauge Cannula | 105 | 105 | ---- | ---- |
| 27 Gauge Cannula | 130 | 150 | ---- | ---- |

## 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 June 1, 2003. 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



Reference 1.3