

LOCTITE® 3619

November 2016

PRODUCT DESCRIPTION

LOCTITE® 3619 provides the following product characteristics:

Technology	Epoxy
Chemical type	Epoxy
Appearance (uncured)	Red high viscosity paste ^{LMS}
Components	One component - requires no mixing
Cure	Heat cure
Application	Surface mount adhesive
Key substrates	SMD components to PCB
Dispense method	Syringe
Dispense speed	High 25,000 - 40,000 dots/h
Wet strength	High

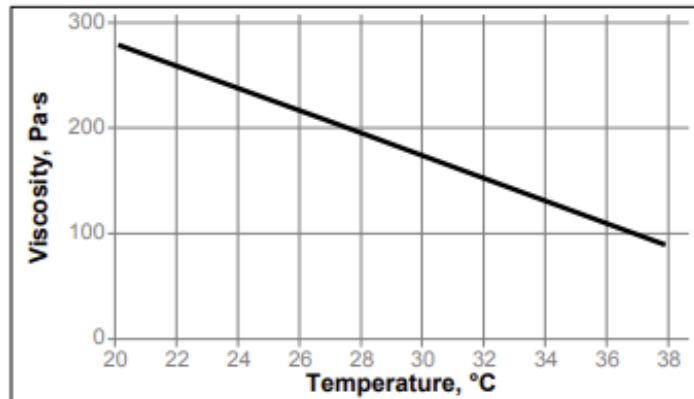
LOCTITE® 3619 is designed for bonding of surface mounted devices to printed circuit boards prior to wave soldering. Particularly suited where low curing temperatures are required with heat sensitive components, and in applications where short curing times are required.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Specific gravity @ 25 °C	1.22
Yield point, 25°C, Pa	200 to 450 ^{LMS}
Cone & plate rheometer:	
Haake PK 100, M10/PK 1 2° Cone	
Casson viscosity @ 25°C, Pa.s	1 to 4
Cone & plate rheometer:	
Haake PK 100, M10/PK 1 2° Cone	
Particle size, µm	<100
Flash point - see SDS	

Viscosity vs. temperature

The following graph shows a typical temperature-viscosity curve as measured using a Haake rotoviscometer PK100, M10/PK1 2° Cone system at a shear rate of 2 s⁻¹ which is representative of the shear rate in the dispense nozzle. Increased cabin or nozzle temperature in the 30°C to 35°C range may aid dispense performance at higher dispense speeds.

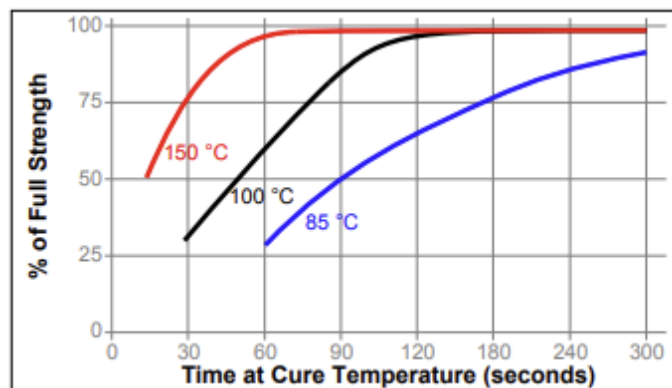


TYPICAL CURING PERFORMANCE

Recommended conditions for curing are exposure to heat above 100°C (typically 90 to 120 seconds @ 100°C). Rate of cure and final strength will depend on the residence time at the cure temperature.

Cure speed vs. time, temperature

The following graph shows the rate of torque strength developed with time at different temperatures. These times are defined from the moment the adhesive reaches cure temperature. In practice, total oven time may be longer to allow for heat up period. Strength is measured on 1206 capacitors @ 22°C, tested according to IPC SM817, TM-650 Method 2.4.42.



Isothermal DSC conversion

3 minutes @ 90°C, %

≥70^{LMS}

TYPICAL PROPERTIES OF CURED MATERIAL

Cured for 30 minutes @ 100°C

Physical propertiesCoefficient of thermal expansion, ISO 11359-2, K⁻¹:

Temperature range: °C to °C

Temperature range: °C to °C

Density,

Glass transition temperature,

Electrical propertiesVolume resistivity, IEC 60093, Ω·cm 1.2×10¹⁵Surface resistivity, IEC 60093, Ω 19×10¹⁵

Electrolytic corrosion, DIN 53489 A - 1

Dielectric breakdown strength, IEC 60243-1, kV/mm 30

Dielectric constant / Dissipation factor, IEC 60250:

1 kHz 3.24 / 0.02

100 kHz 3.05 / 0.03

1,000 kHz 2.89 / 0.04

10,000 kHz 2.75 / 0.05

Surface insulation resistance, Ω: IPC TM 650 2.6.3.1:

Test board: IPC-B-25A, comb pattern D:

Initial 200×10⁹Aged for 7 days @ 50°C, 90% RH 550×10⁹**TYPICAL PERFORMANCE OF CURED MATERIAL****Adhesive properties**

Cured for 90 seconds @ 100°C

Push-off strength: N ≥25^{LMS}
C-1206 on bare FR4 board (lb) (≥5.6)

Cured for 5 minutes @ 100°C

Torque strength, IPC SM817, TM-650 method N.mm 50
2.4.42: (in.oz) (7)
C-1206 on bare FR4 boardPull-off strength, Siemens norm SN59651:: N 50
C-1206 on bare FR4 board (lb) (11)

Cured for 30 minutes @ 100°C

Lap shear strength, ISO 4587: N/mm² ≥14^{LMS}
Steel (grit blasted) (psi) (≥2,030)

Bond strength achieved in practice will vary considerably depending on the SMD component type, adhesive dot size and the type, grade and degree of cure of the solder mask/resist.

TYPICAL ENVIRONMENTAL RESISTANCE

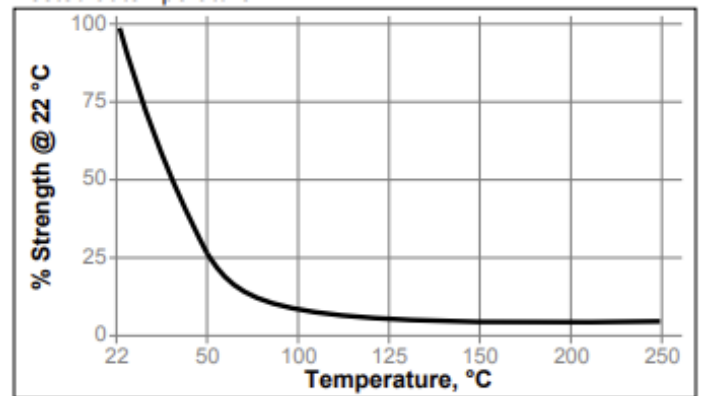
Cured for 30 minutes @ 100°C

Lap shear strength, ISO 4587:

Mild steel (grit blasted)

Hot strength

Tested at temperature

**Resistance to hot solder dip**

Cured for 90 seconds @ 150°C

Hot solder dip, IPC SM817, TM-650 method 2.4.42.1, Pass/Fail:

R-1206 on bare FR4 board

Supported 60 seconds above solder bath @ 260°C and dipped for 10 seconds Pass

GENERAL INFORMATION

For safe handling information on this product, consult the Safety Data Sheet (SDS).

Directions for use

1. LOCTITE® 3619 is supplied de-aerated in a range of ready-to-use syringes which fit straight into a variety of air pressure/time dispensing systems commonly available.
2. After storage in a refrigerator the adhesive must be allowed to equilibrate to room temperature before use, typically 2 to 4 hours.
3. Avoid cross contamination with other adhesive residues by ensuring dispense nozzles, adapters etc. are thoroughly cleaned.
4. Do not leave dirty nozzles on dispensing equipment while not in use or soaking in solvents for long periods of time.
5. The quantity of adhesive dispensed will depend on the dispense pressure, time, nozzle size and temperature.
6. These parameters will vary depending on the type of dispensing system used and should be optimised accordingly.
7. Dispensing temperature should ideally be controlled at a value between 30°C to 35°C for optimum results, however higher dispense temperatures are possible.
8. LOCTITE® 3619 can also be dispensed using positive displacement pump systems.
9. The product is not recommended for dispensing by pin transfer.
10. Uncured adhesive can be cleaned from the board with isopropanol, MEK or ester blends such as LOCTITE® 7360TM.

Loctite material specification^{LMS}

LMS dated August 31, 1999. 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: 2°C to 8°C. Storage below 2°C or greater than 8°C can adversely affect product properties.

Material removed from containers may be contaminated during use. Do not return product to the original container. Henkel 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

$(^{\circ}\text{C} \times 1.8) + 32 = ^{\circ}\text{F}$

$\text{kV/mm} \times 25.4 = \text{V/mil}$

$\text{mm} / 25.4 = \text{inches}$

$\mu\text{m} / 25.4 = \text{mil}$

$\text{N} \times 0.225 = \text{lb}$

$\text{N/mm} \times 5.71 = \text{lb/in}$

$\text{N/mm}^2 \times 145 = \text{psi}$

$\text{MPa} \times 145 = \text{psi}$

$\text{N}\cdot\text{m} \times 8.851 = \text{lb}\cdot\text{in}$

$\text{N}\cdot\text{m} \times 0.738 = \text{lb}\cdot\text{ft}$

$\text{N}\cdot\text{mm} \times 0.142 = \text{oz}\cdot\text{in}$

$\text{mPa}\cdot\text{s} = \text{cP}$

Disclaimer

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. Any liability in respect of the information in the Technical data sheet or any other written or oral recommendation(s) regarding the concerned product is excluded, except if otherwise explicitly agreed and except in relation to death or personal injury caused by our negligence and any liability under any applicable mandatory product liability law.

In case products are delivered by Henkel Belgium NV, Henkel Electronic Materials NV, Henkel Nederland BV, Henkel Technologies France SAS and Henkel France SA please additionally note the following:

In case Henkel would be nevertheless held liable, on whatever legal ground, Henkel's liability will in no event exceed the amount of the concerned delivery.

In case products are delivered by Henkel Colombiana, S.A.S. the following disclaimer is applicable:

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. 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. Any liability in respect of the information in the Technical Data Sheet or any other written or oral recommendation(s) regarding the concerned product is excluded, except if otherwise explicitly agreed and except in relation to death or personal injury caused by our negligence and any liability under any applicable mandatory product liability law.

In case products are delivered by Henkel Corporation, or Henkel Canada Corporation, the following disclaimer is applicable:

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.

Reference 1