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Technical Data Sheet

LOCTITE® 348™

August 2008

PRODUCT DESCRIPTION

LOCTITE® 348™ provides the following product characteristics:

Technology	Epoxy
Chemical Type	Epoxy
Appearance (uncured)	Red high viscosity gel[LMS]
Components	One component - requires no mixing
Fluorescence	Positive under UV light
Cure	Heat cure
Application	Surface mount adhesive
Key Substrates	SMD components to PCB
Other Application Areas	Small parts bonding
Dispense Method	Syringe
Dispense Speed	Medium 15,000 -25,000 dots/h
Wet Strength	High

LOCTITE® 348™ is designed for the bonding of surface mounted devices to printed circuit boards prior to wave soldering. Particularly suited for applications where medium to high dispense speeds, high dot profile, high wet strength and good electrical characteristics are required.

TYPICAL PROPERTIES OF UNCURED MATERIAL

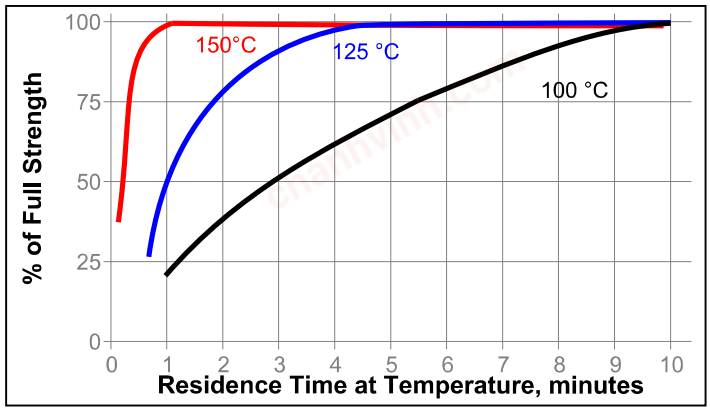
Specific Gravity @ 25 °C	1.2
Yield Point, 25 °C, Pa	300 to 700[LMS]
Cone & Plate Rheometer:	
Haake PK 100, M10/PK 1 2° Cone	
Casson Viscosity @ 25 °C, Pa·s	1 to 5
Cone & Plate Rheometer:	
Haake PK 100, M10/PK 1 2° Cone	
Flash Point - See MSDS	

TYPICAL CURING PERFORMANCE

Recommended conditions for curing are exposure to heat above 100 °C (typically 90-120 seconds @ 150 °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

5 minutes @ 125 °C, %	≥80[LMS]

TYPICAL PROPERTIES OF CURED MATERIAL

Cured for 30 minutes @ 150 °C

Physical Properties:

Coefficient of Thermal Expansion, ISO 11359-2, K^{-1}:	
Temperature Range 25 °C to 70 °C	50
Temperature Range 90 °C to 150 °C	160
Coefficient of Thermal Conductivity, ISO 8302, W/(m·K)	0.25
Specific Heat, kJ/(kg·K)	0.3
Density, BS 5350-B1 @ 25 °C, g/cm³	1.3

Electrical Properties:

Dielectric Constant / Dissipation Factor, IEC 60250:	
1 kHz	4.4 / 0.016
1,000 kHz	4.0 / 0.028
Volume Resistivity, IEC 60093, Ω·cm	2×10^{15}
Surface Resistivity, IEC 60093, Ω	60×10^{12}
Dielectric Breakdown Strength, IEC 60243-1, kV/mm	29.3

TYPICAL PERFORMANCE OF CURED MATERIAL

Adhesive Properties

Cured for 30 minutes @ 150 °C

Lap Shear Strength, ISO 4587:

Steel (grit blasted)	N/mm²	≥10[LMS]
	(psi)	(≥1,450)

Cured for 5 minutes @ 125 °C

Torque Strength, IPC SM817 , TM-650 Method 2.4.42:

C-1206 on bare FR4 board	N·m	30 to 70
	(lb.in.)	(4 to 10)

Cured for 3 minutes @ 150 °C

Push-off Strength:

C-1206 on bare FR4 board	N	≥36.6[LMS]
	(lb)	(8.2)

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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

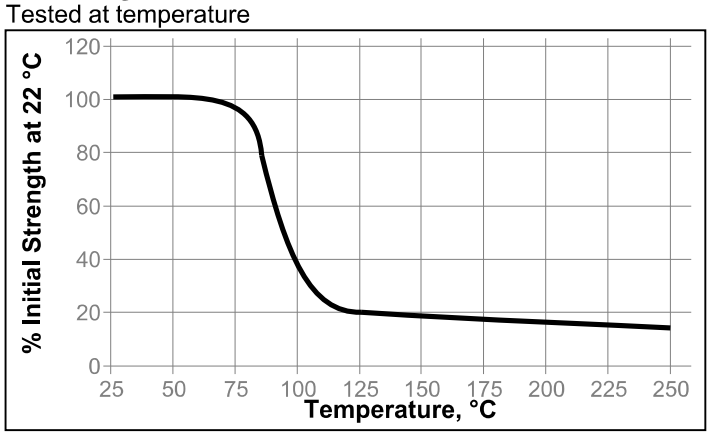
Cured for 30 minutes @ 150 °C

Lap Shear Strength, ISO 4587:

Mild steel (grit blasted)

Hot Strength

Tested at temperature



Chemical/Solvent Resistance

Aged under conditions indicated and tested @ 22 °C.

		% of initial strength		
Environment	**°C**	**100 h**	**500 h**	**1000 h**
Air	22	100	100	95
Air	150	85	70	70
98% RH	40	110	110	100

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

Resistance to Process Conditions

Cured for 90 seconds @ 150 °C

Torque Strength, IPC SM817 , TM-650 Method 2.4.42, % of initial strength retained:

C-1206 on bare FR4 board:

Aged 30 seconds preheat to 100°C and 3 seconds @ 260°C with flux and wave solder	100

GENERAL INFORMATION

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

Directions for use:

1. LOCTITE® 348™ 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 nozzels, 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® 348™ 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® 7360™.

Loctite Material Specification[LMS]

LMS dated August 14, 2006. 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 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

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Note

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Reference 1.1

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