LOCTITE®

315™

April 2008

PRODUCT DESCRIPTION

315™ provides the following product characteristics:

Technology	Acrylic
Chemical Type	Modified acrylic
Appearance (uncured)	Blue paste[LMS]
Components	One component - requires no mixing
Viscosity	High
Cure	Activator
Application	Bonding

315™ is a self-shimming thermally conductive, one part adhesive for bonding electrical components to heat sinks with an insulating gap. The high thermal conductivity provides excellent heat dissipation for thermally sensitive components, while the controlled strength permits field and service repair. The self-shimming property produces a consistent 5-6 mil gap between the component and the heat sink. This gap results in electrical insulation while maintaining thermal conductivity. Typical applications include bonding transformers, transistors and other heat generating electronic components to printed circuit board assemblies or heat sinks. In high pot applications this product should be limited to a maximum of 500 volts. Activator 7387™ is required for proper curing of Loctite® Output™ adhesives.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Specific Gravity @ 25 °C	1.66
Flash Point - See MSDS	
Viscosity, Brookfield - HBT, 25 °C, mPa·s (cP):	
Spindle TF, speed 20 rpm, Helipath	360,000 to 850,000[LMS]

TYPICAL PROPERTIES OF CURED MATERIAL

Physical Properties:

Coefficient of Thermal Expansion, ISO 11359-2, K^{-1}		69×10^{-6}
Coefficient of Thermal Conductivity, ISO 8302, W/(m·K)		0.808
Elongation, at break, ISO 527-3, %		1
Tensile Strength, at break, ISO 527-3	N/mm²	15.0
	(psi)	(2,180)
Young's Modulus	N/mm²	2,690
	(psi)	(390,000)

Electrical Properties:

Volume Resistivity, IEC 60093, Ω·cm	1.3×10^{12}
Surface Resistivity, IEC 60093, Ω	1.2×10^{13}
Dielectric Breakdown Strength, IEC 60243-1, kV/mm	26.7
Dielectric Constant / Dissipation Factor, IEC 60250:	
100 Hz	6.17 / 0.09
1 kHz	5.62 / 0.04
1 MHz	4.99 / 0.03

TYPICAL PERFORMANCE OF CURED MATERIAL

Adhesive Properties

Cured for 1 hour @ 22 °C, Activator 7387™ on 1 side

Lap Shear Strength, ISO 4587, N/mm² :

Steel	N/mm²	≥3.4[LMS]
	(psi)	(≥493)

Cured for 24 hours @ 22 °C, Activator 7387™ on 1 side

Lap Shear Strength, ISO 4587, N/mm² :

Steel	N/mm²	≥5.5[LMS]
	(psi)	(≥797)

Cured for 72 hours @ 22 °C, Activator 7387™ on 1 side

Lap Shear Strength, ISO 4587:

Steel	N/mm²	6.9
	(psi)	(1,000)
Aluminum	N/mm²	5.5
	(psi)	(800)
Aluminum to Epoxyglass	N/mm²	4.1
	(psi)	(600)

Impact Strength, ISO 9653:

Steel	N·m	6.8
	(lb·ft)	(5)

TYPICAL ENVIRONMENTAL RESISTANCE

Cured for 72 hours @ 22 °C, Activator 7387™ on 1 side

Lap Shear Strength, ISO 4587:

Steel

Chemical/Solvent Resistance

Aged under conditions indicated and tested @ 22 °C.

		% of initial strength
Environment	**°C**	**720 h**
Air	87	140
Water	87	75
Freon TF	87	85

Thermal Cycle Resistance

Bonded aluminum to epoxyglass lapshears cured 72 hours @ 22 °C using Activator 7387™ on 1 side were subjected to thermal cycling of 15 °C to 100 °C with a ramp time of 30 minutes. No loss in strength occurred after 1000 hours of cycle time.

GENERAL INFORMATION

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

Directions for use:

1. For best performance bond surfaces should be clean and free from grease.
2. Use applicator to apply the activator to the surface to be bonded.
3. After the solvent evaporates, the active ingredients will appear wet, and will remain active for up to 2 hours after application. Contamination of the surface before bonding should be prevented.
4. Apply adhesive to the unactivated surface.
5. Secure the assembly, and wait for the adhesive to fixture (approximately 5 minutes) before any further handling. Full cure occurs in 4 - 24 hours.
6. The amount of adhesive applied to the part or heat sink should be limited to the amount necessary to fill the bond and just enough to give a small fillet.
7. The dispensing or application of the adhesive should be done as to minimize air entrapment within the bondline.
8. The successful application of this product depends on accurate dispensing on the parts to be bonded. Loctite Equipment Engineers are available to assist you in selecting and implementing the appropriate dispensing equipment for your application.

Loctite Material Specification[LMS]

LMS dated December 10, 2001. 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

Note

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Trademark usage

Reference 1.1