LOCTITE

Technical Data Sheet

LOCTITE 3327

January 2014

PRODUCT DESCRIPTION

LOCTITE 3327 provides the following product characteristics:

Technology	Epoxy
Appearance (uncured)	Grey paste
Appearance (cured)	Translucent grey
Viscosity	Low
Components	One component - requires no mixing
Cure	Ultraviolet (UV) light
Application	Encapsulant - fill
Specific Application	Wire bonded dies used for Smartcard ICs
Specific Benefit	Low coefficient of thermal expansion. High adhesion to a wide range of substrates normally used as carrier plastics, e.g., glass epoxy, polyimide and polyester.

LOCTITE 3327 has been developed for encapsulation of wire bonded dies, used for Smartcard IC modules. It is designed for use only with Hysol® UV dam encapsulants, such as Hysol® 3323™. This combination of dam and fill will pass mechanical stress testing and high reliability tests; typically thermal shock cycling -55 °C to +125 °C and humidity heat aging 85 °C / 85 % RH.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Specific Gravity @ 25 °C	1.4
Viscosity, Cone & Plate, mPa·s (cP):	
Temperature: 25 °C, Shear Rate: 20 s^{-1}	6,500 to 9,500
Temperature: 40 °C, Shear Rate: 20 s^{-1}	2,500 to 4,500
Filler Content, %	40
Filler Particle Size, ISO 13220-1, D95, µm	≤32
Flash Point - See SDS	

TYPICAL CURING PERFORMANCE

LOCTITE 3327 is cured when exposed to UV-A radiation of wavelength of 310 to 365 nm. The speed and depth of cure will depend on the UV intensity measured at the product surface. Typical cure condition is 26 to 46 seconds at 100 mW/cm² using a medium pressure, quartz envelope, mercury vapour UV lamp (e.g. UVALOC 1000). Allow longer time when surfaces are black or dark coloured. LOCTITE 3327 has been formulated to minimize shrinkage for minimum tape warpage and water uptake.

Tack Free Time

Tack Free Time is the time in seconds the product must be irradiated with light energy to form a tack free surface.

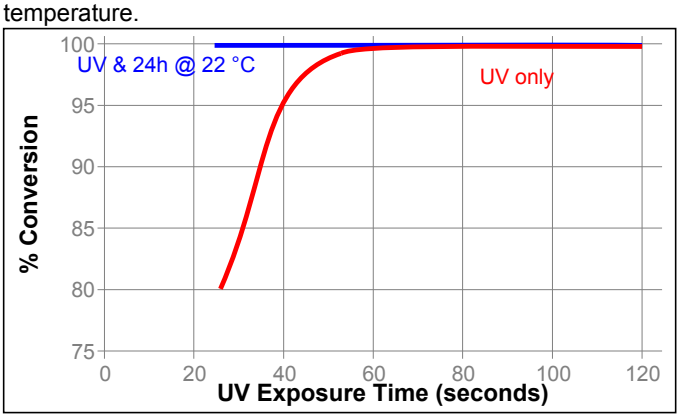
Tack Free Time, seconds	
100 mW/cm² , measured @ 365 nm,	≤7

Depth of Cure

UV Depth of Cure, mm	
30 seconds @ 100 mW/cm² , measured @ 365 nm	≥1.1

Cure by Photo DSC

The following graph shows the percentage conversion by Photo DSC of LOCTITE 3327 at 100 mW/cm² , 50 °C tape temperature.



TYPICAL PROPERTIES OF CURED MATERIAL

Cured @ 100 mW/cm² measured @ 365 nm, for 30 seconds using a medium pressure, quartz envelope, mercury vapour lamp

Physical Properties:

Coefficient of Thermal Expansion ISO 11359-2, K^{-1}:	
alpha 1	45×10^{-6}
alpha 2	130×10^{-6}
Glass Transition Temperature, ISO 6721-1, °C	110
Shore Hardness, ISO 868, Durometer D	45
Extractable Ionic Content, MIL-STD-883 Method 5011, µg/g:	
Fluoride	<400
Chloride	<10
Sodium	<10
Tensile Modulus, ISO 6721-5, DMTA , GPa:	
@ 25 °C	1.0
@ 125 °C	0.2
Water Absorption, ASTM D 570 , %:	
24 hours in deionized water @ 25 °C	1.9

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GENERAL INFORMATION

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

Directions for use

1. Remove product from refrigeration and allow to reach ambient temperature before use.
2. It is recommended to roll/tumble container for at least 8 hours at 0.5 rpm to homogenize the product.
3. This product is UV sensitive. Exposure to daylight, UV light and artificial lighting should be kept to a minimum during storage and handling. Product should be dispensed by applicator equipment suitable for use with UV products. All product reservoirs and feed lines should be impermeable to UV light.
4. For best performance bond surfaces should be clean and free from grease.
5. UV cure rate is dependent on lamp intensity, distance from light source, depth of cure needed or bondline gap and light transmission of the substrate through which the radiation must pass. If filters are in place to block light and heat then this should be considered in the determination of cure times.
6. Detailed process settings for dispensing and UV cure process are available on request from our technical service centers.

Not for product specifications

The technical data contained herein are intended as reference only. Please contact your local quality department for assistance and recommendations on specifications for this product.

Storage

The product is light sensitive and accordingly, translucent containers should be kept in a dark place when not in use. Store product in the unopened container in a dry location. Storage information may also be indicated on the product container labelling.
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 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
N x 0.225 = lb
N/mm x 5.71 = lb/in
N/mm² x 145 = psi
MPa = N/mm²
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

Disclaimer

Note:
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.
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Reference 1.3