

# LOCTITE ECCOBOND UF 3513HF

June 2017

## PRODUCT DESCRIPTION

LOCTITE ECCOBOND UF 3513HF provides the following product characteristics:

<b>Technology</b>	Epoxy
<b>Appearance</b>	Translucent, pale yellow liquid
<b>Product Benefits</b>	<ul style="list-style-type: none"> <li>• Halogen-free</li> <li>• One component for easy processing</li> <li>• Fast cure at moderate temperatures</li> <li>• Good adhesion to a variety of substrates</li> <li>• Stable electrical performance in temperature humidity bias</li> </ul>
<b>Cure</b>	Heat cure
<b>Application</b>	Underfill, Encapsulant
<b>Typical Package Application</b>	CSP/BGA Connector

LOCTITE ECCOBOND UF 3513HF epoxy underfill encapsulant is designed for CSP and BGA applications. It cures quickly at moderate temperatures to minimize stress to other components. When cured, this material provides excellent mechanical and moisture resistant properties for protection of electronic components.

## TYPICAL PROPERTIES OF UNCURED MATERIAL

Viscosity, Brookfield CP51, 25 °C, mPa·s (cP):	
Speed 20 rpm	3,300
Pot Life @ 25°C, days	3
Shelf Life @ 2 to 8°C (from date of shipment) (estimated), days	180
Flash Point - See SDS	

## TYPICAL CURING PERFORMANCE

### Cure Schedule

30 minutes @ 80°C or
20 minutes @ 100°C or
10 minutes @ 120°C

The above cure profile is a guideline recommendation. Cure conditions (time and temperature) may vary based on customers' experience and their application requirements, as well as customer curing equipment, oven loading and actual oven temperatures.

## TYPICAL PROPERTIES OF CURED MATERIAL

### Physical Properties

Glass Transition Temperature (T <sub>g</sub> ) by TMA, °C	75.2
Coefficient of Thermal Expansion, TMA, ppm/°C:	
Below T <sub>g</sub>	60.4
Above T <sub>g</sub>	197.7

### Electrical Properties

Surface Insulation Resistance	Pass
65°C/% RH, IPC B24 format	

## TYPICAL PERFORMANCE OF CURED MATERIAL

### Shear Strength :

Lap Shear Strength :	
Grit blasted steel (TS101) on solder mask:	
Shear speed 2 mm/min	N/mm <sup>2</sup> 21.5 (psi) (3,118)

## GENERAL INFORMATION

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

### THAWING:

1. Allow container to reach room temperature before use.
2. After removing from the freezer, set the syringes to stand vertically while thawing.
3. DO NOT open the container before contents reach 25°C temperature. Any moisture that collects on the thawed container should be removed prior to opening the container.
4. DO NOT re-freeze. Once thawed to 25°C, the adhesive should not be re-frozen.

### DIRECTIONS FOR USE

1. Thawed adhesive should immediately be placed on dispense equipment for use.
2. If the adhesive is transferred to a final dispensing reservoir, care must be exercised to avoid entrapment of contaminants and/or air into the adhesive.
3. Adhesive must be completely used within the product's recommended pot life.

### 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:**

Store product in the unopened container in a dry location. Storage information may be indicated on the product container labeling.

**Optimal Storage : 2 to 8 °C**

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**

$(^{\circ}\text{C} \times 1.8) + 32 = ^{\circ}\text{F}$   
 $\text{kV/mm} \times 25.4 = \text{V/mil}$   
 $\text{mm} / 25.4 = \text{inches}$   
 $\text{N} \times 0.225 = \text{lb}$   
 $\text{N/mm} \times 5.71 = \text{lb/in}$   
 $\text{psi} \times 145 = \text{N/mm}^2$   
 $\text{MPa} = \text{N/mm}^2$   
 $\text{N}\cdot\text{m} \times 8.851 = \text{lb}\cdot\text{in}$   
 $\text{N}\cdot\text{m} \times 0.738 = \text{lb}\cdot\text{ft}$   
 $\text{N}\cdot\text{mm} \times 0.142 = \text{oz}\cdot\text{in}$   
 $\text{mPa}\cdot\text{s} = \text{cP}$

**Disclaimer****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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