

# LOCTITE<sup>®</sup> ECCOBOND UF 9000AG-061

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## PRODUCT DESCRIPTION

LOCTITE<sup>®</sup> ECCOBOND UF 9000AG-061 provides the following product characteristics:

<b>Technology</b>	Epoxy
<b>Appearance</b>	Black liquid
<b>Cure</b>	Heat cure
<b>Product Benefits</b>	<ul style="list-style-type: none"> <li>• One component for easy processing</li> <li>• Fast flow</li> <li>• Low CTE</li> <li>• Good workability</li> <li>• Low resin bleed out (RBO) performance</li> <li>• 260°C reflow capability for Pb-free, low-k applications</li> </ul>
<b>Application</b>	Underfill, Semiconductor Encapsulant, Semiconductor Packaging
<b>Typical Package Application(s)</b>	Flip chip

LOCTITE<sup>®</sup> ECCOBOND UF 9000AG-061 liquid epoxy underfill encapsulant is designed for FCBGA and Cu pillar applications requiring low CTE, fast capillary flow and long worklife. When cured, this material forms a rigid, self-filleting protective seal that dissipates stress in solder joints for extended electrical, thermal and moisture reliability performance.

## TYPICAL PROPERTIES OF UNCURED MATERIAL

Specific Gravity, gm/cc	1.74
Viscosity, Brookfield CP51, 25 °C, mPa·s (cP):	
Spindle 51, speed 5 rpm	11,930
Work Life @ 25°C, hours	24
Shelf Life @ -40°C, days	365

## TYPICAL CURING PERFORMANCE

### Cure Schedule

15 minute ramp to 100°C; 90 minute hold @ 100 °C + 15 minute ramp from 100°C to 165°C; 2 hour hold @ 165°C

### Alternate Cure Schedule

30 minute ramp to 90°C; 4 hour hold @ 90°C + 30 minute ramp from 90°C to 150°C; 2 hour hold @ 150°C

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

## TYPICAL PROPERTIES OF CURED MATERIAL

### Physical Properties

Coefficient of Thermal Expansion, TMA, ppm/°C:

Below Tg	19
Above Tg	62

Glass Transition Temperature, °C:

Tg by TMA	135
Tg by DMA	160

Storage Modulus, DMA:

@ 25°C	GPa	15
	(N/mm <sup>2</sup> )	(15,000)
	(psi)	(2.18×10 <sup>6</sup> )
@ 250°C	GPa	0.4
	(N/mm <sup>2</sup> )	(400)
	(psi)	(58,000)

## 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. Complete cleaning of the substrates should be performed to remove contamination such as oxide layers, dust, moisture, salt and oils which can cause poor adhesion or corrosion in a bonded part.
2. Some filler settling is common during shipping and storage. For this reason, it is recommended that the contents of the shipping container be thoroughly mixed prior to use.
3. Apply adhesive to all surfaces to be bonded and join



together.

4. In most applications only contact pressure is required.
5. Usable shelf life may vary depending on method of application and storage conditions.

### STORAGE

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

**Optimal Storage: -40°C. Storage below -40°C or above -40°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 Henkel Representative.

### Conversions

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

### Not for product specifications

The technical data contained herein are intended as reference only. Please contact your local Henkel representative for assistance and recommendations on the specifications of this product.

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