

LOCTITE ECCOBOND 3185

December 2014

PRODUCT DESCRIPTION

LOCTITE ECCOBOND 3185 provides the following product characteristics:

Technology	Silicone
Appearance	Silver
Cure	Heat cure
Product Benefits	<ul style="list-style-type: none"> Thermally conductive Electrically conductive Low modulus
Application	Die attach
Filler Type	Silver
Typical Applications	Bonding ICs to integrated heat spreaders in laminate BGA applications

LOCTITE ECCOBOND 3185 adhesive is designed for thermally enhanced flip chip BGA applications. This material is sensitive to amines, phosphines, acids and sulfur containing materials. This material needs to be isolated from uncured epoxy-based resins as interaction will inhibit curing. Interaction will inhibit curing.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Thixotropic Index (0.5/5 rpm)	4
Viscosity, Brookfield CP51, 25 °C, mPa·s (cP):	
Speed 5 rpm	42,000
Work Life @ 25°C, hours	10
Shelf Life @ -40°C (from date of manufacture), days	180
Flash Point - See SDS	

TYPICAL CURING PERFORMANCE

Recommended Cure Schedule

60 minutes @ 175°C

Alternate Cure Schedule

60 minutes @ 100°C plus 60 minutes @ 175°C

Ramp cure/step cure have shown to reduce voiding in the bondline. Due to varying package designs for BGA, different dwell time at initial step temperature may be necessary to achieve minimal voiding.

The above cure profiles are guideline recommendations. 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

Thermal Conductivity, W/(m·K)	3.9
Coefficient of Thermal Expansion :	
Below T _g , ppm/°C	55
Above T _g , ppm/°C	135
Glass Transition Temperature (T _g) by TMA, °C:	
TMA penetration mode	37
TMA expansion mode	-13

Tensile Modulus, DMTA :

@ -65 °C	N/mm ² 6,000 (psi) (870,000)
@ 25 °C	N/mm ² 290 (psi) (42,000)
@ 150 °C	N/mm ² 50 (psi) (7,000)
@ 250 °C	N/mm ² 140 (psi) (20,000)

Extractable Ionic Content, Teflon flask, 5 gm sample/20-40 mesh, 50 gm DI water, 100°C for 24 hours ppm:

Chloride (Cl ⁻)	≤10
Sodium (Na ⁺)	≤50
Potassium (K ⁺)	≤5

Electrical Properties

Volume Resistivity, ohms-cm	0.001
Bond Joint Resistance, ohms	0.0006

TYPICAL PERFORMANCE OF CURED MATERIAL

Miscellaneous

Die Shear Strength @ 25°C:

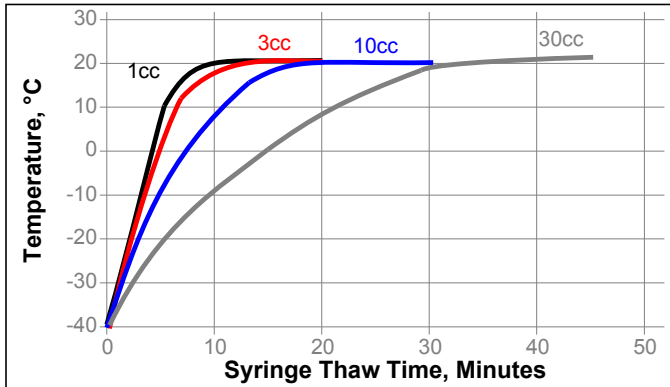
3 x 3 mm Si die on Ni/Cu leadframe, kg-f/die 7.0

GENERAL INFORMATION

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

THAWING:

- Allow container to reach room temperature before use.
- After removing from the freezer, set the syringes to stand vertically while thawing.
- Refer to the Syringe Thaw time chart for the thaw time recommendation.
- 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.
- DO NOT re-freeze. Once thawed to -40°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 work life.
4. Silver-resin separation may occur if the adhesive is left out at room temperature, beyond the recommended work 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: -40 °C. Storage below minus (-)40 °C or greater than minus (-)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 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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