

LOCTITE ECCOBOND 3185

January 2023

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 | 183 |
| 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 specific 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 Tg, ppm/°C | 55 |
| Above Tg, ppm/°C | 135 |

Glass Transition Temperature (Tg) 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:

| | |
|-----------------------------|-----|
| 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

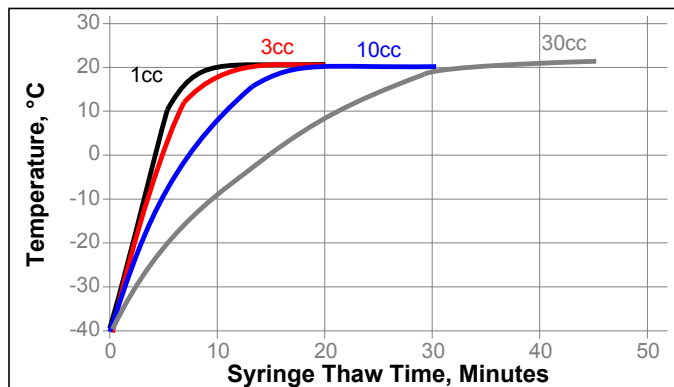
| | |
|--|-----|
| Die Shear Strength @ 25°C: | |
| 3 x 3 mm Si die on Ni/Cu leadframe, kg-f/die | 7.0 |

GENERAL INFORMATION

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

Thawing

1. Allow container to reach room temperature before use.
2. After removing from the freezer, set the syringes to stand vertically while thawing.
3. Refer to the Syringe Thaw time chart for the thaw time recommendation.
4. 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.
5. DO NOT re-freeze. Once thawed to -40°C, the adhesive should not be re-frozen.



DIRECTIONS FOR USE

1. Thawed material 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 Henkel representative for assistance and recommendations on the specifications of 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 Henkel Representative.

Conversions

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

Disclaimer

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Reference 2