

## LOCTITE ABLESTIK 8361J

October 2014

**PRODUCT DESCRIPTION**

LOCTITE ABLESTIK 8361J provides the following product characteristics:

|                         |   |
|-------------------------|---|
| <b>Technology</b>       | Epoxy   |
| <b>Appearance</b>       | Silver  |
| <b>Cure</b>             | Heat cure   |
| <b>Product Benefits</b> | <ul style="list-style-type: none"> <li>Electrically conductive</li> <li>High purity</li> <li>Minimal resin bleed</li> <li>Low condensable volatiles</li> <li>Excellent dispensability, minimal tailing and stringing</li> <li>Box oven cure</li> <li>Minimal voiding</li> <li>Excellent strength retention after temperature/humidity exposures</li> <li>Moderately stress absorbing</li> </ul> |
| <b>Application</b>      | Die attach  |
| <b>Filler Type</b>      | Silver  |
| <b>pH</b>               | 7.3   |

LOCTITE ABLESTIK 8361J die attach adhesive is designed for high reliability packaging applications.

**TYPICAL PROPERTIES OF UNCURED MATERIAL**

|   |       |
|---|-------|
| Thixotropic Index (0.5/5 rpm)                       | ≥4.5  |
| Viscosity, Brookfield CP51, 25 °C, mPa·s (cP):      |       |
| Speed 5 rpm   | 9,000 |
| Work Life @ 25°C, hours                             | 24    |
| Shelf Life @ -40°C (from date of manufacture), days | 365   |

**TYPICAL CURING PERFORMANCE****Cure Schedule**

1 hour @ 175°C

**Alternate Cure Schedule**

30 minute ramp to 115°C + 30 minutes @ 175°C

**Weight Loss on Cure**

10 x 10 mm Si die on glass slide, % 1.7

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**

Coefficient of Thermal Expansion :

|                  |     |
|------------------|-----|
| Below Tg, ppm/°C | 85  |
| Above Tg, ppm/°C | 200 |

Glass Transition Temperature (Tg) by TMA, °C 40

**Tensile Modulus, DMTA :**

|          |  |
|----------|--|
| @ -65 °C | N/mm <sup>2</sup> 5,400<br>(psi) (780,000) |
| @ 25 °C  | N/mm <sup>2</sup> 2,900<br>(psi) (420,000) |
| @ 150 °C | N/mm <sup>2</sup> 120<br>(psi) (18,000)    |
| @ 250 °C | N/mm <sup>2</sup> 51<br>(psi) (8,000)      |

**Extractable Ionic Content, ppm:**

|  |     |
|--|-----|
| Chloride (Cl-)   | <15 |
| Sodium (Na+)   | <10 |
| Potassium (K+)   | <5  |
| Water Extract Conductivity, $\mu$ hos/cm                 | 99  |
| Weight Loss @ 300°C, %                                   | 0.3 |
| Moisture Absorption @ Saturation, wt.% @ 0.65 85°C/85%RH |     |

**Electrical Properties**

|                              |        |
|------------------------------|--------|
| Bond Joint Resistance, ohms: |        |
| 0.5 x 0.5 in                 | ≤0.001 |

**TYPICAL PERFORMANCE OF CURED MATERIAL****Miscellaneous**

Die Shear Strength:

|                        |              |
|------------------------|--------------|
| 2 X 2 mm Si die, kg-f, | <b>@25°C</b> |
| Ag/Cu leadframe        | 11.6         |

## 3 X 3 mm Si die, kg-f,

| Substrate   | <b>@25°C</b> | <b>@200°C</b> | <b>@250°C</b> |
|-------------|--------------|---------------|---------------|
| Ag/Cu LF    | 31           | 2.6           | 2.2           |
| Bare Cu LF  | 29           | 3.7           | 3.6           |
| Pd/Ni/Cu LF | 31           | 2.1           | 1.6           |

## 3 X 3 mm Si die, kg-f,

After 85°C/85% RH exposure for 68 hours

| Substrate   | <b>@25°C</b> | <b>@200°C</b> |
|-------------|--------------|---------------|
| Ag/Cu LF    | 25           | 1.7           |
| Bare Cu LF  | 24           | 2.5           |
| Pd/Ni/Cu LF | 27           | 1.7           |

## Chip Warpage vs Chip Size:

0.38 mm thick Si die on 0.2 mm thick Ag/Cu LF @ 25°C,  $\mu$ m

| Chip Size:    | <b>Warpage:</b> |
|---------------|-----------------|
| 7.6 x 7.6mm   | 8               |
| 10.2 x 10.2mm | 18              |
| 12.7 x 12.7mm | 33              |



**Chip Warpage vs Post Cure Thermal Process:**

12.7 x 12.7 x 0.38 mm Si die on 0.2 mm thick Ag/Cu leadframe  
@ 25°C,  $\mu\text{m}$

| Post Cure | + Wirebond<br>(1 min @ 250°C) | + Post Mold Bake<br>(4 hrs @ 175°C) |
|-----------|-------------------------------|-------------------------------------|
| 32        | 36                            | 38                                  |

12.7 x 12.7 x 0.38 mm Si die on 0.2 mm thick Bare Cu leadframe @ 25°C,  $\mu\text{m}$

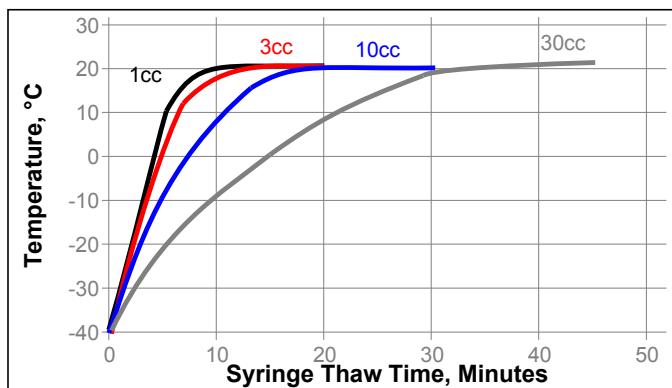
| Post Cure | + Wirebond<br>(1 min @ 250°C) | +Post Mold Bake<br>(4 hrs @ 175°C) |
|-----------|-------------------------------|------------------------------------|
| 34        | 36                            | 39                                 |

**GENERAL INFORMATION**

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

**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 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 products recommended work life.
4. Silver-resin separation may occur if the adhesive is left out at 25 °C beyond the recommended work life.
5. Apply enough adhesive to achieve a 25 to 50  $\mu\text{m}$  wet bondline thickness, dispensed with approximately 25 to 50 % filleting on all sides of the die.
6. Star or crossed shaped dispense patterns will yield fewer bondline voids than the matrix style of dispense pattern.

**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**

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

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Reference 0.3