

# LOCTITE ABLESTIK 8900NC

April 2014

## PRODUCT DESCRIPTION

LOCTITE ABLESTIK 8900NC provides the following product characteristics:

|                         |   |
|-------------------------|---|
| <b>Technology</b>       | Epoxy   |
| <b>Appearance</b>       | Yellow  |
| <b>Filler Type</b>      | PTFE  |
| <b>Cure</b>             | Heat cure   |
| <b>Product Benefits</b> | <ul style="list-style-type: none"> <li>• Fast cure</li> <li>• Snap curable</li> <li>• High strength</li> <li>• Non-conductive</li> <li>• Low resin bleed</li> <li>• Low voiding during cure</li> <li>• Moderately stress absorbing</li> <li>• Use for small to medium package sizes</li> <li>• Excellent dispensability, minimal tailing and stringing</li> </ul> |
| <b>Application</b>      | Die attach  |
| <b>Key Substrates</b>   | Bare Copper, Ag plated Cu leadframes and Pd plated Cu leadframes  |

LOCTITE ABLESTIK 8900NC die attach adhesive has been formulated for use in high throughput die attach applications. Actual performance will depend on die size, aspect ratio and package design.

## TYPICAL PROPERTIES OF UNCURED MATERIAL

|  |        |
|--|--------|
| Thixotropic Index (0.5/5 rpm)                  | 5.9    |
| Viscosity, Brookfield CP51, 25 °C, mPa·s (cP): |        |
| Speed 5 rpm                                    | 10,000 |
| Work Life @ 25°C, hours                        | 24     |
| Shelf Life @ -40°C, year                       | 1      |
| Flash Point - See SDS                          |        |

## TYPICAL CURING PERFORMANCE

### Weight Loss on Cure

|                        |     |
|------------------------|-----|
| Weight Loss on Cure, % | 2.1 |
|------------------------|-----|

### Recommended Cure Schedule

30 minute ramp to 175°C + 15 minutes @ 175°C

### Snap Cure Schedule

| Zone No. | 1   | 2   | 3   | 4   | 5   | 6   | 7   | Time    |
|----------|-----|-----|-----|-----|-----|-----|-----|---------|
| Temp °C  | 160 | 185 | 200 | 200 | 220 | 220 | 220 | 1-2 min |

**Note:** N2 flow: 15 liters/minute  
N2 PreHeat Temp: 150°C

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 , TMA:               |  |
| Below Tg, ppm/°C                                      | 65   |
| Above Tg, ppm/°C                                      | 162  |
| Glass Transition Temperature (Tg) by TMA, °C          | 19   |
| Thermal Conductivity , W/(m-K)                        | 0.3  |
| Tensile Modulus, DMTA :                               |  |
| @ 25 °C   | N/mm <sup>2</sup> 1,310<br>(psi) (190,000) |
| @ 150 °C  | N/mm <sup>2</sup> 117<br>(psi) (17,000)    |
| @ 250 °C  | N/mm <sup>2</sup> 62<br>(psi) (9,000)      |
| Extractable Ionic Content, @ 100°C for 24 hours, ppm: |  |
| Chloride (Cl-)  | ≤20  |
| Sodium (Na+)  | ≤10  |
| Potassium (K+)  | ≤10  |
| Water Extract Conductivity, μmhos/cm                  | 105  |
| Weight Loss @ 300°C, %                                | 1.58                                       |

### Electrical Properties

|                            |                      |
|----------------------------|----------------------|
| Volume Resistivity, ohm-cm | 2.3×10 <sup>13</sup> |
|----------------------------|----------------------|

## TYPICAL PERFORMANCE OF CURED MATERIAL

Die Shear Strength:

2 X 2 mm Si die, kg-f,

| Substrate          | @25°C |
|--------------------|-------|
| Ag/Cu leadframe    | 13.0  |
| Cu leadframe       | 12.5  |
| Alloy 42 leadframe | 13.8  |
| Ni/Pd leadframe    | 13.0  |
| Au/Flash leadframe | 12.1  |

7.5 X 7.5 mm Si die, kg-f,

@ 250°C

| Substrate   | Post Cure | Post Mold | 24 hrs @ 85%/85% RH |
|-------------|-----------|-----------|---------------------|
| Ag/Cu LF    | 8.1       | 10.9      | 3.2                 |
| Cu LF       | 4.2       | 3.3       | 4.0                 |
| Alloy 42 LF | 12.0      | 11.2      | 5.1                 |
| Ni/Pd LF    | 3.4       | 9.4       | 2.8                 |

12.5 X 12.5 mm Si die, kg-f,  
@ 250°C

| Substrate   | Post Cure | Post Mold | 24 hrs @<br>85%/85% RH |
|-------------|-----------|-----------|------------------------|
| Ag/Cu LF    | 20.4      | 14.8      | 11.3                   |
| Cu LF       | 30.6      | 17.5      | 11.3                   |
| Alloy 42 LF | 29.1      | 30.0      | 13.8                   |
| Ni/Pd LF    | 3.8       | 14.4      | 2.7                    |

Die Shear Strength vs Temperature:

3 X 3 mm Si die, kg-f,

| Substrate   | @ RT | @200°C | @250°C |
|-------------|------|--------|--------|
| Ag/Cu LF    | 24.1 | 2.9    | 2.5    |
| Cu LF       | 22.2 | 2.7    | 1.4    |
| Alloy 42 LF | 25   | 2.4    | 1.4    |
| Ni/Pd LF    | 22.3 | 1.9    | 1.5    |
| Au/Flash LF | 21.8 | 1.7    | 1.0    |

Chip Warpage :

7.5 X 7.5 mm Si die, µm

| Substrate | Post Cure | Post Mold Bake<br>(4 hrs @ 175°C) |
|-----------|-----------|-----------------------------------|
| Ag/Cu LF  | 9.6       | 10.1                              |
| Cu LF     | 10.9      | 10.6                              |
| Alloy 42  | 3.5       | 1.3                               |
| Ni/Pd LF  | 10.5      | 9.9                               |

12.5 X 12.5 mm Si die, µm

| Substrate   | Post Cure | Post Mold |
|-------------|-----------|-----------|
| Ag/Cu LF    | 46.7      | 47.6      |
| Cu LF       | 45.4      | 46.8      |
| Alloy 42 LF | 5.4       | 3.8       |
| Ni/Pd LF    | 45.9      | 47.4      |

## 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. 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 products recommended work life.
4. Silver-resin separation may occur if the adhesive is left out at room temperature, beyond the recommended work life.

5. Apply enough adhesive to achieve a 25 to 50 µm wet bondline thickness, dispensed with approximately 25 to 50 % filleting on all sides of the die.
6. Alternate dispense amounts may be used depending on the application requirements.
7. 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

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

### 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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