

# LOCTITE ABLESTIK 965-1L

October 2014

## PRODUCT DESCRIPTION

LOCTITE ABLESTIK 965-1L 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>Stress absorbing</li> <li>Low levels of contaminants</li> <li>Void-free bondline with minimal bleed</li> </ul>
<b>Application</b>	Die attach
<b>pH</b>	5.5
<b>Filler Type</b>	Silver

LOCTITE ABLESTIK 965-1L is designed for bonding large die integrated circuits with mismatched coefficients of thermal expansion. It is designed for high speed, automated assembly operations.

## TYPICAL PROPERTIES OF UNCURED MATERIAL

Viscosity, Brookfield CP51, 25 °C, mPa·s (cP):

Speed 5 rpm	12,000
Thixotropic Index (0.5/5 rpm)	4.5
Work Life @ 25°C, hours	24
Shelf Life @ -40°C, days	365
Flash Point - See SDS	

## TYPICAL CURING PERFORMANCE

### Recommended Curing Conditions

1 hour @ 150°C

### Weight Loss on Cure

Weight Loss on Cure, % 4.2

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 expansion:

Below Tg	50
Above Tg	190

Glass Transition Temperature, TMA penetration, °C 72

Extractable Ionic Content, ppm:

Chloride (Cl-)	≤15
Sodium (Na+)	≤10
Potassium (K+)	≤5

Tensile Modulus, DMTA :

@ -65 °C	N/mm <sup>2</sup> 5,800 (psi) (840,000)
@ 25 °C	N/mm <sup>2</sup> 4,800 (psi) (700,000)
@ 150 °C	N/mm <sup>2</sup> 290 (psi) (42,000)
@ 250 °C	N/mm <sup>2</sup> 300 (psi) (44,000)

Water Extract Conductivity, μmhos-cm 7

Thermal Conductivity, W/(m-K) 3.0

## Electrical Properties

Volume Resistivity, ohms-cm ≤0.0005

## TYPICAL PERFORMANCE OF CURED MATERIAL

### Shear Strength

Die Shear Strength:

2 X 2 mm (80 x 80 mil) Si die on Ag/Cu LF, kg-f/die:

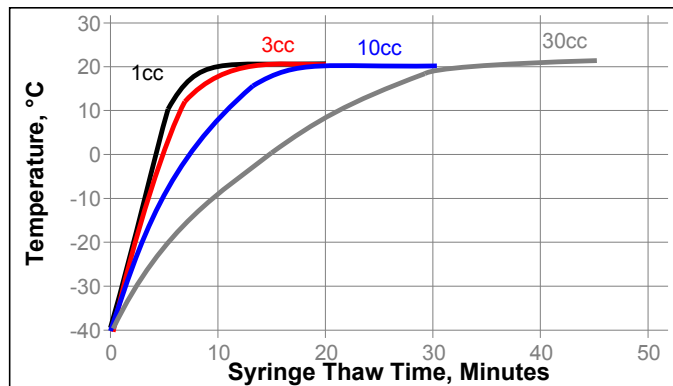
@ 25°C	10
@ 250°C	0.6
Lap Shear Strength	N/mm <sup>2</sup> 10 (psi) (≥1,400)

## GENERAL INFORMATION

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

### THAWING:

- Allow container to reach room temperature before use.
- After removing from the freezer, set the syringes to stand vertically while thawing.
- 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 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 product's recommended work life.
4. 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.
5. Alternate dispense amounts may be used depending on the application requirements.
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**

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

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Reference 0.1