

# LOCTITE ABLESTIK 71-1

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## PRODUCT DESCRIPTION

LOCTITE ABLESTIK 71-1 provides the following product characteristics:

<b>Technology</b>	Polyimide
<b>Appearance</b>	Silver
<b>Cure</b>	Heat cure
<b>pH</b>	6.7
<b>Product Benefits</b>	<ul style="list-style-type: none"> <li>Electrically conductive</li> <li>High purity</li> </ul>
<b>Application</b>	Die attach
<b>Filler Type</b>	Silver

LOCTITE ABLESTIK 71-1 die attach adhesive is designed for microelectronic and semiconductor packaging applications. It is formulated to provide high bond strength at ambient and elevated temperatures.

## TYPICAL PROPERTIES OF UNCURED MATERIAL

Thixotropic Index (0.5/5 rpm)	2.9
Viscosity, Brookfield CP51, 25 °C, mPa·s (cP):	
Speed 5 rpm	14,000
Shelf Life @ -40°C (from date of manufacture), days	365

## TYPICAL CURING PERFORMANCE

### Cure Schedule

30 minutes ramp to 150°C + 30 minutes @ 275°C

### Weight Loss on Cure

10 x 10 mm Si die on glass slide, % 26

The polyimide resin in this material is solvent borne. Observe recommended cure conditions to remove the solvent for cure. The initial cure stage will drive off the solvent, while the subsequent 275°C will imidize (cure) the resin. An extended 150°C dry cycle may be employed if the recommended 30-minute cycle produces an unacceptable amount of 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

Coefficient of Thermal Expansion, TMA expansion mode:	
Below Tg, ppm/°C	41
Glass Transition Temperature, TMA penetration mode, °C	240
Thermal Conductivity @ 121°C, C-matic Conductance Tester, W/(m·K)	2.0

### Extractable Ionic Content, ppm:

Chloride (Cl-)	5
Sodium (Na+)	5
Potassium (K+)	5

### Tensile Modulus:

@ -65°C	N/mm <sup>2</sup>	3,600
	(psi)	(520,000)
@ 25°C	N/mm <sup>2</sup>	3,400
	(psi)	(490,000)
@ 150°C	N/mm <sup>2</sup>	3,000
	(psi)	(430,000)
@ 250°C	N/mm <sup>2</sup>	2,300
	(psi)	(330,000)

Water Extract Conductivity, μmhos/cm	15
Weight Loss @ 300°C, Thermogravimetric Analysis, %	0.35

Moisture Absorption @ Saturation, after 85°C/85% RH exposure 0.6

## Electrical Properties

Volume Resistivity, , ohm-cm	0.00013
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## TYPICAL PERFORMANCE OF CURED MATERIAL

### Shear Strength

#### Die Shear Strength @ 25 °C:

Al to Al	N/mm <sup>2</sup>	7
	(psi)	(1,000)

#### Lap Shear Strength @ 25°C:

2 X 2 mm (80 x 80 mil) Si die on Ag/Cu LF, kg-f/die 3.8

## 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. Warming time can be significantly reduced by blowing room temperature air across the syringe(s).
3. DO NOT open the package before contents reach ambient temperature.
4. Any moisture that collects on the thawed package should be removed prior to opening the package.

## Homogenization by Rolling (Jars Only)

Adhesive that appears to have separated should not be used without remixing. Separation of silver from resin is indicated by the presence of an amber band along the length or top of the container. Any product showing evidence of separation should be rolled prior to use to maintain homogeneity. These jars should be rolled for a minimum of 8 hours at 5 rpm.

**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. 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.
4. Alternate dispense amounts may be used depending on the application requirements.
5. Star or crossed shaped dispense patterns will yield fewer bondline voids than the matrix style of dispense pattern.
6. To maintain the rheology of the material, care must be exercised to prevent the evaporation of solvent during storage, handling and application. Placing an airtight enclosure over the stamping or screening equipment with an open container of NMP inside will significantly reduce the evaporation rate of the NMP from the adhesive during application.

**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. We recommend that syringes be stored frozen in a vertical position.

**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 0.0