

# LOCTITE ABLESTIK SSP 2020

July 2015

## PRODUCT DESCRIPTION

LOCTITE ABLESTIK SSP 2020 provides the following product characteristics:

<b>Technology</b>	Silver Sintering Paste
<b>Appearance</b>	Silver
<b>Cure</b>	Heat cure
<b>Product Benefits</b>	<ul style="list-style-type: none"> <li>• Long work life</li> <li>• Good workability</li> <li>• Syringe dispensable</li> <li>• Stencil printable</li> <li>• High electrical conductivity</li> <li>• High thermal conductivity</li> <li>• High die shear strength</li> </ul>
<b>Application</b>	High power die attach
<b>Typical Package Application</b>	High thermal package applications
<b>Key Substrates</b>	Metalized back side die to Ag or Au coated substrates or other metalized leadframes

LOCTITE ABLESTIK SSP 2020 sintering silver paste die attach adhesive designed for devices requiring high thermal and electrical conductivity. LOCTITE ABLESTIK SSP 2020 is formulated to provide high heat transfer generated from power devices. LOCTITE ABLESTIK SSP 2020 maintains high adhesion at operating temperatures as high as 260°C.

## TYPICAL PROPERTIES OF UNSINTERED MATERIAL

Thixotropic Index (0.5/5 rpm)	5.0
Viscosity, Brookfield - Cone & Plate, 25 °C, mPa·s (cP):	
Speed 5/0.5 rpm	19,000
Work Life @ 25°C, hours	>18
Storage Life @ -40°C, days	183
Flash Point - See SDS	

## TYPICAL SINTERING PERFORMANCE

### Pressureless Sintering Process

Ag or Au Leadframe sintered in	
Conventional Air Circulated Oven	10 minute ramp to 250°C + 60 minutes @ 250°C
N2 Oven	10 minute ramp to 250°C + 60 minutes @ 250°C

Direct Bonded Copper (DBC)	
on Au	10 minute ramp to 200°C + 60 minutes @ 200°C
on Ag	10 minute ramp to 250°C + 60 minutes @ 250°C

## Pressure Sintering Process

Air dry 40 minutes @ 120°C then sinter 2 minutes @ ≥250 °C at >10 MPa pressure

The above sintering profiles are guideline recommendations. Sintering conditions (time and temperature) may vary based on customers' experience and their application requirements, as well as customer sintering equipment, oven loading and actual oven temperatures.

## TYPICAL PROPERTIES OF SINTERED MATERIAL

Sample sintered 30 min ramp to 250°C + 60 mins @ 250°C

### Physical Properties

Thermal Conductivity, W/(m·K)	>100
Extractable Ionic Content, ppm:	
Chloride (Cl-)	<1
Sodium (Na+)	<1
Potassium (K+)	<1
Modulus of Elasticity :	
@ 25°C	N/mm <sup>2</sup> 12,490 (psi) (1,800,000)
@ 100°C	N/mm <sup>2</sup> 9,740 (psi) (1,400,000)
@ 150°C	N/mm <sup>2</sup> 8,290 (psi) (1,200,000)
@ 200°C	N/mm <sup>2</sup> 6,970 (psi) (1,000,000)
@ 250°C	N/mm <sup>2</sup> 5,615 (psi) (800,000)

### Electrical Properties

Volume Resistivity , 4-point probe , ohm-cm	4.8×10 <sup>-5</sup>
---	----------------------

## TYPICAL PERFORMANCE OF SINTERED MATERIAL

Exact performance depends on process conditions.

### Miscellaneous

Die Shear Strength	
Pressureless Sintering	
Ag/Cu leadframe, kg/mm <sup>2</sup>	3
PPF LF, kg/mm <sup>2</sup>	2
Pressure Sintering	
Ag or Au Surface, kg/mm <sup>2</sup>	>>4

## GENERAL INFORMATION

Product is hazardous to environment and is an eye irritant. For safe handling information on this product, consult the Material Safety Data Sheet, (MSDS).

**THAWING:**

1. This adhesive is packed and shipped in dry ice.
2. Allow container to reach room temperature before use.
3. DO NOT open the container before contents reach 20°C temperature. Any moisture that collects on the thawed container should be removed prior to opening the container.

**DIRECTIONS FOR USE**

1. Product remixing with a three- axis mixer is recommended before use. Silver-resin separation may occur if the adhesive is left standing.
2. Adhesive must be used within 8 hours after remixing.
3. This material can be applied by stencil printing or dispensed
4. 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
5. Apply enough adhesive to achieve a 25 to 100 µm wet bondline thickness.
6. Star or crossed shaped dispense patterns will yield fewer bondline voids than the matrix style of dispense pattern
7. The following are the recommended stencil printing parameters:
 

Squeegee Type	Stainless steel metal, 45°
Print Speed, mm/sec	20 to 100
Squeegee pressure, Kg	3 to 6
8. Alternate print or dispense amounts may be used depending on the application requirements

**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 Protect from heat.**

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**

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

**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.

Any liability in respect of the information in the Technical Data Sheet or any other written or oral recommendation(s) regarding the concerned product is excluded, except if otherwise explicitly agreed and except in relation to death or personal injury caused by our negligence and any liability under any applicable mandatory product liability law.

**In case products are delivered by Henkel Belgium NV, Henkel Electronic Materials NV, Henkel Nederland BV, Henkel Technologies France SAS and Henkel France SA please additionally note the following:**

In case Henkel would be nevertheless held liable, on whatever legal ground, Henkel's liability will in no event exceed the amount of the concerned delivery.

**In case products are delivered by Henkel Colombiana, S.A.S. the following disclaimer is applicable:**

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. 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.

Any liability in respect of the information in the Technical Data Sheet or any other written or oral recommendation(s) regarding the concerned product is excluded, except if otherwise explicitly agreed and except in relation to death or personal injury caused by our negligence and any liability under any applicable mandatory product liability law.

**In case products are delivered by Henkel Corporation, Resin Technology Group, Inc., or Henkel Canada Corporation, the following disclaimer is applicable:**

The data contained herein are furnished for information only and are believed to be reliable. We cannot assume responsibility for the results obtained by others over whose methods we have no control. It is the user's responsibility to determine suitability for the user's purpose of any production methods mentioned herein and to adopt such precautions as may be advisable for the protection of property and of persons against any hazards that may be involved in the handling and use thereof. In light of the foregoing, **Henkel Corporation specifically disclaims all warranties expressed or implied, including warranties of merchantability or fitness for a particular purpose, arising from sale or use of Henkel Corporation's products. Henkel Corporation specifically disclaims any liability for consequential or incidental damages of any kind, including lost profits.** The discussion herein of various processes or compositions is not to be interpreted as representation that they are free from domination of patents owned by others or as a license under any Henkel Corporation patents that may cover such processes or compositions. We recommend that each prospective user test his proposed application before repetitive use, using this data as a guide. This product may be covered by one or more United States or foreign patents or patent applications.

**Trademark usage**

Except as otherwise noted, all trademarks in this document are trademarks of Henkel Corporation in the U.S. and elsewhere. ® denotes a trademark registered in the U.S. Patent and Trademark Office.

Reference 0.1