Technical Data Sheet

# LOCTITE ABLESTIK SSP 2020

July 2015

## PRODUCT DESCRIPTION

LOCTITE ABLESTIK SSP 2020 provides the following product characteristics:

| | |
|---|---|
| **Technology** | Silver Sintering Paste |
| Appearance | Silver |
| **Cure** | Heat cure |
| Product Benefits | • Long work life<br>• Good workability<br>• Syringe dispensable<br>• Stencil printable<br>• High electrical conductivity<br>• High thermal conductivity<br>• High die shear strength |
| **Application** | High power die attach |
| Typical Package Application | High thermal package applications |
| Key Substrates | 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 260ºC.

## 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 @ 120ºC 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/mm² (psi) | 12,490 (1,800,000) |
| @ 100°C | N/mm² (psi) | 9,740 (1,400,000) |
| @ 150°C | N/mm² (psi) | 8,290 (1,200,000) |
| @ 200°C | N/mm² (psi) | 6,970 (1,000,000) |
| @ 250°C | N/mm² (psi) | 5,615 (800,000) |

**Electrical Properties**

| | |
|---|---|
| Volume Resistivity , 4-point probe , ohm-cm | $4.8\times10^{-5}$ |

## TYPICAL PERFORMANCE OF SINTERED MATERIAL

Exact performance depends on process conditions.

**Miscellaneous**

| | |
|---|---|
| Die Shear Strength | |
| Pressureless Sintering | |
| Ag/Cu leadframe, kg/mm² | 3 |
| PPF LF, kg/mm² | 2 |
| Pressure Sintering | |
| Ag or Au Surface, kg/mm² | >>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 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, 45º |
| 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**

(°C x 1.8) + 32 = °F
kV/mm x 25.4 = V/mil
mm / 25.4 = inches
N x 0.225 = lb
N/mm x 5.71 = lb/in
N/mm² x 145 = psi
MPa = N/mm²
MPa x 145 = psi
N·m x 8.851 = lb·in
N·m x 0.738 = lb·ft
N·mm x 0.142 = oz·in
mPa·s = cP

**Disclaimer**

**Note:**

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Reference 0.1