

Product Description

DM-SSA-10301S is a nanosilver based conductive adhesive designed for pressureless and pressure sintering for flip chip technology applications including power management such as IGBT modules, SiC and GaN, LED packaging and high speed optical network devices. It offers a high reliability alternative to Pb solder alloys with excellent electrical ($5 \mu\Omega\cdot\text{cm}$, $<2 \text{ m}\Omega/\square/25 \mu\text{m}$). The paste is sintered in air or nitrogen.

Product Benefits

- Excellent dispense and print performance. Suitable for both syringe, screen and stencil printing
- Electrical conductivity ($5 \mu\Omega\cdot\text{cm}$)
- Sinterable paste with excellent adhesive properties $>30 \text{ MPa}$
- Suitable for both pressure and pressureless sintering
- Compatible with a wide range of substrates including silver, gold and copper

Paste Preparation

DM-SSA-10301S is a silver based paste system. If the paste is stored refrigerated, allow the material to reach room temperature before use. DM-SSA-10301 is supplied as a single part, ready to use paste. Gently stir before use, avoiding introduction of air bubbles. Once the paste has been removed from the container for printing, this may introduce contamination. Do not replace the paste in the container.

Properties of Uncured Paste

Test	Properties
Viscosity after mixing (Pa.s) (Cone and plate 1000s^{-1} , 20°C)	3 - 8
Thinner	For slight adjustments in viscosity, use DM-SSA-10301-DT
Solids Content	89 - 93 %

Paste Processing Conditions

Parameter	Typical Properties
Printer Type	Stencil
Substrate Compatibility	Copper, Silver, Gold
Stencil	50-100 μm
Print speed	25 - 50 mm/s
Drying Temperature	80°C
Drying Time	~10 mins, depending on print thickness
Curing Temperature	$240\text{-}260^\circ\text{C}$
Curing Time	30-60 mins

The paste is designed for pressureless and pressure sintering.

Pastes should be applied to bond pads by screen, syringe or stencil. Components should be attached whilst the paste is still wet using pick & place equipment. The material should be then dried to 150°C for 30 mins. The device should then be sintered at 250°C for 60 mins if pressureless sintered. Sinter atmosphere can be air or nitrogen. Pressure sintering will allow sinter times to be reduced.

Drying and sintering times should be adjusted to achieve the optimum resistivity depending on manufacturing process set-up.

Properties of Cured Paste

Test	Typical Properties
Sheet Resistance	2 m Ω /□/25 μ m at 250°C, pressureless sinter
Volume Resistivity	5 $\mu\Omega$.cm at 250°C, pressureless sinter
Thermal Conductivity	>100 W/m.K
Die Shear Strength	5 Kg/mm ² (3 mm x 3mm die, 250°C, pressureless sinter)

Clean-Up

Avoid drying of the pastes on screen. Equipment can be cleaned using isopropanol alcohol (IPA).

Storage and shelf-life

Material should be stored at a temperature of 5 - 25°C with lids tightly sealed. The material shelf life for an unopened container is 6 months from manufacturing date. Dycotec Materials cannot assume responsibility for a material that has not been stored in appropriate conditions or where the paste has been contaminated following use.

Safety and Handling

For safe use of this product, please review relevant material safety and datasheet (MSDS).

Packaging

Available for manual use with automatic syringe dispense (DM-SSA-10301SY) or pots (DM-SSA-10301P).

For more information, please contact:

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All information reported in the datasheet is for experimental work undertaken in our laboratories and illustrates typical values only. Processing conditions may vary depending on customers' experience and their application requirements and manufacturing process equipment set-up.

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