

# Ag Paste 2713 SC

## APPLICATION

Chimet Ag Paste 2713 SC is a low metal content silver paste for bus bar screen printing on the rear side of silicon solar cells. The paste is especially designed to match the requirements of state of art PV cells manufacturing and contain the related costs. Its low silver content, along with its rheological properties, allow a high speed printing which contributes to decreasing the paste lay down with benefits in terms of cost. Under common firing conditions the Ag 2713 SC sintering forms a dense layer that exhibits high electrical conductivity and enables a strong mechanical bond with the connecting ribbon. The Ag 2713 SC has thoroughly been tested in combination with well-known front pastes and BSF pastes and found out no compatibility problems. #1

The Ag 2713 SC is a lead- and cadmium-free product.

#1 However it is impractical to test all existing products and the customer must carry out suitable trials in order to verify the behaviour in his specific production conditions or ones that meet his expectations.

## BENEFITS

- Very low silver consumption (see **Table 1.**)
- High adhesion and solderability
- High conductivity
- Very good silver-aluminum contact
- Smooth surface with no mottling
- Excellent printability
- Environmentally friendly material #2

#2 Ag 2713 SC is Pb, Cd and Tl free means that Pb, Cd or Tl are not intentionally added. Trace amounts however may be present.

## TYPICAL PROCESS PARAMETERS

**Printing:** typical industrial parameters: 230 – 280 mesh stainless steel screen, 22.5-45°. EOM 4 – 15 µm. Squeegee medium hardness, 160 – 250 mm/s, 60-80N.

**Drying:** both fast high temperature and slow low temperature are suitable for Ag 2713 SC.

**Firing:** infrared fast firing belt furnace: paste Ag 2713 SC co-fires effectively with front Ag and back Al pastes in several firing profiles for the production of high efficiency silicon PV cells.

**Soldering:** suitable for standard ribbon materials, leaded and lead-free solder (e.g. 60Sn/40Pb, 62Sn/36Pb/2Ag or 96.5Sn/3.5Ag)

**Table 1. TYPICAL PROPERTIES**

Viscosity (Pa·s)
85-95
Fineness of grind
<10 µm
Conductivity:
< 4 mΩ/□ @ 10 µm
Solids (%), Silver usage #3
53.8-55.8, 2-3 mg/cm <sup>2</sup>
Laydown #3
4-6 mg/cm <sup>2</sup>
Typical line thickness
4 µm
Thinner
0200IT

#3 depending on screen mesh and, in general, screen printing conditions.

**Viscosity test:**

Brookfield DV II Viscosimeter, small sample adapter 6R, spindle 14R @ 10r.p.m. and 25.0 (±0.5) °C.

**SHELF LIFE**

Min. 6 months when properly stored in tightly closed containers at room temperature (< 25°C). 9 months when stored @ 4° - 10°C.

**RECOMMENDATION**

Stir the paste gently before use (to avoid air entrapment) with a spatula for homogenisation (30" to 1'). Jar rolling is not recommended as this could have a detrimental effect on the rheology of the paste. Keep the paste at room temperature for 12h before opening the container.

**SAFETY AND HANDLING**

For information on health and safety regulations please refer to the product SDS.

**DISCLAIMER**

The data published in this document come from experiments carried out in our laboratories and performed in conditions believed to be the most commonly accepted by the industry. It is the end-user's responsibility to check whether this product can be efficiently used in his specific process and under his specific industrial conditions which Chimet can neither control nor foresee. Chimet makes no warranties expressed or implied arising from the product use. Chimet specifically disclaims any liability for consequential or incidental damages of any kinds, including lost profits.

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