

## Screen printing of plating seeds sunstence<sup>®</sup> uni / sunstence<sup>®</sup> me

**nb technologies**  
consulting engineers



Electroplated metallisation for silicon solar cells offer cost reduction and efficiency increase. There are options to plate metal stacks of Ag or Ni/Cu/Sn on printed silver lines, in order to reduce the line resistance. Plating on silver seed may be considered a first step of plated metallisation towards direct plating on silicon.

Fine line print is one of the requirements to benefit from plating approaches on silver seeds. The plating of contact fingers on silver print will grow laterally, so the finer the print the finer the final finger will be after plating without resist mould. Secondly, the seed print should be as thin as possible or affordable to save silver and take advantage of the plated metal for cost saving and efficiency increase.

**NEW**

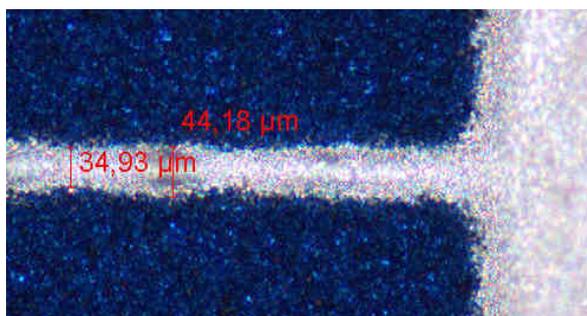
The recently enhanced **sunstence<sup>®</sup> uni sp** at **25µm foil thickness** and **sunstence<sup>®</sup> me** are best suited for fine, thin and homogenous print of silver seeds, while conventional mesh screens with wire crossings are limited in thickness reduction and uniformity at low print thickness.

A major benefit is that well-established and available screen printing technologies can be employed for achieving plating seeds without the need for special equipment or extra investment. Furthermore, new techniques such as ink-jetting would involve a change to other media and firing profiles.

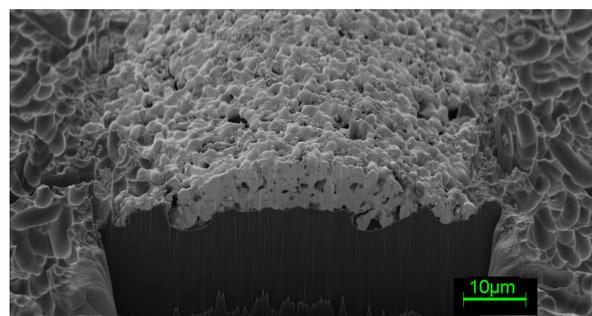
Printing a resist mould is another option for optimising the process and geometry of the metallisation. **sunstence<sup>®</sup> uni** and **sunstence<sup>®</sup> me** screens enable to have a plating seed with printed silver and accurately aligned resist print, which protects nitride layers during plating and also provides a plating mould with steep sidewalls to avoid lateral growth of the lines.

### **Major benefits using sunstence<sup>®</sup> uni / sunstence<sup>®</sup> me screens for plating seeds**

- silver seed thickness down to 2µm @40µm width (depending on paste)(unmatched by mesh screens)
- reduced printing force and soft contact print
- applicable with available standard screen printing technology  
(no need for extra investment for tooling, new media, change of firing process, contact qualification)
- combination with aligned printed resist mould avoids undesired increase of lateral line width



CCD picture of screen printed Ag paste finger for plating seed



FIB cut of Ag paste finger, screen printed and fired; 50µm wide, 7.5µm thick

**sunstence<sup>®</sup> uni** and **sunstence<sup>®</sup> me** are distributed under the **sunstence<sup>®</sup>** family by Hans Frintrup GmbH. 

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