DuPont™ Solamet® PV416

photovoltaic metallizations

Technical Data Sheet

Product Description

DuPont™ Solamet® PV416 photovoltaic metallization paste is a silver based polymer composition. It is designed for Screen Printing for use as a front-side conductor in CIGS, a-Si and other thin film solar cell applications.

Product Benefits

- Low contact resistance (Rc) to ITO and AZO
- Low grid line resistance (Rgl)
- Excellent fine line capability with minimal flow-out
- Excellent adhesion to TCO

Processing Summary

- **Screen Printing Equipment**
  Reel-to-reel, semi-automatic, manual
- **Substrates**
  Rigid/Flexible with sputter coated TCO
- **Screen Type**
  PET or stainless steel (SD 67/25 (280 mesh))
- **Typical Drying Conditions**
  Substrate/cell dependent,
  130–180°C/5–60 min
- **Typical Circuit Line Thickness**
  18µm for 100µm track width
- **Clean-up Solvent**
  Ethylene Glycol diacetate

Table 1
Typical Composition and Physical Properties

Solids (%) at 750°C	81–84
Viscosity (Pa.s.) (Brookfield RVT, spindle #14, 10rpm)	90–130
Thinner	8260
Resistivity (mΩ/sq/25µm)	8–12
Coverage (cm^2/g) (100µm track width, 18µm thickness, with SD 67/25 mesh)	~115
Abrasion Resistance (ASTM Pencil Hardness)	2H

Paste Preparation

The composition should be thoroughly mixed before use. This is best achieved by slow, gentle hand stirring with a clean burr-free spatula (flexible plastic) for 1–2 minutes. Jar rolling is NOT recommended, as this could change the rheology of the material. Care should be taken to avoid air entrapment.

Drying

Depending on the temperature tolerance of the cell and substrate, Solamet® PV416 can be dried at temperatures between 130°C and 180°C. Drying times can vary depending on the efficiency of the drier. Longer drying times and higher drying temperatures will improve the adhesion, resistivity and abrasion resistance.

Printing

Printing should be carried out in a clean, well-ventilated area. DuPont™ Solamet® PV416 photovoltaic composition, in its container, should be at ambient temperature prior to commencement of printing.

Thinner

This composition is optimized for screen printing, thinning is not normally required. Use the DuPont recommended thinner for slight adjustments to viscosity or to replace evaporation losses. The use of too much thinner or the use of a non recommended thinner may affect the rheological behavior of the material and its printing characteristics. Refer to the table.

Storage and Shelf Life

Containers may be stored in a clean, stable environment at room temperature (between 5°C–30°C), with their lids tightly sealed. Storage in high temperature (>30°C) or in freezers (temperature < 0°C) is NOT recommended as this could cause irreversible changes in the material. The shelf life of compositions in factory-sealed (unopened) containers between (5°C–30°C) conditions is 6 months from date of shipment.

Safety and Handling

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

For more information on DuPont™ Solamet® PV416 photovoltaic metallizations or other DuPont Microcircuit Materials, please contact your local representative:

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