DuPont Electronic Materials

7102 Carbon Conductor

Polymer Thick Film Composition

All values reported here are results of experiments in our laboratories intended to illustrate product performance potential with a given experimental design. They are not intended to represent the product's specifications, details of which are available upon demand.

Product Description

Carbon Conductor 7102 is used as a conductor in designs that tolerate high resistivity. It can also be used as an overprint carbon for 5000 silver polymeric conductor. Its major benefits include low cost and excellent screen life as well as excellent high-temp stability. It can be used with semi-automatic and manual printers. 7102 may be blended with other DuPont carbon and silver conductors to meet specific resistance requirements.

Processing

- **Screen Printing Equipment**
  Semi-automatic or manual
- **Ink residence Time on Screen**
  Longer than 2 hours
- **Screen Types**
  Polyester, Stainless steel (SS)
- **Typical Cure Conditions**
  Box Oven: 120°-130°C / 5 min
- **Typical Circuit Line Thickness Printed With 200 SS Mesh screen**
  9-15 µm
- **Clean-up Solvent**
  Ethylene diacetate or methyl propasol acetate.

Printing

Carbon Conductor 7102 should be thoroughly mixed before use. This is best achieved by slow, gentle hand stirring with a clean, burr-free spatula (flexible plastic or stainless steel) for 1-2 minutes.

Printing should be carried out in a clean, well-ventilated area. Additional information on requirements for printing areas is contained in DuPont Technical Guide, EUT 7.3 "Processing-Screen Printing Rooms", available on request.

Note: optimum printing characteristics of 7102 are generally achieved in the temperature range 20°C-23°C. It is therefore important that the material, in its container, is at this temperature prior to commencement of printing.

Table 1
Exemplary Physical Properties on 125µm Mylar® ELPolyester Film

Sheet Resistivity (Ω/□/25µm) 130°C	≤ 35
Resistivity after Flex (Ω/□/25µm) 15 sec after 180° Crease	< 100
Abrasion Resistance, Pencil Hardness (ASTM D3363-74)	3H
Solderability	Not applicable

Table 2
Composition Properties

Viscosit (Pa.s) (Brookfield RVT, UC & SP (SC4-14/6R) 10rpm@25°C)	60-125
Thinner	3610

Thinner

7102 is optimised for screen printing and

thinning is not normally required. DuPont Electronics Composition Thinner 3610 may be used sparingly for slight adjustments to viscosity or to replace evaporation losses. However, the use of too much thinner or the use of a non-recommended thinner may affect the rheological behaviour of the material and its printing characteristics.

General

Yields and performance will depend to a large degree on the care exercised during processing, particularly in screen printing. Scrupulous care should be taken to keep the Carbon Conductor, printing screens and other tools free of metal contamination. Dust, lint and other particulate matter may also contribute to poor yields.

Compatibility

Whilst DuPont has tested this composition with specified materials and under the recommended processing conditions, it is impossible or impractical to cover every combination of materials, customer processing conditions and circuit layout. It is therefore essential that customers thoroughly evaluate this material in their specific situations, in order to completely satisfy themselves as to the overall quality and suitability of the composition for its intended application(s).

Storage

Containers of 7102 may be stored in a clean, stable environment at room temperature (<25°C), with their lids tightly sealed. Storage in freezers (temperature <0°C) is NOT recommended, as this could cause irreversible changes in the material. Jar rolling is unnecessary and is NOT recommended, as this could change the rheology of the material.

Shelf life

Carbon Conductor 7102 has a shelf life of 6 months from date of shipment, for factory-sealed (unopened) containers, stored under room temperature conditions.

Health/Safety considerations

DuPont polymer compositions are intended for use in an industrial environment by trained personnel. All appropriate health/safety regulations regarding storage, handling and processing of such materials should be complied with. For information on health/safety regulations, please refer to the specific MSDS for 7102 and to the DuPont Safety Guide EUT 7.1 “Practical Safe Handling of Thick Film Compositions”.

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