The miracles of science™

8144 Electroluminescent 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 8144 is designed for use with DuPont Luxprint® system for manufacturing screen printed electroluminescent (EL) lamps. It is fully compatible with the phosphors, dielectrics, and conductors of the system. 8144 may be employed as an economical rear electrode in cases where high conductivity is not required or if humid conditions are present.

Key Features

- ❑ **Low affinity for moisture**
- ❑ **Low cost**
- ❑ **Excellent adhesion to ITO sputtered polyester**
- ❑ **Compatible with Luxprint® System**

Processing

- ❑ **Screen Printing Equipment**
  Semi-automatic or manual
- ❑ **Substrates**
  Print Treated Polyester, and ITO-Polyester, DuPont EL Dielectrics, and Glass
- ❑ **Ink residence time on screen**
  >2 hours
- ❑ **Screen Types**
  Polyester mesh: 77T-48Y or 61-64Y; 20-25µm emulsion
- ❑ **Typical Cure Conditions**
  Box oven:130°C / 15 minutes
  Belt dryer:130°C / 90 seconds
- ❑ **Clean-up Solvent**
  Ethylene Diacetate, Acetone

*For further information please see Luxprint® Processing Guide

Table 1
Composition Properties

% Solids @ 150°C	37.5 - 40.0
Viscosity (Pa.s) Brookfield RVT, UC & SP (SC-4-14/6R) @ 10 rpm, 25°C	20 -80
Thinner	5928
Shelf life (months)	6

Table 2
Exemplary Physical Properties on 125µm Polyester Film

Dry Layer Thickness (µm)	7 - 12
Resistivity (ohms/sq/25µm)	80 - 120
Coverage (cm^2/g)	>300

Application Note

In applications where silver migration is of concern, 8144 may also be employed as an underprint to the silver rear electrode, to form a barrier layer.

Printing

The composition must be thoroughly mixed before use. This is best achieved by slow, gentle, hand stirring with a clean, preferably plastic spatula for several minutes. Care must be taken to avoid air entrapment.

Printing should be performed in a clean and 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 are generally achieved in the room temperature range of 20°C-23°C. It is therefore important that the material, in its container, is at this temperature prior to commencement of printing.

Thinner

This composition is optimized for printing, thinning is not normally required. Use the DuPont recommended thinner

L-13833 01/07

Printed in the UK

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 behaviour of the material and its printing characteristics. Refer to table - “Composition Properties”

General

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

Compatibility

Carbon conductor 8144 is compatible with other members of the DuPont Luxprint® System, and should be used together with the recommended phosphors, conductors and dielectrics.

Whilst DuPont has tested this composition with the specified materials and under the recommended processing conditions, it is impossible or impractical to cover every combination of materials, customer processing conditions and circuit layouts.

It is therefore essential that customers thoroughly evaluate the material in their specific situations in order to completely satisfy themselves with the overall quality and suitability of the composition for its intended application(s).

Storage

Containers of Carbon conductor 8144 may be stored in a clean, stable environment at temperature of between 5°C - 30°C, with their lids tightly sealed. Storage in freezers (temperature < 0°C) is NOT recommended as this could cause irreversible changes in the material. For guidance regarding storage of material, please consult DuPont Technical Note EUT 7.2 "Shelf Life Policy".

Shelf life

This composition 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’s 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 product MSDS and to the DuPont Safety Guide EUT 7.1 “Practical Safe Handling of Thick Film Compositions”.