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BQ331 Gold Conductive Composition

Polymer Thick Film Composition/ Data Sheet

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.

BQ Series Description

The Biomedical Quality (BQ) Series is designed for use in a variety of different applications including, medical monitoring, diagnostics, drug delivery and electro-chemical and biological sensing. The series includes conductive Ag, Ag/C, and C for electrical signal processing, Ag/AgCl for multi-electrode (working/counter/reference) configurations, dielectric compositions for electrical isolation, and a range of novel materials including Pt, Au, Pt/C, and Zn based compositions designed for enhancing sensor performance.

Product Description

BQ331 is a screen printable gold composition designed for use as working electrodes in biosensors and other electrochemical sensors. It provides high signal with low background noise, in a multitude of designs. It can be used with manual, semi-automatic and reel to reel equipment.

Product Benefits

- **High Sensitivity**
- **Strong Adhesion to a variety of PET substrates**

Processing

- **Screen Printing Equipment**
  Semi-automatic or manual
- **Ink Residence Time on Screen**
  >1 hours
- **Screen Type**
  Polyester or Stainless steel
- **Typical Circuit Line Thickness Printed With Polyester Mesh Type 77-48Y**
  20µm
- **Substrate**
  PET
- **Typical Cure Conditions**
  Box Oven:130°C for 5-10 minutes
  Reel to Reel: 140°C for 1 minute
- **Clean up solvent**
  Ethylene diacetate or methyl propasol acetate

Composition Properties	
Viscosity (Pa.s) Brookfield RVT, Utility cup & spindle (SC4-14/6R), @ 10 rpm, 25°C ± 0.2°C	**30 - 85**
%Solids (150°C)	**85.0 - 88.0**
Coverage (cm²/g) (Dependent on screen mesh size and type)	**≈55**
Density (g/cc)	**3.40**
Thinner	**8210**
Shelf Life (Months)	**6**

Typical Physical Properties On 125µm Polyester Film	
Sheet Resistivity (mΩ/□/25µm)	**500**
Adhesion (Tape test) (B)	**5**
Abrasion Resistance (Pencil Hardness(H) ASTM D 3363-74)	**2**
Solderability	**NA**

Compatibility

Whilst DuPont has tested this composition 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).

Printing

The composition should be thoroughly mixed before use. This is best achieved by slow, gently, hand stirring (to avoid air entrapment) with a clean burr-free flexible plastic spatula for 1-2 minutes. Metal spatulas are not recommended as they may abrade the plastic jar causing contamination of the composition.
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

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"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.

Drying

Dry in a well ventilated box oven, belt or conveyor furnace. Air flows and extraction rates should be optimized to ensure the complete removal of solvent from the paste.

Thinner

BQ series compositions are optimized for their intended application and do not normally require thinning. 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 behaviour of the material and its printing characteristics. Refer to table - "Composition Properties"

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, stored under room-temperature (between 5°C - 30°C) conditions is 6 months from date of shipment. For guidance regarding storage of material, please consult DuPont Technical Note EUT 7.2 "Shelf Life Policy".

General

Performance will depend to a large degree on care exercised 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.

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 product MSDS and to the DuPont Safety Guide EUT 7.1 "Practical Safe Handling of Thick Film Compositions".