



DuPont Photopolymer & Electronic Materials

CB230 Copper Conductor

Polymer Thick Film Compositions For Printed Circuits Materials

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

Copper conductor CB230 is a solderable composition formulated with a silver-coated copper powder for enhanced solderability and leach resistance. It is applied by screen printing. It can be used to create additive circuitry and/or electrodes and termination sites on a wide variety of substrates, including rigid and flexible polymer laminates, glass and ceramic.

Key Features :

- ☐ Excellent solderability and leach resistance
- ☐ Strong adhesion to a wide variety of substrates
- ☐ Excellent printing properties

Design Notes

Properties are based on laboratory data using recommended processing procedures for manufacturing test vehicles.

In order to achieve good solderability CB230 needs to be cured in a nitrogen atmosphere.

Substrates

CB230 can be used on a variety of substrates that include Epoxy glass, phenolic paper, ceramic, Kapton®, Pyralux® and other flexible and rigid substrates.

Composition Properties

Viscosity [Pa.s]	65 - 75
Brookfield RVT, Utility cup & Spindle (SC4-14/6R), @10 rpm, 25°C ± 0.2°C	
Coverage[cm²/g]	100 -120
Thinner	9245
Shelf Life[months]	3

Processing Conditions

Printing	70T mesh/cm polyester screen (emulsion build up 20µm) to achieve a print thickness of 25-30µm
Curing	30 minutes at 160°C in a well ventilated box oven or conveyorised dryer

Product Properties

Sheet Resistivity [mΩ/□/25µm]	60-70
Sheet Resistivity after flex [mΩ/□/25µm] (15 sec after test Crease180°, 1 mm radius, 10 cycles)	60-170
Adhesion/Tape Pull (3M"Scotch" Tape #600)	No material transfer
Abrasion Resistance (ASTM D3363-74)	Pencil Hardness >5H
Solderability	Excellent with conventional processes and solders

Change in Electrical Properties After Environmental Test

Thermal Ageing (85°C, 2000hrs)	ΔR <30%
Heat/Humidity (60°C/95% RH, 2000hrs)	ΔR <30%
Thermal Cycling (-55°C<->125°C, 500 cycles)	ΔR <20%
Solder Dip (260°C, 10secs, 3 cycles)	ΔR <10%

Change in Physical Properties

After Environmental Test(above)	Insignificant
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Compatibility

Whilst DuPont has tested this composition with the materials specified above and 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).

Recommended Processing Procedure

Storage

Containers may be stored in a clean, stable environment in the temperature range of 0-5°C, with their lids tightly sealed. Storage in freezers (temperature < 0°C) is NOT recommended as this could cause irreversible changes in the material.

Shelf life

This composition's shelf life is from date of shipment, for factory-sealed (unopened) containers, stored under room-temperature conditions. Refer to table - for shelf life period.

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

Printing

The composition should be thoroughly mixed before use. This is best achieved by slow, gently, hand stirring with a clean burr-free spatula (flexible plastic or stainless steel) for 1-2 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 acclimatises to this temperature, prior to commencement of printing. It is important that the container remains sealed during the acclimatisation period, so as to avoid the possibility of condensation contaminating the paste.

Class 10,000 printing area is

recommended, otherwise severe yield losses could occur. Refer to table - "Processing Conditions"

Curing

Cure in a well ventilated oven or conveyor dryer. Refer to table - "Processing Conditions"

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 thick film 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".

This information corresponds to our current knowledge on the subject. It is offered solely to provide possible suggestions for your own experimentation. It is not intended, however, to substitute for any testing you may need to conduct to determine for yourself the suitability of our products for your particular purposes. This information may be subject to revision as new knowledge and experience become available. Since we cannot anticipate all variations in actual end-use conditions, DuPont makes no warranties and assumes no liability in connection with any use of this information. Nothing in this publication is to be considered as a license to operate under or a recommendation to infringe any patent right. **Caution: Do not use in medical applications involving permanent implantation in the human body. For other medical applications, see "DuPont Medical Caution Statement" H-50102.**