



CB100 Conductive ViaPlug

Polymer Thick Film Compositions For Printed Circuits

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

CB100 Conductive ViaPlug is used to provide high conductivity, plateable vias for PBGAs, buildup substrates, and standard PWBs. It provides a simple, low cost method to create planar, thermal, and buried vias with minimum capital investment.

Key Features :

- High thermal conductivity allows use of drilled, filled vias as heat sinks, improving thermal management
- High electrical conductivity of filled, buried vias allows reduced layer count and processing steps
- No shrinkage, one part silver epoxy system provides reliability, planarization, and ease of use
- Strong adhesion to copper and most laminate materials provides increased reliability
- Solderability after plating provides increased use of board real estate by allowing via in pad technology
- Simple application using stencil printing techniques reduces processing steps

Composition Properties

Viscosity [Pa.s]	125-175
Brookfield HAT utility cup & spindle (SC4-14/6R), 10 rpm, 25°C ± 0.2°C	
Specific Gravity[g/cc]	≈5.5
Thinner	5928
Shelf Life[months]	3

Typical Physical Properties

Sheet Resistivity [$m\Omega/\square$] @ 25μm fired thickness]	
Unplated	50 - 100
Plated	3 - 5
Thermal Conductivity (W/m/°K)	5.23
Abrasion Resistance, Pencil Hardness (ASTM D3363-74)	Better than 4H
Plateability	Compatible with conventional electroless or electrolytic processes Solderable after Plating
Solderability	
Change in Physical Properties after Environmental Tests*	Passes
Change in Electrical Properties after Environmental Tests (plated vias)*	No increase in resistivity
Tg	115°C
TCE	35 ppm/°C

*Environmental Tests
a Thermal Shock (+85°C to -40°C, 30 min each, 5 cycles)
b Dry Heat (+85°C, 10 days)
c Humidity (+40°C, 95%RH, 10 days)[MIL Std 202E, method 103, cond.A]
d Thermal Cycling (-50°C <-> +125°C, 1,000 cycles)
e Thermal Stress (5 X at 286°C)

with minimal capital investment

Design Notes

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

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.

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.

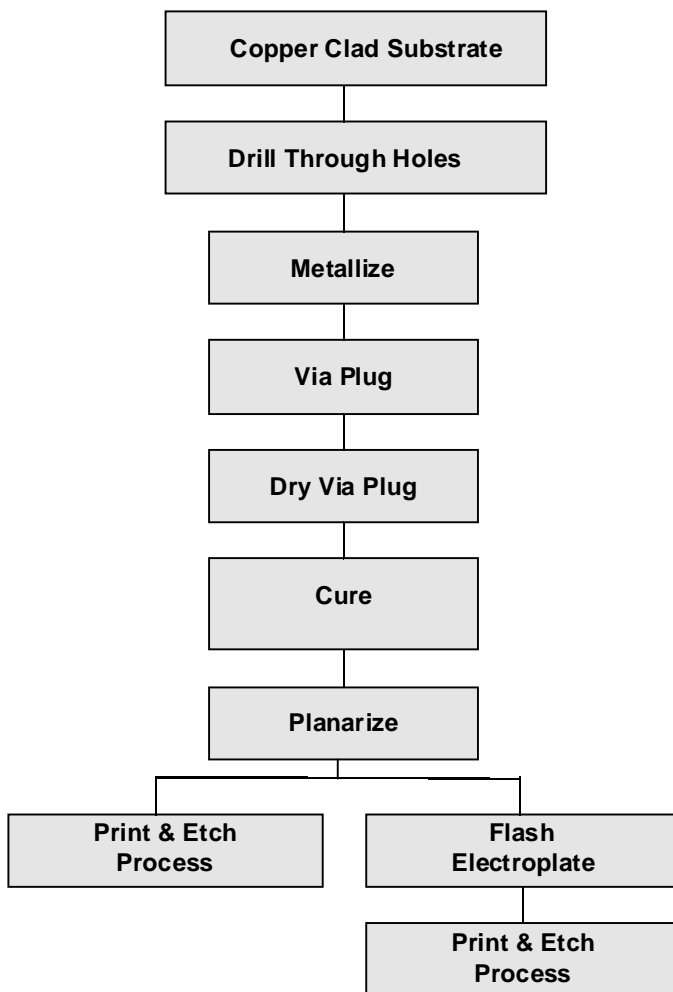
Use the DuPont recommended thinner for slight adjustments to viscosity or to replace evaporation losses. The use of too much thinner or the use of a non recommended thinner may affect the rheological behaviour of the material and its printing characteristics. Refer to table - “Composition Properties”

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

Processing Information



- Screen/Printing Equipment**
Semi-automatic or manual with vacuum assist
- Substrate**
Epoxy glass, BT resin
- Ink Residence Time on Screen/Stencil**
> 1 Hour
- Stencil Type**
75 - 100µm stainless steel stencil recommended
- Aspect Ratio** (Via depth/diameter)
Up to 6:1 with vacuum assist
- Typical Drying Conditions**
15 minutes at 100 -115°C in a well ventilated box oven or conveyorised dryer (Do not exceed 120°C)
- Typical Cure Conditions**
60 minutes at 160°C in a well ventilated box oven or conveyorised
- Clean-up Solvents**
Axarel®, Isopropanol, Water
- Processing Condition**
Refer to processing guide. “DuPont CB100 conductive Via Plug Processing Guidelines

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"

Drying and Curing

Dry and 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.**