

# DuPont CB100

CONDUCTIVE VIA PLUG PASTE

## Technical Data Sheet

### Product Description

DuPont CB100 conductive via plug is used to provide high conductivity, plateable vias for plastic ball grid array (PBGA), buildup substrates, and standard Printed Wired Board. It provides a simple, low cost method to create planar, thermal, and buried vias with minimum capital investment.

### Product Benefits

- 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 with minimal capital investment
- **Aspect Ratio** (via depth/diameter)  
Up to 6:1 with vacuum assist

### Processing

- **Screen/Stencil Printing Equipment**  
Semi-automatic or manual with vacuum assist
- **Substrates**  
Epoxy glass, BT resin
- **Ink Residence Time on Screen/Stencil**  
>1hr
- **Stencil Types** 3  
-4mil stainless steel stencil recommended

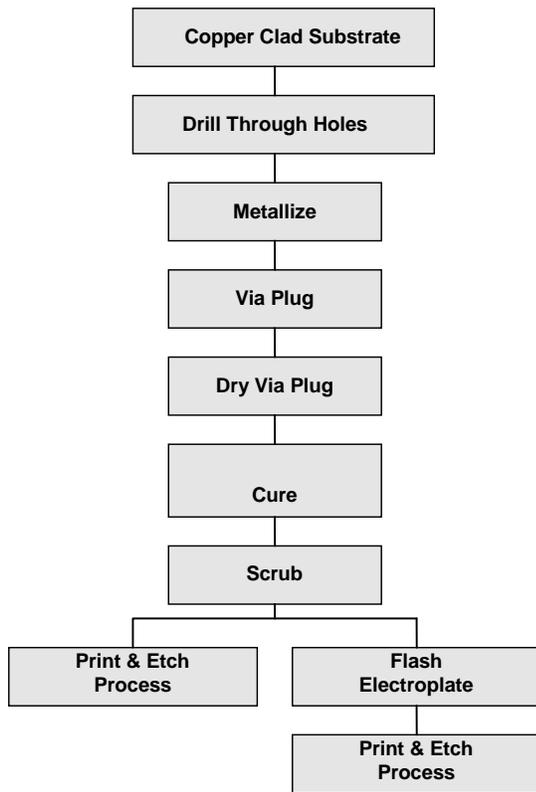
### Composition Properties

Test	Properties
Viscosity (Pa.S) [HAT UC&SP, 10 rpm, 25°C]	115 - 145
Specific Gravity (g/cc)	≈ 5.5
Thinner	DuPont 5928

Table 1 shows anticipated typical physical properties for DuPont CB100 based on specific controlled experiments in our labs and are not intended to represent the product specifications, details of which are available upon request.

- **Typical Cure Conditions**  
Drying Step: 110 - 115°C for 30 minutes (Do not exceed 120°C). Curing Step: 160°C for 60 minutes (See Dry & Cure Cycle Guidelines for additional recommendations).
- **Clean-up Solvents**  
Axarel®, Isopropanol
- **Processing Conditions**  
**Refer to process guidelines and/or trouble shooting guidelines. Available upon request.**

## Process Recommendations

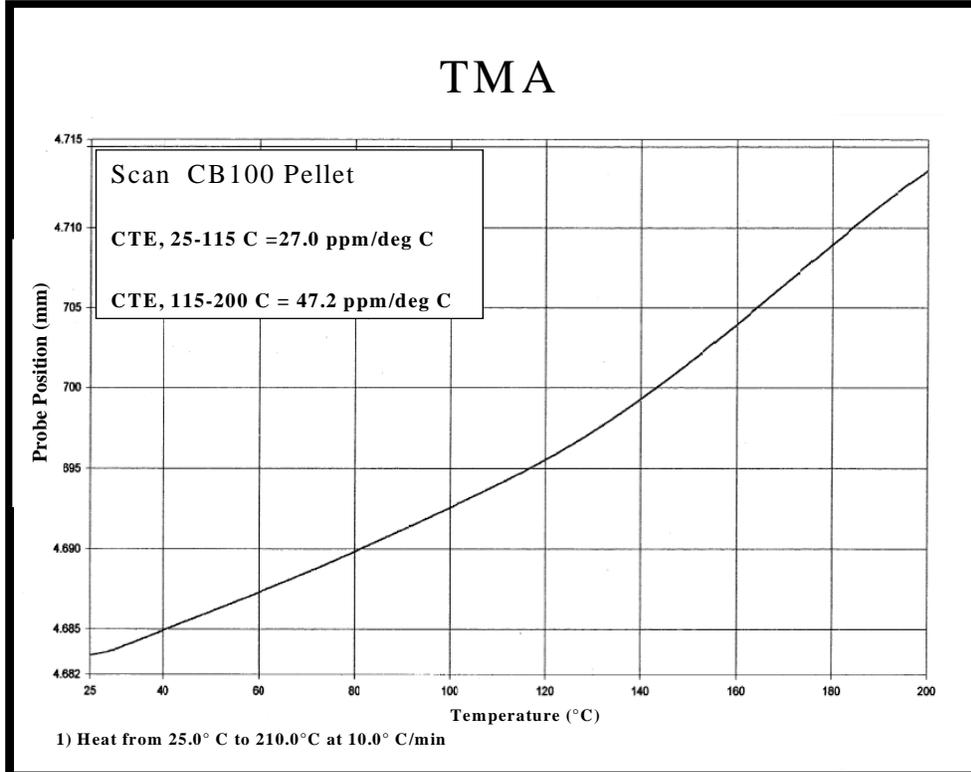


## Dry & Cure Cycle Guidelines (Based on Panel Thickness)

Since other variables can effect the **Dry and Cure Rate**, such as board density, via diameter, oven air flow and oven load, this is meant to be a starting point to help ensure fully dried and cured plugged vias.

Panel Thickness	Dry Schedule	Cure Schedule
<.030	110°C/60 min	160°C/60 min
.030 - .062	110°C/90 min	160°C/90 min
.063 - .120	110°C/2 hrs	160°C/2 hrs
.121 - .175	110°C/3 hrs	160°C/3 hrs
>.175	110°C/4 hrs	160°C/4 hrs

\* Drying Step: Do not exceed 120°C



The miracles of science™

**Table 1  
Typical Physical Properties**

Test	Properties
Sheet Resistivity (mΩ/sq) [@ 25μ thickness]	
Plated	3 - 5
Unplated	50 - 100
Volume Resistivity (Ω/centimeter)	0.00016
Abrasion Resistance (H) (Pencil Hardness) [IPC-TF 870 2.4.27.2]	> 5
TG (°C) (Glass Transition)	115
TCE (ppm) *see attached TMA	35

**Table 2  
Environmental Properties**

Thermal Shock (°C) (30 minutes, Dwell)[5 cycles]	-40 to +85
Dry Heat (°C) [500 hours]	85
Humidity (°C) At 95% RH, 500 hours [Mil Std 202E, Method 102 condition A]	+40
At 85% RH, 10 Volt bias, 168 Hours	85
Thermal Cycle (°C) [1000 cycles] (IPC-TM-60 2.6.7.2)	-65 to +125
Thermal Stress (°C) [Solder Float] (Five 10 second cycles)	288
Electromigration (°C) 100% RH, 2atm, 168 hours, 50 volt (Pressure cooker Test)	121
HAST (°C) 100% RH, 2atm, 168 hours (Pressure cooker test)	121

**NO INCREASE IN RESISTIVITY AFTER ENVIRONMENTAL TEST**

Table 1 & 2 show anticipated typical physical properties for DuPont CB100 based on specific controlled experiments in our labs and are not intended to represent the product specifications, details of which are available upon request.

**Plating**

Compatible with standard Electroless and Electro plating

**Solderability**

Solderable after plating only

**Maximum Processing Temperature**

> 175°C

**Via Plug Adhesion**

7 - 10 Pounds (31 - 48 Newton)

**Out Gassing: Test Method ASTM E595 (NASA Out gassing Test)**

Sample I.D.	%TML (Total mass loss)	% CVCM (Collected volatile condensable material)
CB100	0.050	0.00

TML is well below the normal acceptance limit of 1.0%  
CVCM is below the normal acceptance level of 0.10%



*The miracles of science™*

## Storage and Shelf Life

Shelf life is three months from date of shipment, when refrigerated ( 0 – 4°C ). Storage at ( -15 to - 20 °C ) will further prolong shelf life. Storage at room temperature is not recommended. Gradual polymerization and associated viscosity increase, and mechanical separation can be expected over a period of a few months. When refrigerating and / or freezing conditions are used for storage, materials should be allowed to equilibrate to room temperature before opening to prevent pick up of moisture from condensation.

After the containers are opened, use and storage conditions and the possible effects of contamination make shelf life limits unpredictable.

## Safety and Handling

For Safety and Handling information pertaining to this product, read the Material Safety Data Sheet (MSDS).

Copyright © 2009 DuPont. All rights reserved. The DuPont Oval, DuPont™, The miracles of science™, Green Tape™ and all products or words denoted with ® or ™ are registered trademarks or trademarks of E. I. du Pont de Nemours and Company or its affiliates ("DuPont"). NO PART OF THIS MATERIAL MAY BE REPRODUCED, STORED IN A RETRIEVAL SYSTEM OR TRANSMITTED IN ANY FORM OR BY ANY MEANS ELECTRONIC, MECHANICAL, PHOTOCOPYING, RECORDING OR OTHERWISE WITHOUT THE PRIOR WRITTEN PERMISSION OF DUPONT.

Caution: Do not use in medical applications involving implantation in the human body or contact with internal body fluids or tissue unless the product is provided by DuPont under a formal written contract consistent with the DuPont Policy Regarding Medical Applications of DuPont Materials H-50103-2 ("Medical Applications Policy") and which expressly acknowledges the contemplated use. For additional information, please request a copy of DuPont Medical Caution Statement H-50102-2 and the DuPont Medical Applications Policy.

The information provided herein is offered for the product user's consideration and examination. While the information is based on data believed to be reliable, DuPont makes no warranties, expressed or implied as to the data's accuracy or reliability and assumes no liability arising out of its use. The data shown are the result of DuPont laboratory experiments and are intended to illustrate potential product performance within a given experimental design under specific, controlled laboratory conditions. While the data provided herein falls within anticipated normal range of product properties based on such experiments, it should not be used to establish specification limits or used alone as the basis of design. It is the product user's responsibility to satisfy itself that the product is suitable for the user's intended use. Because DuPont neither controls nor can anticipate the many different end-uses and end-use and processing conditions under which this information and/or the product described herein may be used, DuPont does not guarantee the usefulness of the information or the suitability of its products in any given application. Users should conduct their own tests to determine the appropriateness of the products for their particular purpose.

The product user must decide what measures are necessary to safely use the product, either alone or in combination with other products, also taking into consideration the conditions of its facilities, processes, operations, and its environmental, health and safety compliance obligations under any applicable laws.

This information may be subject to revision as new knowledge and experience become available. This publication is not to be taken as a license to operate under, or recommendation to infringe any patent.



*The miracles of science™*

For more information on DuPont CB100 or other DuPont Microcircuit Materials products, please contact your local representative:

### Americas

DuPont Microcircuit Materials  
14 T.W. Alexander Drive  
Research Triangle Park, NC 27709  
Tel.: 800-284-3382

### Europe

Du Pont (U.K.) Limited  
Coldharbour Lane  
Bristol BS16 1QD  
U.K.  
Tel.: 44-117-931-3191

### Asia

DuPont Kabushiki Kaisha  
DuPont Electronic Center  
KSP R&D B213, 2-1, Sakado 3-chome, Takatsu-ku,  
Kawasaki-shi, Kanagawa, 213-0012, Japan  
Tel: +81-44-820-7575

DuPont Taiwan Ltd  
45, Hsing-Pont Road,  
Taoyuan, Taiwan 330  
Tel.: 886-3-377-3616

DuPont China Holding Co. Ltd  
Bldg 11, 399 Keyuan Rd., Zhangji Hi-Tech Park,  
Pudong New District, Shanghai 201203, China  
Tel.: 86-21-6386-6366 ext.2202

DuPont Korea Inc.  
3~5th Floor, Asia tower #726,  
Yeoksam-dong, Gangnam-gu  
Seoul 135-719, Korea  
Tel.: 82-10-6385-5399

E. I. DuPont India Private Limited  
7th Floor, Tower C, DLF Cyber Greens,  
Sector-25A, DLF City, Phase-III,  
Gurgaon 122 002 Haryana, India  
Tel.: 91-124-4091818

Du Pont Company (Singapore) Pte Ltd  
1 HarbourFront Place, #11-01  
HarbourFront Tower One,  
Singapore 098633  
Tel.: 65-6586-3022

<http://mcm.dupont.com>