

(2004075925)

21 DEC. 2004

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
8 January 2004 (08.01.2004)

PCT

(10) International Publication Number
WO 2004/004428 A1

(51) International Patent Classification⁷: **H05K 1/05**, 3/44,
H01L 23/498, C09D 5/44

(74) Agents: **ALTMAN, Deborah M.** et al.; One PPG Place,
Pittsburgh, PA 15272 (US).

(21) International Application Number:
PCT/US2003/020357

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,
CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC,
SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA,
UG, UZ, VC, VN, YU, ZA, ZM, ZW.

(22) International Filing Date: 27 June 2003 (27.06.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10/184,192 27 June 2002 (27.06.2002) US

(84) Designated States (*regional*): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,
SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM,
GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(71) Applicant: **PPG INDUSTRIES OHIO, INC.** [US/US];
3800 West 143rd Street, Cleveland, OH 44111 (US).

(72) Inventors: **MCCOLLUM, Gregory J.**; 5130 Brownyn
Court, Gibsonia, PA 15044 (US). **MORIARITY, Thomas
C.**; 2806 Shamrock Drive, Allison Park, PA 15101 (US).
OLSON, Kevin C.; 213 Briar Hill Court, Wexford, PA
15090 (US). **SANDALA, Michael G.**; 84 Donna Drive,
Pittsburgh, PA 15237 (US). **WANG, Alan E.**; 1032 Old
Orchard Drive, Gibsonia, PA 15044 (US). **ZAWACKY,
Steven R.**; 124 Old English Road, Pittsburgh, PA 15237
(US).

Published:

- with international search report
- before the expiration of the time limit for amending the
claims and to be republished in the event of receipt of
amendments

For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.



162162



ACTION

WO 2004/004428 A1

(54) Title: PROCESS FOR FABRICATING CIRCUIT ASSEMBLIES USING ELECTRODEPOSITABLE DIELECTRIC COAT-
ING COMPOSITIONS

(57) Abstract: Provided is a process for forming metallized vias in a substrate including the steps of (I) applying to an electrocon-
ductive substrate an electrodepositable coating composition onto all exposed surfaces of the substrate to form a conformal dielectric
coating; (II) ablating a surface of the dielectric coating to expose a section of the substrate; (III) applying a layer of metal to all
surfaces to form metallized vias in the substrate. Also disclosed are processes for fabricating a circuit assembly which include the
application of an electrodepositable coating composition onto exposed surfaces of the substrate/core to form a conformal dielectric
coating thereon. The electrodepositable coating composition includes a resinous phase dispersed in an aqueous phase, where the
resinous phase has a covalently bonded halogen content of at least 1 percent by weight. The dielectric coating derived therefrom has
a low dielectric constant and low dielectric loss factor.