

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
6 October 2005 (06.10.2005)

PCT

(10) International Publication Number
WO 2005/093134 A3

(51) International Patent Classification:
C25D 3/56 (2006.01)

(21) International Application Number:
PCT/US2005/000791

(22) International Filing Date: 11 January 2005 (11.01.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10/790,365 1 March 2004 (01.03.2004) US

(71) Applicant (for all designated States except US):
ATOTECH DEUTSCHLAND GMBH [DE/DE];
D-10507 Berlin Erasmusstrasse 20, 10553 Berlin (DE).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **FELS, Carl, Christian** [DE/DE]; Gladbecker Strasse 249, 46240 Bottrop (DE). **KAMIYA, Shoichi** [JP/JP]; 5-30-13 Morino, Machida-shi, Tokyo 194-0022 (JP). **JONES, Allen, R.** [US/US]; 5016 Saddle Horn Trail, Weddington, NC 28104 (US).

(74) Agents: **BOISSELLE, Armand, P.** et al.; Renner, Otto, Boisselle & Sklar, LLP, 1621 Euclid Avenue, 19th Floor, Cleveland, OH 44115 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, 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, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

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

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

(88) Date of publication of the international search report:
4 May 2006

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

(54) Title: IRON-PHOSPHORUS ELECTROPLATING BATH AND METHOD

(57) Abstract: In one embodiment, this invention relates to an aqueous acid iron phosphorus bath which comprises (A) at least one compound from which iron can be electrolytically deposited, (B) hypophosphite ion, and (C) a sulfur-containing compound selected from sulfoalkylated polyethylene imines, sulfonated safranin dye, and mercapto aliphatic sulfonic acids or alkali metal salts thereof. Optionally, the aqueous acidic iron phosphorus electroplating bath of the invention also may comprise aluminum irons. The alloys which are deposited on the substrates by the process of the present invention are characterized by the presence of iron, phosphorus and sulfur.



WO 2005/093134 A3