

CORRECTED VERSION

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
24 January 2008 (24.01.2008)

PCT

(10) International Publication Number
WO 2008/010965 A1

(51) International Patent Classification:
H01B 1/00 (2006.01)

(21) International Application Number:
PCT/US2007/016060

(22) International Filing Date: 13 July 2007 (13.07.2007)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/831,696 18 July 2006 (18.07.2006) US

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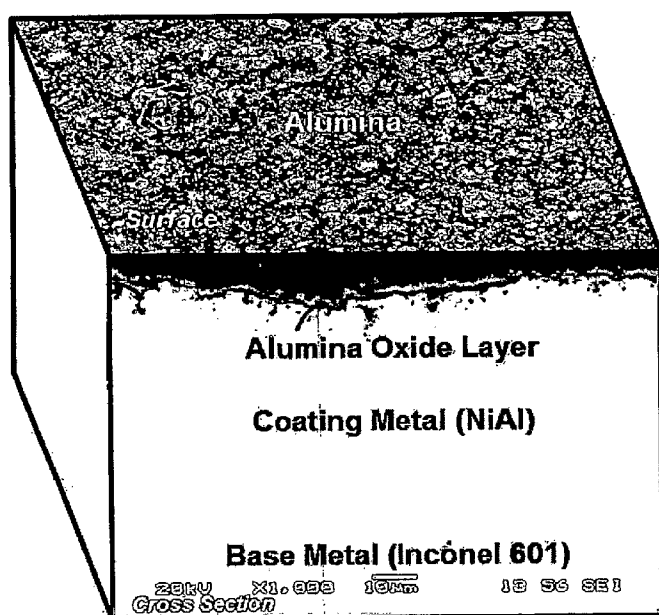
(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH,

[Continued on next page]

(54) Title: HIGH PERFORMANCE COATED MATERIAL WITH IMPROVED METAL DUSTING CORROSION RESISTANCE

Surface And Cross-Sectional SEM Image of the NiAl-Coated Inconel 601 Material
After Testing At 1050°C In 50CO-50H₂ Gas Mixture For 300 Hours



(57) Abstract: High performance coated metal compositions resistant to metal dusting corrosion and methods of providing such compositions are provided by the present invention. The coated metal compositions are represented by the structure (PQR), wherein P is an oxide layer at the surface of (PQR), Q is a coating metal layer interposed between P and R, and R is a base metal. P includes alumina, chromia, silica, mullite or mixtures thereof. Q includes Ni and Al. R is selected from the group consisting of carbon steels, low chromium steels, ferritic stainless steels, austenetic stainless steels, duplex stainless steels, Inconel alloys, Incoloy alloys, Fe-Ni based alloys, Ni-based alloys and Co-based alloys. Advantages exhibited by the disclosed coated metal compositions include improved metal dusting corrosion resistance at high temperatures in carbon-supersaturated environments having relatively low oxygen partial pressures. The coated metal compositions are suitable for use in syngas generation process equipment.



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, LV, MC, MT, 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).

(48) Date of publication of this corrected version:

12 September 2008

(15) Information about Correction:

see Notice of 12 September 2008

Published:

— *with international search report*