Title (en)

LIGHT ALLOY-BASED COMPOSITE PROTECTIVE MULTIFUNCTION COATING

Title (de)

MULTIFUNKTIONELLE KOMPOSIT-SCHUTZBESCHICHTUNG AUF LEICHTMETALLBASIS

Title (fr)

REVETEMENT DE PROTECTION COMPOSITE MULTIFONCTIONS A BASE D'ALLIAGES LEGERS

Publication

EP 1231299 A4 20060802 (EN)

Application

EP 99958538 A 19990817

Priority

RU 9900298 W 19990817

Abstract (en)

[origin: EP1231299A1] A protective multi-functional composite coating on non-ferrous alloys (Al, Mg, Ti, Nb, Al-Ti, Al-Be, Ti-Nb), consisting of a strong, hard, porous oxide-ceramic layer in the form of a matrix, and a functional compounds introduced into the pores of the matrix. The functional compounds are selected from a series of metals (Ni, Cu, Co, Fe, Cr, Mo, Ti, Al, Sb, Ag, Zn, Cd, Pb, Sn, Bi, In, Ga) and/or refractory compounds (carbides, oxides, nitrides, borides and silicides of the metals of groups IVB-VTB of the periodic system of elements). The oxide-ceramic matrix layer is applied by the oxidation of the base by the method of plasma electrolytic oxidation, and has high adhesion to the base. By regulating the parameters of the oxidation process, the required porosity of the oxide layer is achieved. The functional compounds are introduced into the porous structure of the ceramic matrix using any of the following processes: chemical or electrochemical precipitation from solutions, chemical or physical precipitation from the gaseous phase, or the friction-mechanical method (rubbing on). After the introduction of the functional compounds, the composite coating is subjected to finishing treatment with the aim of laying bare the apexes of the ceramic layer capable of taking load. The strongly developed surface of the porous structure of the matrix layer, bonded to the functional compound, creates a new coating with high cohesion strength. The composite coating acquires a combination of increased strength, hardness, wear and corrosion resistance, along with a certain plasticity and resistance to contact dynamic loads and vibrations.

IPC 1-7

C25D 5/16; C25D 11/02; C23C 28/00

IPC 8 full level

C25D 11/18 (2006.01); **C23C 8/80** (2006.01); **C23C 28/00** (2006.01); **C25D 11/02** (2006.01); **C25D 11/04** (2006.01); **C25D 11/26** (2006.01); **C25D 11/30** (2006.01); **C25D 11/34** (2006.01)

CPC (source: EP KR)

C23C 8/80 (2013.01 - EP); **C23C 28/04** (2013.01 - EP); **C23C 28/044** (2013.01 - EP); **C23C 28/048** (2013.01 - EP); **C25D 11/02** (2013.01 - KR); **C25D 11/024** (2013.01 - EP); **C25D 11/026** (2013.01 - EP)

Citation (search report)

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Designated contracting state (EPC)

AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

DOCDB simple family (publication)

EP 1231299 A1 20020814; **EP 1231299 A4 20060802**; **EP 1231299 B1 20120118**; AT E541962 T1 20120215; AU 1588600 A 20010313; BR 9917460 A 20020402; CA 2382164 A1 20010222; CN 1367849 A 20020904; CZ 2002572 A3 20020814; JP 2003507574 A 20030225; KR 20020042642 A 20020605; MX PA02001672 A 20021213; NO 20020748 D0 20020215; NO 20020748 L 20020412; WO 0112883 A1 20010222

DOCDB simple family (application)

EP 99958538 A 19990817; AT 99958538 T 19990817; AU 1588600 A 19990817; BR 9917460 A 19990817; CA 2382164 A 19990817; CN 99816864 A 19990817; CZ 2002572 A 19990817; JP 2001516965 A 19990817; KR 20027002082 A 20020218; MX PA02001672 A 19990817; NO 20020748 A 20020215; RU 9900298 W 19990817