

Title (en)
PREALLOYED IRON-BASED POWDER, A METHOD FOR THE MANUFACTURING AND USE THEREOF AND A SINTERED COMPONENT

Title (de)
VORLEGIERTES AUF EISEN BASIERENDES PULVER, VERFAHREN ZU SEINER HERSTELLUNG, VERWENDUNG DAVON UND GESINTERTES TEIL

Title (fr)
POUDRE PRÉALLIÉE À BASE DE FER, PROCÉDÉ POUR SA PRODUCTION, SON UTILISATION ET COMPOSANT FRITTÉ

Publication
EP 3124634 A1 20170201 (EN)

Application
EP 15183275 A 20150901

Priority
PL 41328315 A 20150727

Abstract (en)
The object of the invention is an easily sinterable prealloyed iron-based powder and the method for its manufacturing. The easily sinterable prealloyed iron-based powder comprises according to the invention at least 80% Fe by weight, Cu and P as alloying additives and inevitable impurities, particularly hardly reducible oxides. A method for producing the easily sinterable prealloyed iron-based powders according to the invention comprises the successive steps: preparing a reducible material; subjecting the said reducible material to mechanical processing by milling, including grinding, homogenization and activation of the reducible material; annealing the said ground homogenized and activated by milling reducible material in a reducing atmosphere; cooling the said reduced material to a temperature preventing its self-ignition; and grinding the said cooled material to a powder having a predetermined average particle size. The invention further relates to the use of the easily sinterable prealloyed iron-based powder for the production of sintered structural and tool components, in particular sintered metal-diamond composites, and the sintered product, especially the sintered metal-diamond composite, wherein the total porosity of the sintered product at a temperature not higher than 950°C is lower than 5%.

IPC 8 full level
C22C 33/02 (2006.01); **B22F 9/22** (2006.01); **C22C 38/00** (2006.01); **C22C 38/16** (2006.01); **C22C 26/00** (2006.01)

CPC (source: EP)
B22F 9/22 (2013.01); **C22C 33/0257** (2013.01); **C22C 38/002** (2013.01); **C22C 38/008** (2013.01); **C22C 38/16** (2013.01); **B22F 2998/10** (2013.01); **C22C 26/00** (2013.01)

C-Set (source: EP)
B22F 2998/10 + B22F 9/04 + B22F 9/22 + B22F 9/04

Citation (applicant)
• US 6554885 B1 20030429 - MENDE BERND [DE], et al
• US 6613122 B1 20030902 - BONNEAU MAXIME [FR], et al
• US 6312497 B1 20011106 - STANDAERT ROGER [BE]
• US 7077883 B2 20060718 - KAMPHUIS BERT-JAN [BE], et al
• EP 0865511 B1 19990818 - UNION MINIERE SA [BE]
• EP 1492897 B1 20050720 - UMICORE NV [BE]
• BJ. KAMPHUIS; B. SERNEELS: "Cobalt and nickel free bond powder for diamond tools: Cobalite CNF", INDUSTRIAL DIAMOND REVIEW, 2004, pages 26 - 32, XP009098907

Citation (search report)
• [XA] US 4518563 A 19850521 - SUGANUMA TETSUYA [JP], et al
• [A] US 4588441 A 19860513 - IKENOUE YUTAKA [JP], et al
• [A] GB 2023184 A 19791228 - HOEGANAES AB

Cited by
CN112676562A; CN111822715A; CN113523266A; CN109702188A; CN107030584A; CN112223129A; CN114466719A; WO2021063653A1

Designated contracting state (EPC)
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)
BA ME

DOCDB simple family (publication)
EP 3124634 A1 20170201; PL 232405 B1 20190628; PL 413283 A1 20170130

DOCDB simple family (application)
EP 15183275 A 20150901; PL 41328315 A 20150727