Title (en)

MICROALLOYED STEEL WITH GOOD RESISTANCE TO HYDROGEN FOR THE COLD-FORMING OF MACHINE PARTS HAVING HIGH PROPERTIES

Title (de)

MIKROLEGIERTER STAHL MIT GUTER BESTÄNDIGKEIT GEGENÜBER WASSERSTOFF ZUR KALTUMFORMUNG VON MASCHINENTEILEN MIT HOHEN EIGENSCHAFTEN

Title (fr)

ACIER MICRO-ALLIÉ À BONNE TENUE À L'HYDROGÈNE POUR LE FORMAGE À FROID DE PIÈCES MÉCANIQUES À HAUTES CARACTÉRISTIQUES

Publication

EP 2134882 B1 20191030 (FR)

Application

EP 08787931 A 20080409

Priority

- FR 2008000496 W 20080409
- FR 0702666 A 20070412

Abstract (en)

[origin: WO2008142275A2] The steel according to the invention is characterized in that, in order to keep its molybdenum weight content below 0.45%, its chemical composition, besides iron and the inevitable residual impurities resulting from the smelting of the steel, corresponds to the following analysis, given in percentages by weight: 0.3 = C% = 0.5; 0.20 = Mo% < 0.45; 0.4 = Mn% = 1.0; 0.4 = Cr% = 2.0; 0.04 = Ni% = 0.8; 0.02 = Nb% = 0.045; 0.03 = V% = 0.30; 0.02 = Ti% = 0.05; with Ti > 3.5 N; 0.003 = B% = 0.005; S% = 0.015; P% = 0.015, and optionally 0.05 = Si% = 0.20; A1% = 0.05 and N% = 0.015; by cold-forming of a hot-rolled wire rod resulting from continuous casting, it is possible to obtain, after heat treatment, "ready-to-use" coined parts, such as cap screws, for example for the automotive industry, that offer a tensile strength of 1200 to more than 1500 MPa while having a good resistance to hydrogen embrittlement, with a specially controlled "raw material" production cost.

IPC 8 full level

C22C 38/04 (2006.01); **C21D 8/06** (2006.01); **C22C 38/44** (2006.01); **C22C 38/46** (2006.01); **C22C 38/48** (2006.01)

CPC (source: EP KR US)

C21D 8/06 (2013.01 - EP KR US); **C22C 38/04** (2013.01 - EP US); **C22C 38/22** (2013.01 - KR); **C22C 38/24** (2013.01 - KR); **C22C 38/44** (2013.01 - EP KR US); **C22C 38/46** (2013.01 - EP US); **C22C 38/48** (2013.01 - EP US)

Cited by

WO2021009543A1; WO2021009705A1

Designated contracting state (EPC)

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MT NL NO PL PT RO SE SI SK TR

DOCDB simple family (publication)

FR 2914929 A1 20081017; **FR 2914929 B1 20101029**; CN 101688281 A 20100331; CN 101688281 B 20121121; EP 2134882 A2 20091223; EP 2134882 B1 20191030; JP 2010523825 A 20100715; JP 5687898 B2 20150325; KR 20090128547 A 20091215; US 2010135745 A1 20100603; US 9194018 B2 20151124; WO 2008142275 A2 20081127; WO 2008142275 A3 20090122; WO 2008142275 A4 20090305; WO 2008142275 A8 20091015

DOCDB simple family (application)

FR 0702666 A 20070412; CN 200880009306 A 20080409; EP 08787931 A 20080409; FR 2008000496 W 20080409; JP 2010502546 A 20080409; KR 20097023298 A 20080409; US 59494408 A 20080409