

Title (en)

METHOD FOR PRODUCING A GRAIN-ORIENTED ELECTRICAL STEEL STRIP OR SHEET INTENDED FOR ELECTROTECHNICAL APPLICATIONS

Title (de)

VERFAHREN ZUM HERSTELLEN EINES KORNIORIENTIERTEN, FÜR ELEKTROTECHNISCHE ANWENDUNGEN BESTIMMTEN ELEKTROBANDS ODER -BLECHS

Title (fr)

PROCÉDÉ DE FABRICATION DE FEUILLARD OU TÔLE MAGNÉTIQUE À GRAINS ORIENTÉS POUR APPLICATIONS ÉLECTROTECHNIQUES

Publication

EP 2761041 B1 20171122 (DE)

Application

EP 12762581 A 20120920

Priority

- DE 102011054004 A 20110928
- EP 2012068525 W 20120920

Abstract (en)

[origin: WO2013045339A1] The invention relates to a method for producing a grain-oriented electrical steel strip or sheet. The slab temperature of a thin slab, which consists of a steel comprising (in wt.%) Si: 2 - 6.5%, C: 0.02 - 0.15%, S: 0.01 - 0.1%, Cu: 0.1 - 0.5%, the Cu-to-S content proportion %Cu/%S being > 4, Mn: up to 0.1%, the Mn-to-S content proportion %Mn/%S being < 2.5, and optionally contents of N, Al, Ni, Cr, Mo, Sn, V, Nb, is homogenized at 1000 - 1200 °C. The thin slab is hot-rolled into a hot strip with a thickness of 0.5 - 4.0 mm at an initial hot-rolling temperature <= 1030 °C and a final hot-rolling temperature >= 710 °C and with a respective thickness reduction of >= 40% in both the first as well as the second hot-forming pass. The hot strip is cooled and coiled into a coil, said hot strip being cold-rolled into a cold strip with a final thickness of 0.15 - 0.50 mm. An annealing separator is applied onto the annealed cold strip, and a final annealing process of the cold strip which is provided with the annealing separator is carried out in order to form a Goss texture.

IPC 8 full level

C22C 38/00 (2006.01); **C21D 8/02** (2006.01); **C21D 8/12** (2006.01); **C22C 38/02** (2006.01); **C22C 38/04** (2006.01); **C22C 38/06** (2006.01); **C22C 38/16** (2006.01); **C22C 38/34** (2006.01); **C22C 38/42** (2006.01); **H01F 1/147** (2006.01)

CPC (source: EP KR US)

C21D 8/02 (2013.01 - KR); **C21D 8/0226** (2013.01 - US); **C21D 8/0247** (2013.01 - US); **C21D 8/0284** (2013.01 - EP US); **C21D 8/12** (2013.01 - KR); **C21D 8/1255** (2013.01 - EP US); **C21D 8/1283** (2013.01 - EP US); **C22C 38/001** (2013.01 - EP US); **C22C 38/008** (2013.01 - EP US); **C22C 38/02** (2013.01 - EP KR US); **C22C 38/04** (2013.01 - EP KR US); **C22C 38/06** (2013.01 - EP US); **C22C 38/16** (2013.01 - EP KR US); **C22C 38/34** (2013.01 - EP US); **C22C 38/42** (2013.01 - EP US); **H01F 1/14775** (2013.01 - US)

Citation (examination)

- US 2008216985 A1 20080911 - GUNTHER KLAUS [DE], et al
- SPIEKERMANN P: "LEGIERUNGEN - EIN BESONDERES PATENTRECHTLICHES PROBLEM? - LEGIERUNGSPRUEFUNG IM EUROPÄISCHEN PATENTAMT -", MITTEILUNGEN DER DEUTSCHEN PATENTANWÄLTE, HEYMANN, KOLN, DE, 1 January 1993 (1993-01-01), pages 178 - 190, XP000961882, ISSN: 0026-6884

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

DOCDB simple family (publication)

DE 102011054004 A1 20130328; BR 112013027352 A2 20170117; CN 103635596 A 20140312; CN 103635596 B 20161012; EP 2761041 A1 20140806; EP 2761041 B1 20171122; JP 2015501370 A 20150115; KR 20140066665 A 20140602; MX 2013010774 A 20131007; RU 2014111889 A 20151010; RU 2572919 C2 20160120; US 2014230966 A1 20140821; WO 2013045339 A1 20130404

DOCDB simple family (application)

DE 102011054004 A 20110928; BR 112013027352 A 20120920; CN 201280021491 A 20120920; EP 12762581 A 20120920; EP 2012068525 W 20120920; JP 2014532324 A 20120920; KR 20137029450 A 20120920; MX 2013010774 A 20120920; RU 2014111889 A 20120920; US 201214347679 A 20120920