

Title (en)

GRAIN ORIENTED STEEL STRIP WITH HIGH MAGNETIC CHARACTERISTICS, AND MANUFACTURING PROCESS OF THE SAME

Title (de)

KORNORIENTIERTER BANDSTAHL MIT HOCHMAGNETISCHEN EIGENSCHAFTEN UND HERSTELLUNGSVERFAHREN DAFÜR

Title (fr)

BANDE D'ACIER À GRAINS ORIENTÉS DOTÉE DE CARACTÉRISTIQUES MAGNÉTIQUES ÉLEVÉES ET SON PROCÉDÉ DE FABRICATION

Publication

EP 2547799 B1 20150408 (EN)

Application

EP 11717012 A 20110318

Priority

- IB 2010000591 W 20100319
- IB 2011000582 W 20110318

Abstract (en)

[origin: WO2011114178A1] A method for the production of hot-rolled steel strip comprising the following steps : - providing a steel slab comprising, in weight percentages : Si : 2.5 to 3.5 %, C : 0.05 to 0.1 %, Mn : 0.05 to 0.1 %, Als : 0.015 to 0.026 %, N : 0.0050 to 0.0100 %, and further comprising S and/or Se so that S+ (32/79) Se is in an amount of 0.018 to 0.030 %, and optionally comprising one or more elements chosen among Sb in an amount of 0.015 to 0.035 %, Cu in an amount of 0.08 % to 0.25 %, Sn in an amount of 0.06 % to 0.15 %, P in an amount of 0.005 % to 0.015 %, the balance being iron and unavoidable impurities, - reheating said slab to a temperature between 1300°C and 1430°C, - roughing hot-rolling said slab to produce a blank having a thickness below 50 mm, - finishing hot-rolling of said blank to produce a hot rolled strip in three rolling passes or more, the temperature of said blank during the first pass being above 1150°C and at least one rolling pass being performed with a reduction of 40 % or more and being immediately followed by a holding of more than 20 sec at an average interpass holding temperature T_{av} settled between 1000 and 1200°C, the total finishing hot rolling time t being controlled so that the value of T_{av} for any portion of said strip further respects the under mentioned equation : $T_{av} > T_1 + a_1(t-78)$ [eq1] with $T_1 = 992.2 + 1493(Als)$ and $a_1 = 1.204 + 24.9(Als)$, T_{av} and T_1 being expressed in °C, t in seconds and Als in weight %, - cooling of said hot-rolled strip from the finish rolling temperature to a temperature below 600°C in less than 10 sec and - coiling of said hot-rolled strip.

IPC 8 full level

C21D 8/02 (2006.01); **C21D 6/00** (2006.01); **C21D 8/12** (2006.01); **C21D 9/46** (2006.01); **C22C 38/00** (2006.01); **C22C 38/02** (2006.01); **C22C 38/04** (2006.01); **C22C 38/06** (2006.01); **C22C 38/16** (2006.01)

CPC (source: EP US)

C21D 6/008 (2013.01 - EP US); **C21D 8/0226** (2013.01 - US); **C21D 8/0284** (2013.01 - US); **C21D 8/1222** (2013.01 - EP US); **C21D 9/46** (2013.01 - EP US); **C22C 38/001** (2013.01 - EP US); **C22C 38/002** (2013.01 - US); **C22C 38/008** (2013.01 - EP US); **C22C 38/02** (2013.01 - EP US); **C22C 38/04** (2013.01 - EP US); **C22C 38/06** (2013.01 - EP US); **C22C 38/16** (2013.01 - EP US); **C21D 8/1233** (2013.01 - EP US); **C21D 8/1255** (2013.01 - EP US); **C21D 8/1261** (2013.01 - EP US); **C21D 8/1272** (2013.01 - EP US); **C21D 2211/005** (2013.01 - EP US)

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)

WO 2011114178 A1 20110922; BR 112012023611 A2 20171003; EP 2547799 A2 20130123; EP 2547799 B1 20150408; US 2013174940 A1 20130711; WO 2011114227 A2 20110922; WO 2011114227 A3 20121122

DOCDB simple family (application)

IB 2010000591 W 20100319; BR 112012023611 A 20110318; EP 11717012 A 20110318; IB 2011000582 W 20110318; US 201113635743 A 20110318