

Title (en)

METHOD OF MANUFACTURING GRAIN-ORIENTED ELECTRICAL STEEL SHEET

Title (de)

VERFAHREN ZUR HERSTELLUNG EINES KORNIORIENTIERTEN ELEKTRISCHEN STAHLBLECHS

Title (fr)

PROCÉDÉ DE FABRICATION D'UNE TÔLE EN ACIER ÉLECTRIQUE À GRAINS ORIENTÉS

Publication

EP 2537947 A1 20121226 (EN)

Application

EP 11744742 A 20110218

Priority

- JP 2010033921 A 20100218
- JP 2011053491 W 20110218

Abstract (en)

Hot rolling is performed on a steel with a predetermined composition containing Ti: 0.0020 mass% to 0.010 mass% and/or Cu: 0.010 mass% to 0.50 mass% to obtain a hot-rolled steel sheet. Annealing is performed on the hot-rolled steel sheet to obtain an annealed steel sheet. Cold rolling is performed on the annealed steel sheet to obtain a cold-rolled steel sheet. Decarburization annealing is performed on the cold-rolled steel sheet at a temperature of 800°C to 950°C to obtain a decarburization annealed steel sheet. Then, nitridation treatment is performed on the decarburization annealed steel sheet at 700°C to 850°C to obtain a nitrided steel sheet. Finish annealing is performed on the nitrided steel sheet.

IPC 8 full level

C21D 8/12 (2006.01); **C22C 38/00** (2006.01); **C22C 38/16** (2006.01); **C22C 38/34** (2006.01); **H01F 1/16** (2006.01)

CPC (source: EP KR US)

C21D 3/04 (2013.01 - EP KR US); **C21D 8/12** (2013.01 - EP KR US); **C21D 8/1255** (2013.01 - EP KR US); **C21D 8/1272** (2013.01 - EP KR US); **C21D 9/46** (2013.01 - EP KR US); **C22C 38/001** (2013.01 - EP KR US); **C22C 38/04** (2013.01 - EP US); **C22C 38/06** (2013.01 - EP US); **C22C 38/14** (2013.01 - EP KR US); **C22C 38/16** (2013.01 - EP KR US); **C22C 38/34** (2013.01 - EP KR US); **C23C 8/02** (2013.01 - EP KR US); **C23C 8/80** (2013.01 - EP KR US); **H01F 1/16** (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)

EP 2537947 A1 20121226; **EP 2537947 A4 20170726**; **EP 2537947 B1 20181219**; BR 112012020741 A2 20160823; BR 112012020741 B1 20220719; CN 102762752 A 20121031; CN 102762752 B 20160413; JP 4943559 B2 20120530; JP WO2011102456 A1 20130617; KR 101389248 B1 20140424; KR 20120118504 A 20121026; KR 20130119516 A 20131031; PL 2537947 T3 20190531; US 2012312423 A1 20121213; WO 2011102456 A1 20110825

DOCDB simple family (application)

EP 11744742 A 20110218; BR 112012020741 A 20110218; CN 201180009920 A 20110218; JP 2011053491 W 20110218; JP 2011523633 A 20110218; KR 20127024187 A 20110218; KR 20137026864 A 20110218; PL 11744742 T 20110218; US 201113579684 A 20110218