

Title (en)  
NON-ORIENTED ELECTRICAL STEEL SHEET WITH EXCELLENT HIGH FREQUENCY IRON LOSS CHARACTERISTICS

Title (de)  
NICHTORIENTIERTES ELEKTRISCHES STAHLBLECH MIT HERVORRAGENDEN HOCHFREQUENZ-EISENVERLUSTEIGENSCHAFTEN

Title (fr)  
FEUILLE D'ACIER ÉLECTRIQUE NON ORIENTÉE AYANT D'EXCELLENTE CARACTÉRISTIQUES DE PERTE DE FER À FRÉQUENCE ÉLEVÉE

Publication  
**EP 2977480 B1 20170705 (EN)**

Application  
**EP 14767789 A 20140312**

Priority  
• JP 2013060537 A 20130322  
• JP 2014056430 W 20140312

Abstract (en)  
[origin: EP2977480A1] A non-oriented electrical steel sheet has a chemical composition comprising C: not more than 0.005%, Si: 1.5-4%, Mn: 1.0-5%, P: not more than 0.1%, S: not more than 0.005%, Al: not more than 3 mass%, N: not more than 0.005 mass%, Bi: not more than 0.0030% as mass% and the remainder being Fe and inevitable impurities or a chemical composition containing C: not more than 0.005%, Si: 1.5-4%, Mn: 1.0-5%, P: not more than 0.1%, S: not more than 0.005%, Al: not more than 3 mass%, N: not more than 0.005 mass%, Bi: not more than 0.0030% and further one or two of Ca: 0.0005-0.005% and Mg: 0.0002-0.005%, and is stably excellent in the high-frequency iron loss property even if a great amount of Mn is included.

IPC 8 full level  
**C22C 38/00** (2006.01); **C21D 8/12** (2006.01); **C22C 38/02** (2006.01); **C22C 38/04** (2006.01); **C22C 38/06** (2006.01); **C22C 38/12** (2006.01); **C22C 38/14** (2006.01); **C22C 38/60** (2006.01); **H01F 1/147** (2006.01); **H01F 1/16** (2006.01)

CPC (source: EP RU US)  
**C22C 38/00** (2013.01 - EP US); **C22C 38/001** (2013.01 - EP US); **C22C 38/002** (2013.01 - EP US); **C22C 38/004** (2013.01 - EP US); **C22C 38/008** (2013.01 - EP US); **C22C 38/02** (2013.01 - EP US); **C22C 38/04** (2013.01 - EP RU US); **C22C 38/06** (2013.01 - EP RU US); **C22C 38/12** (2013.01 - EP US); **C22C 38/14** (2013.01 - EP US); **C22C 38/60** (2013.01 - EP US); **H01F 1/16** (2013.01 - EP RU US); **C21D 8/1222** (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); **H01F 1/14791** (2013.01 - EP US)

Cited by  
EP3633059A4; US11404189B2

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 2977480 A1 20160127**; **EP 2977480 A4 20160413**; **EP 2977480 B1 20170705**; CN 105074032 A 20151118; CN 105074032 B 20180112; JP 2014185365 A 20141002; KR 101700694 B1 20170131; KR 20150109485 A 20151001; RU 2015145284 A 20170425; RU 2650469 C2 20180413; TW 201443248 A 20141116; TW I551694 B 20161001; US 2016076125 A1 20160317; WO 2014148328 A1 20140925

DOCDB simple family (application)  
**EP 14767789 A 20140312**; CN 201480016783 A 20140312; JP 2013060537 A 20130322; JP 2014056430 W 20140312; KR 20157023252 A 20140312; RU 2015145284 A 20140312; TW 103110021 A 20140318; US 201414767735 A 20140312