

Title (en)

VERY THIN HARD STEEL SHEET AND METHOD FOR PRODUCING THE SAME

Title (de)

SEHR DÜNNES HARTSTAHLBLECH UND VERFAHREN ZU SEINER HERSTELLUNG

Title (fr)

FEUILLE TRES MINCE D'ACIER DUR ET SON PROCEDE DE FABRICATION

Publication

EP 2003221 A4 20141203 (EN)

Application

EP 07741011 A 20070404

Priority

- JP 2007057575 W 20070404
- JP 2006102766 A 20060404

Abstract (en)

[origin: EP2003221A1] A hard extra-thin steel sheet having a sheet thickness of 0.400 mm or less, the sheet contains, by mass%, C: 0 to 0.800%; N: 0 to 0.600%; Si: 0 to 2.0%; Mn: 0 to 2.0%; P: 0 to 0.10%; S: 0 to 0.100%; Al: 0 to 3.0%; and O: 0 to 0.200%, and also has, by volume fraction, 0.05% or more of a second phase having an average major axis of 0.10 μm or greater and an average minor axis of 0.05 μm or greater and satisfying average major axis/average minor axis ≥ 2.0 .

IPC 8 full level

B21B 1/26 (2006.01); **B21B 3/00** (2006.01); **C21D 1/06** (2006.01); **C21D 8/04** (2006.01); **C21D 9/46** (2006.01); **C21D 9/48** (2006.01); **C22C 38/00** (2006.01); **C22C 38/60** (2006.01)

CPC (source: EP KR)

C21D 1/06 (2013.01 - EP); **C21D 8/0426** (2013.01 - EP); **C21D 8/0457** (2013.01 - EP); **C21D 9/46** (2013.01 - EP); **C21D 9/48** (2013.01 - EP); **C22C 38/004** (2013.01 - EP); **C22C 38/02** (2013.01 - EP); **C22C 38/04** (2013.01 - EP KR); **C22C 38/06** (2013.01 - EP); **C22C 38/14** (2013.01 - EP); **C22C 38/42** (2013.01 - EP); **C22C 38/48** (2013.01 - EP); **C22C 38/60** (2013.01 - EP); **B21B 1/40** (2013.01 - EP); **C21D 8/0436** (2013.01 - EP); **C21D 8/0442** (2013.01 - EP); **C21D 2201/05** (2013.01 - EP); **C21D 2211/004** (2013.01 - EP); **C21D 2211/005** (2013.01 - EP)

Citation (search report)

- [X] US 2004244885 A1 20041209 - MURAKAMI HIDEKUNI [JP], et al
- [A] EP 1514949 A1 20050316 - JFE STEEL CORP [JP]
- [A] WO 2006027854 A1 20060316 - NIPPON STEEL CORP [JP], et al & EP 1806420 A1 20070711 - NIPPON STEEL CORP [JP]
- [E] EP 1950317 A1 20080730 - NIPPON STEEL CORP [JP]
- [E] EP 1865085 A1 20071212 - KOBE STEEL LTD [JP]
- See references of WO 2007116913A1

Cited by

DE102012016645B4; DE102010003997A1; US2019300994A1; CN102443743A; US2019300993A1; CN108374126A; US2019241997A1; US2012067469A1; US9689052B2; US2019153574A1; US10801091B2; US2019300992A1; US10808304B2; EP2341156A1; US9163303B2; US9765678B2; US10006111B2

Designated contracting state (EPC)

BE DE ES FR GB

DOCDB simple family (publication)

EP 2003221 A1 20081217; **EP 2003221 A4 20141203**; **EP 2003221 B1 20160525**; CN 101415851 A 20090422; CN 101415851 B 20110608; ES 2575997 T3 20160704; JP 5058978 B2 20121024; JP WO2007116913 A1 20090820; KR 101065545 B1 20110919; KR 20080106330 A 20081204; WO 2007116913 A1 20071018

DOCDB simple family (application)

EP 07741011 A 20070404; CN 200780011684 A 20070404; ES 07741011 T 20070404; JP 2007057575 W 20070404; JP 2008509867 A 20070404; KR 20087024085 A 20070404