

Title (en)  
LOW-YIELD RATIO STEEL SHEET HAVING EXCELLENT LOW-TEMPERATURE TOUGHNESS AND METHOD FOR MANUFACTURING SAME

Title (de)  
STAHLBLECH MIT NIEDRIGER STRECKGRENZE, HERVORRAGENDER TIEFTEMPERATURZÄHIGKEIT UND VERFAHREN ZUR HERSTELLUNG DAVON

Title (fr)  
TÔLE D'ACIER À FAIBLE RAPPORT D'ÉLASTICITÉ PRÉSENTANT UNE EXCELLENTE TÉNACITÉ À BASSE TEMPÉRATURE ET SON PROCÉDÉ DE FABRICATION

Publication  
**EP 3561107 A4 20200101 (EN)**

Application  
**EP 17882705 A 20171208**

Priority  
• KR 20160176126 A 20161221  
• KR 2017014411 W 20171208

Abstract (en)  
[origin: EP3561107A1] An aspect of the present invention relates to a low-yield ratio steel sheet having excellent low-temperature toughness, the steel sheet comprising, in terms of weight%, 0.05-0.1% of C, 0.3-0.7% of Si, 1.0-2.0% of Mn, 0.005-0.04% of Al, 0.04-0.07% of Nb, 0.001-0.02% of Ti, 0.05-0.4% of Cu, 0.1-0.6% of Ni, 0.01-0.08% of Mo, 0.001-0.008% of N, 0.015% or less of P, 0.003% or less of S, and the remainder Fe and unavoidable impurities, wherein a microstructure comprises, by area fraction, -80-92% of ferrite and 8-20% of MA (martensite/austenite mixed structure), the average size of the MA measured for a circle-equivalent diameter being 3# or less.

IPC 8 full level  
**C21D 1/28** (2006.01); **C21D 6/00** (2006.01); **C21D 8/02** (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 38/08** (2006.01); **C22C 38/12** (2006.01); **C22C 38/14** (2006.01); **C22C 38/16** (2006.01)

CPC (source: EP KR)  
**C21D 1/28** (2013.01 - EP KR); **C21D 6/005** (2013.01 - EP); **C21D 8/02** (2013.01 - EP); **C21D 8/0205** (2013.01 - EP); **C21D 8/0226** (2013.01 - EP); **C21D 8/0263** (2013.01 - KR); **C21D 9/46** (2013.01 - EP KR); **C22C 38/001** (2013.01 - EP); **C22C 38/02** (2013.01 - EP KR); **C22C 38/04** (2013.01 - EP KR); **C22C 38/06** (2013.01 - EP KR); **C22C 38/08** (2013.01 - EP KR); **C22C 38/12** (2013.01 - EP KR); **C22C 38/14** (2013.01 - EP KR); **C22C 38/16** (2013.01 - EP KR); **C21D 2211/005** (2013.01 - KR)

Citation (search report)  
• [I] EP 2940172 A1 20151104 - POSCO [KR]  
• [A] JP 2013049895 A 20130314 - JFE STEEL CORP  
• [A] KR 100833075 B1 20080527 - POSCO [KR]  
• [A] JP 2012031509 A 20120216 - JFE STEEL CORP  
• [A] US 7520943 B2 20090421 - ISHIKAWA NOBUYUKI [JP], et al  
• See references of WO 2018117507A1

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

Designated extension state (EPC)  
BA ME

DOCDB simple family (publication)  
**EP 3561107 A1 20191030**; **EP 3561107 A4 20200101**; CN 110100027 A 20190806; CN 110100027 B 20211015; JP 2020503435 A 20200130; JP 6847225 B2 20210324; KR 101917451 B1 20181109; KR 20180072496 A 20180629; WO 2018117507 A1 20180628

DOCDB simple family (application)  
**EP 17882705 A 20171208**; CN 201780079094 A 20171208; JP 2019532672 A 20171208; KR 20160176126 A 20161221; KR 2017014411 W 20171208