

Title (en)
ULTRAHIGH-STRENGTH COLD-ROLLED STEEL SHEET WITH EXCELLENT DUCTILITY AND DELAYED-FRACTURE RESISTANCE, AND
PROCESS FOR PRODUCING SAME

Title (de)
ULTRAHOCHFESTES KALTGEWALZTES STAHLBLECH MIT HERVORRAGENDER DUKTILITÄT UND VERZÖGERTER BRUCHFESTIGKEIT
SOWIE HERSTELLUNGSVERFAHREN DAFÜR

Title (fr)
TÔLE D'ACIER LAMINÉE À FROID À ULTRAHAUTE RÉSISTANCE PRÉSENTANT UNE EXCELLENTE DUCTILITÉ ET RÉSISTANCE À LA
RUPTURE DIFFÉRÉE, ET SON PROCÉDÉ DE PRODUCTION

Publication
EP 2589674 A1 20130508 (EN)

Application
EP 11800982 A 20110624

Priority
• JP 2010148531 A 20100630
• JP 2011065135 W 20110624

Abstract (en)
Provided is an ultra-high-strength cold-rolled steel sheet having excellent delayed fracture resistance and a tensile strength of 1320 MPa or more and a method for manufacturing the same. The ultra-high-strength cold-rolled steel sheet has a steel composition that does not excessively contain a transition metal element, such as V or Mo, causing a significant increase in allowing cost or Al, which may possibly cause casting defects. An ultra-high-strength cold-rolled steel sheet with excellent ductility and delayed fracture resistance contains 0.15% to 0.25% C, 1.0% to 3.0% Si, 1.5% to 2.5% Mn, 0.05% or less P, 0.02% or less S, 0.01% to 0.05% Al, and less than 0.005% N on a mass ratio, the remainder being Fe and unavoidable impurities, and has a metal microstructure containing 40% to 85% of a tempered martensite phase and 15% to 60% of a ferrite phase on a volume fraction basis and a tensile strength of 1320 MPa or more.

IPC 8 full level
C22C 38/00 (2006.01); **B21B 3/00** (2006.01); **C21D 9/46** (2006.01); **C22C 38/06** (2006.01); **C22C 38/14** (2006.01)

CPC (source: EP KR US)
C21D 6/00 (2013.01 - EP US); **C21D 8/00** (2013.01 - EP US); **C21D 8/005** (2013.01 - EP US); **C21D 8/0436** (2013.01 - EP KR US); **C21D 8/0447** (2013.01 - EP KR US); **C21D 9/46** (2013.01 - EP KR US); **C22C 38/001** (2013.01 - EP KR US); **C22C 38/02** (2013.01 - EP KR US); **C22C 38/04** (2013.01 - EP KR US); **C22C 38/06** (2013.01 - EP KR US); **C22C 38/12** (2013.01 - EP KR US); **C22C 38/14** (2013.01 - EP KR US); **C21D 2211/005** (2013.01 - EP KR US); **C21D 2211/008** (2013.01 - EP KR US)

Cited by
US10253387B2; EP4159886A4; EP3128026A4; EP4012055A4; EP3088547A4; EP3272892A4; EP3567132A4; US10329636B2; US10711322B2; US11293103B2

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 2589674 A1 20130508; EP 2589674 A4 20170621; CN 102971442 A 20130313; JP 2012012642 A 20120119; JP 5668337 B2 20150212; KR 101540507 B1 20150729; KR 20130037208 A 20130415; US 2013087257 A1 20130411; WO 2012002520 A1 20120105

DOCDB simple family (application)
EP 11800982 A 20110624; CN 201180032639 A 20110624; JP 2010148531 A 20100630; JP 2011065135 W 20110624; KR 20127034013 A 20110624; US 201113805144 A 20110624