

Title (en)

LOW-DENSITY HOT- OR COLD-ROLLED STEEL, METHOD FOR IMPLEMENTING SAME AND USE THEREOF

Title (de)

WARM- ODER KALTGEWALZTER STAHL MIT NIEDRIGER DICHT, VERFAHREN ZUR REALISIERUNG DAVON UND VERWENDUNG DAVON

Title (fr)

ACIER LAMINE A CHAUD OU A FROID A FAIBLE DENSITE, SON PROCEDE DE MISE EN OEUVRE ET SON UTILISATION

Publication

**EP 2855725 A1 20150408 (FR)**

Application

**EP 13732225 A 20130527**

Priority

- FR 2012000220 W 20120531
- IB 2013001057 W 20130527

Abstract (en)

[origin: WO2013178887A1] The invention relates to a sheet of rolled steel having mechanical strength no lower than 600 MPa and elongation at break no lower than 20 % as well as to the method for manufacturing same. The chemical composition of the sheet of the invention includes: 0.10 % <= C <= 0.30 %, 6.0 % <= Mn <= 15.0 %, 6.0 % <= Al <= 15.0 %, and optionally one or more elements selected among: Si <= 2.0 %, Ti <= 0.2 %, V <= 0.6 % and Nb <= 0.3 %, the rest of the composition comprising iron and inevitable impurities that result from the production process. The weight ratio of manganese to aluminium is such that: (I). The microstructure of the sheet according to the invention consists of ferrite, austenite and up to 5 % of kappa precipitates as a surface fraction.

IPC 8 full level

**B21C 47/02** (2006.01); **B21B 1/46** (2006.01); **B21B 45/02** (2006.01); **C21D 6/00** (2006.01); **C21D 8/02** (2006.01); **C21D 8/04** (2006.01); **C21D 9/46** (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)

CPC (source: EP KR US)

**B21B 1/463** (2013.01 - US); **B21B 45/0203** (2013.01 - US); **B21C 47/02** (2013.01 - US); **C21D 6/005** (2013.01 - EP US); **C21D 8/02** (2013.01 - KR); **C21D 8/0205** (2013.01 - EP US); **C21D 8/0226** (2013.01 - EP US); **C21D 8/0236** (2013.01 - EP US); **C21D 8/0436** (2013.01 - EP US); **C21D 8/0473** (2013.01 - EP US); **C21D 9/46** (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 US); **C22C 38/14** (2013.01 - EP KR US); **C21D 2211/001** (2013.01 - EP US); **C21D 2211/004** (2013.01 - EP US); **C21D 2211/005** (2013.01 - EP US)

Citation (search report)

See references of WO 2013179115A1

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)

**WO 2013178887 A1 20131205**; BR 112014029177 A2 20170627; BR 112014029177 B1 20190326; CA 2873578 A1 20131205; CA 2873578 C 20171010; CN 104350169 A 20150211; CN 104350169 B 20170222; EP 2855725 A1 20150408; EP 2855725 B1 20160706; ES 2594328 T3 20161219; HU E028856 T2 20170130; IN 9576DEN2014 A 20150717; JP 2015520298 A 20150716; JP 2017106108 A 20170615; JP 6074031 B2 20170201; JP 6242990 B2 20171206; KR 20150003918 A 20150109; KR 20160129916 A 20161109; KR 20170053727 A 20170516; MA 20150361 A1 20151030; MA 37508 B1 20160331; MX 2014014613 A 20150810; MX 359361 B 20180926; PL 2855725 T3 20161230; RU 2014153550 A 20160720; RU 2614491 C2 20170328; UA 111285 C2 20160411; US 10900105 B2 20210126; US 2015147221 A1 20150528; WO 2013179115 A1 20131205; WO 2013179115 A8 20141106; ZA 201408109 B 20151125

DOCDB simple family (application)

**FR 2012000220 W 20120531**; BR 112014029177 A 20130527; CA 2873578 A 20130527; CN 201380027985 A 20130527; EP 13732225 A 20130527; ES 13732225 T 20130527; HU E13732225 A 20130527; IB 2013001057 W 20130527; IN 9576DEN2014 A 20141113; JP 2015514609 A 20130527; JP 2016228644 A 20161125; KR 20147034966 A 20130527; KR 20167030369 A 20130527; KR 20177010838 A 20130527; MA 37508 A 20141111; MX 2014014613 A 20130527; PL 13732225 T 20130527; RU 2014153550 A 20130527; UA A201414024 A 20130527; US 201314404750 A 20130527; ZA 201408109 A 20141106