

Title (en)

HIGH-CARBON HOT-ROLLED STEEL SHEET AND METHOD FOR PRODUCING SAME

Title (de)

HEISSGEWALZTES STAHLBLECH MIT HOHEM KOHLENSTOFFGEHALT UND VERFAHREN ZUR HERSTELLUNG DAVON

Title (fr)

TÔLE D'ACIER LAMINÉE À CHAUD À HAUTE TENEUR EN CARBONE ET SON PROCÉDÉ DE PRODUCTION

Publication

EP 3091098 A4 20170405 (EN)

Application

EP 15770102 A 20150326

Priority

- JP 2014068737 A 20140328
- JP 2015001712 W 20150326

Abstract (en)

[origin: EP3091098A1] Provided is a high-carbon hot-rolled steel sheet whose raw material is B-added steel, with which it is possible to stably achieve excellent hardenability even if annealing is performed in a nitrogen atmosphere, and which has excellent workability corresponding to a hardness of 73 or less in terms of HRB and to a total elongation of 39% or more before a quenching treatment is performed. A high-carbon hot-rolled steel sheet having a chemical composition containing, by mass%, C: 0.20% or more and 0.40% or less, Si: 0.10% or less, Mn: 0.50% or less, P: 0.03% or less, S: 0.010% or less, sol.Al: 0.10% or less, N: 0.0050% or less, B: 0.0005% or more and 0.0050% or less, and one or more of Sb, Sn, Bi, Ge, Te, and Se in an amount of 0.002% or more and 0.030% or less in total, in which the proportion of the content of a solid solution B to the content of B is 70% or more, a microstructure including ferrite and cementite, in which the density of cementite in the ferrite grains is 0.08 pieces/ μm^2 or less, a hardness of 73 or less in terms of HRB, and a total elongation of 39% or more.

IPC 8 full level

C22C 38/00 (2006.01); **C21D 1/32** (2006.01); **C21D 9/46** (2006.01); **C22C 38/60** (2006.01)

CPC (source: EP KR US)

C21D 8/0226 (2013.01 - EP KR US); **C21D 8/0263** (2013.01 - EP KR US); **C21D 9/46** (2013.01 - EP KR US); **C22C 38/00** (2013.01 - EP US); **C22C 38/001** (2013.01 - EP KR US); **C22C 38/002** (2013.01 - EP US); **C22C 38/008** (2013.01 - EP 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 38/08** (2013.01 - EP US); **C22C 38/12** (2013.01 - EP US); **C22C 38/18** (2013.01 - EP US); **C22C 38/32** (2013.01 - EP US); **C22C 38/60** (2013.01 - EP KR US); **C21D 2211/003** (2013.01 - EP KR US); **C21D 2211/005** (2013.01 - EP KR US); **C21D 2211/009** (2013.01 - EP US)

Citation (search report)

- [X] JP 2010255066 A 20101111 - JFE STEEL CORP
- [A] US 2013186526 A1 20130725 - NAKAMURA NOBUYUKI [JP], et al
- See references of WO 2015146173A1

Cited by

EP3901302A4; EP3901303A4; CN111655893A; EP3748030A4; US11359267B2

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 3091098 A1 20161109; **EP 3091098 A4 20170405**; **EP 3091098 B1 20180711**; CN 106133170 A 20161116; CN 106133170 B 20171226; JP 6065120 B2 20170125; JP WO2015146173 A1 20170413; KR 101892524 B1 20180828; KR 20160138230 A 20161202; TW 201538744 A 20151016; TW I557239 B 20161111; US 2017121787 A1 20170504; WO 2015146173 A1 20151001

DOCDB simple family (application)

EP 15770102 A 20150326; CN 201580016876 A 20150326; JP 2015001712 W 20150326; JP 2015537042 A 20150326; KR 20167029879 A 20150326; TW 104109998 A 20150327; US 201515129520 A 20150326