

Title (en)

High tensile steel containing Mn, steel surface product made from such steel and method for producing same

Title (de)

Höherfester, Mn-haltiger Stahl, Stahlflachprodukt aus einem solchen Stahl und Verfahren zu dessen Herstellung

Title (fr)

Acier à résistance élevée comprenant du Mn, produit plat en acier composé d'un tel acier et son procédé de fabrication

Publication

EP 2383353 A3 20150318 (DE)

Application

EP 11164339 A 20110429

Priority

DE 102010019114 A 20100430

Abstract (en)

[origin: EP2383353A2] Steel with an elongation at break A80 of minimum 4% and a tensile strength of 900-1500 MPa, comprises iron and unavoidable impurities comprising carbon (up to 0.5%), manganese (4-12%), silicon (up to 1%), aluminum (up to 3%), chromium (0.1-4%), copper (up to 2%), nickel (up to 2%), nitrogen (up to 0.05%), phosphorus (up to 0.05%), and sulfur (up to 0.01%), and optionally at most 0.5% of one or more elements comprising vanadium, niobium or titanium. Independent claims are included for: (1) a flat rolled steel product made of the steel, comprising 30-100% of martensite, tempered martensite or bainite and residual quantity of austenite; and (2) making the flat rolled steel products, comprising melting composite molten steel, producing an starting product for subsequent hot rolling, in which the molten steel is poured into a strand of which at least a slab or a thin slab partitioned as a starting material for hot rolling, or a cast strip provided as a starting material for hot rolling, heat treating the starting product at a hot rolling start temperature of 1000-1150[deg] C, hot rolling the starting product to a hot strip with a thickness of at most 2.5 mm, where the hot rolling is performed at 800-1050[deg] C, coiling the hot strip into a coil at a coiling temperature of = 700[deg] C, and optionally annealing the hot strip at 250-950[deg] C, cold rolling the annealed hot strips in one or more steps to a cold-rolled strip with a thickness of at most 60% of the thickness of the hot strips, annealing the cold-rolled strip at 450-950[deg] C, coating the surface of the hot strip or cold-rolled strip with a metallic corrosion protective coating, and coating the surface of the hot strip or the cold strip with an organic coating.

IPC 8 full level

C21D 8/02 (2006.01); **C21D 8/04** (2006.01); **C22C 38/04** (2006.01); **C22C 38/18** (2006.01)

CPC (source: EP)

C21D 8/02 (2013.01); **C21D 8/0221** (2013.01); **C21D 8/0263** (2013.01); **C21D 8/0278** (2013.01); **C21D 8/04** (2013.01); **C21D 8/0415** (2013.01); **C21D 8/0421** (2013.01); **C21D 8/0447** (2013.01); **C21D 8/0478** (2013.01); **C22C 38/04** (2013.01); **C22C 38/18** (2013.01)

Citation (search report)

- [X] EP 0425058 A1 19910502 - MANNESMANN AG [DE]
- [A] US 5454883 A 19951003 - YOSHIE ATSUSHIKO [JP], et al
- [A] US 7018488 B2 20060328 - TOYOOKA TAKAAKI [JP], et al
- [A] US 4796946 A 19890110 - WILSON ROLAND B [US], et al

Cited by

DE102015112886A1; DE102016115618A1; DE102015112889A1; DE102016117508A1; DE102016117508B4; WO2017021464A1; WO2018050634A1; WO2018036918A1; WO2018050637A1; RU2697052C1; US11261503B2; CN114150227A; CN115572887A; RU2749270C2; CN110306117A; CN110951956A; DE102017223633A1; US10378681B2; RU2734216C1; US2018223399A1; CN109097680A; US2021301376A1; WO2019020169A1; CN109642263A; KR20190042022A; RU2714975C1; US2021147953A1; WO2018160700A1; WO2022068201A1; WO2017013193A1; US11352679B2; CN106297960A; CN109790611A; US2019194773A1; EP3504351A4; US11186890B2; DE102016117494A1; US11214846B2; CN106893931A; CN111727265A; JP2021516292A; US11549163B2; WO2019177896A1; DE102016110661A1; WO2017211952A1; DE102020204356A1; WO2018050683A1; DE102016117502A1; WO2017021459A1; WO2018083035A1; WO2018083028A1; WO2018083029A1; WO2018050387A1; US11473160B2; US11519050B2; WO2015001367A1; WO2015001414A1; US10400315B2; US10711320B2; EP2402472B2; EP3658307B1

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 2383353 A2 20111102; EP 2383353 A3 20150318; EP 2383353 B1 20191106

DOCDB simple family (application)

EP 11164339 A 20110429