Title (en)

STEEL, FLAT STEEL PRODUCT, STEEL COMPONENT AND METHOD FOR PRODUCING A STEEL COMPONENT

Title (de)

STAHL, STAHLFLACHPRODUKT, STAHLBAUTEIL UND VERFAHREN ZUR HERSTELLUNG EINES STAHLBAUTEILS

Title (fr)

ACIER, PRODUIT PLAT EN ACIER, ÉLÉMENT EN ACIER ET PROCÉDÉ DE FABRICATION D'UN ÉLÉMENT EN ACIER

Publication

EP 2553133 B1 20140827 (DE)

Application

EP 11711594 A 20110401

Priority

- EP 10158923 A 20100401
- EP 2011055117 W 20110401
- EP 11711594 A 20110401

Abstract (en)

[origin: EP2374910A1] Steel comprises carbon (0.15-0.40 wt.%), manganese (1-2 wt.%), aluminum (0.2-1.6 wt.%), silicon (0-1.4 wt.%), phosphorus (0-0.10 wt.%), sulfur (0-0.03 wt.%), chromium (0-0.5 wt.%), molybdenum (0-1 wt.%), nitrogen (0-0.01 wt.%), nickel (0-2 wt.%), niobium (0.012-0.04 wt.%), titanium (0-0.40 wt.%), boron (0.0010-0.0050 wt.%), calcium (0-0.0050 wt.%), iron (remaining quantity) and inevitable impurities, where the sum of quantity of silicon and aluminum is 0.25-1.6 wt.%. Independent claims are included for: (1) a flat steel product for producing a steel component comprising at least a region containing the high-strength steel; (2) a steel component made of the flat steel product, having a structure in the region of high-strength steel consisting of martensite, austenite and up to 20% of ferrites; and (3) a method for producing the steel component comprising providing the flat steel product, heating the flat steel product at 780-950[deg] C, hot-deforming the flat steel product to steel component, and accelerated cooling the steel component so that the steel component obtained after cooling exhibits at least a structure in the region of high-strength steel consisting of martensite, austenite and up to 20% ferrite.

IPC 8 full level

C21D 6/00 (2006.01); **C21D 9/46** (2006.01); **C22C 38/04** (2006.01); **C22C 38/06** (2006.01); **C22C 38/12** (2006.01)

CPC (source: EP KR US)

C21D 6/00 (2013.01 - EP KR US); **C21D 9/46** (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); C21D 2211/001 (2013.01 - EP KR US); C21D 2211/005 (2013.01 - EP KR US); C21D 2211/008 (2013.01 - EP KR US)

Cited by

EP4324950A1; WO2024038037A1; WO2023020931A1; WO2023020932A1

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 2374910 A1 20111012; CA 2780082 A1 20111006; DK 2553133 T3 20141208; EP 2553133 A2 20130206; EP 2553133 B1 20140827; ES 2524352 T3 20141205; JP 2013527312 A 20130627; JP 5871901 B2 20160301; KR 20130014520 A 20130207; MX 2012007359 A 20120801; PL 2553133 T3 20150331; PT 2553133 E 20141127; UA 108091 C2 20150325; US 2012279621 A1 20121108; WO 2011121118 A2 20111006; WO 2011121118 A3 20120202

DOCDB simple family (application)

EP 10158923 A 20100401; CA 2780082 A 20110401; DK 11711594 T 20110401; EP 11711594 A 20110401; EP 2011055117 W 20110401; ES 11711594 T 20110401; JP 2013501863 A 20110401; KR 20127024639 A 20110401; MX 2012007359 A 20110401; PL 11711594 T 20110401; PT 11711594 T 20110401; UA A201209615 A 20110401; US 201113519916 A 20110401