

Title (en)
Steel for the production of a steel component, flat steel product comprising same, component comprised of same and method for producing same

Title (de)
Stahl für die Herstellung eines Stahlbauteils, daraus bestehendes Stahlflachprodukt, daraus hergestelltes Bauteil und Verfahren zu dessen Herstellung

Title (fr)
Acier destiné à la fabrication d'un composant en acier, produit plat en acier en étant constitué, composant en étant issu et leur procédé de fabrication

Publication
EP 2664682 A1 20131120 (DE)

Application
EP 12168384 A 20120516

Priority
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Abstract (en)
Steel comprises 0.05-0.15 wt.% of carbon, 0.5-2 wt.% of manganese, 0.01-0.70 wt.% of silicon, 0.01-0.1 wt.% of aluminum, 0.08-0.14 wt.% of titanium, 0.15-0.50 wt.% of chromium = 0.010 wt.% of sulfur and/or optionally one or more elements comprising = 0.1 wt.% of phosphorus, = 0.01 wt.% of nitrogen, = 0.1 wt.% of copper, = 0.1 wt.% of nickel, = 0.1 wt.% of molybdenum, = 0.1 wt.% of vanadium, = 0.0010 wt.% of boron, = 0.25 wt.% of niobium and 0.001-0.0040 wt.% of calcium, iron and unavoidable impurities. Independent claims are included for: (1) a flat steel product, comprising completely or at least in a portion of a constituted steel; (2) a steel component produced by hot-forming and subsequent quenching of the produced flat steel product, comprising the constituted steel having a tensile strength of at least 700 MPa and a structure, which consists of a combination of finely dispersed hard phases (martensite/bainite) and ductile phases (globular ferrite and dislocation-rich bainitic ferrite) and/or an austenite area of maximum of 5% in a fine-grained microstructure with additional precipitation hardening from titanium carbonitrides; and (3) producing the constituted steel component, comprising heating the flat steel product at a temperature of 750-950[deg] C in an oven, transferring the flat steel product from the oven to a tool, hot-forming the flat steel product into the steel component, and quenching the flat steel product at a cooling rate of more than 25[deg] C/seconds.

Abstract (de)
Ein erfindungsgemäßer Stahl weist neben Eisen und unvermeidbaren Verunreinigungen (in Gew.-%) C: 0,05 - 0,15 %, Mn: 0,5 - 2,0 %, Si: 0,01 - 0,70 %, Al: 0,01 - 0,1 %, Ti: 0,08 - 0,14 %, Cr: 0,15 - 0,50 %, S: # 0,010 %, sowie jeweils optional eines oder mehrere Elemente aus der Gruppe "P, N, Cu, Ni, Mo V, B, Nb, Ca" mit der Maßgabe auf, P: # 0,1 %, N: # 0,01 %, Cu: # 0,1 %, Ni: # 0,1 %, Mo: # 0,1 %, V: # 0,1 %, B: # 0,0010 %, Nb: # 0,25 %, Ca: 0,001 - 0,0040 %. Ein solcher Stahl und daraus hergestellte Stahlflachprodukte sind für die Herstellung von Bauteilen durch Warmpressformhärten optimal geeignet. Aus erfindungsgemäßen Stahlflachprodukten geformte Stahlbauteile besitzen eine hohe Festigkeit und hohe Duktilität. Hierzu gibt die Erfindung ein Verfahren an, mit dem sich derartige Bauteile aus erfindungsgemäßigem Stahl herstellen lassen.

IPC 8 full level
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Citation (applicant)
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