

Title (en)
Method for manufacturing a high strength flat steel product

Title (de)
Verfahren zur Erzeugung eines hochfesten Stahlflachprodukts

Title (fr)
Procédé de génération d'un produit plat en acier haute résistance

Publication
EP 2924140 A1 20150930 (DE)

Application
EP 14161606 A 20140325

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Abstract (en)
[origin: CA2941202A1] To produce a flat steel product having a yield strength of = 700 MPa and a microstructure which is bainitic to an extent of = 70% by volume, the following working steps are carried out according to the invention: a) melting of a steel melt consisting of (in % by weight) C: 0.05-0.08%, Si: 0.015-0.500%, Mn: 1.60-2.00%, P: = 0.025%, S: = 0.010%, Al: 0.020-0.050%, N: = 0.006%, Cr: = 0.40%, Nb: 0.060-0.070%, B: 0.0005-0.0025%, Ti: 0.090- 0.130% and unavoidable impurities, remainder Fe; b) casting of the melt to form a slab; c) reheating of the slab to 1200-1300 °C; d) rough rolling of the slab at 950-1250 °C and with an overall pass reduction of = 50%; e) hot finish-rolling of the rough-rolled slab with a hot-rolling end temperature of 800-880 °C; f) cooling of the hot finish-rolled flat steel product within = 10 s after the hot finish-rolling to 50-620 °C at a cooling rate of = 40 K/s; g) coiling of the hot finish-rolled flat steel product.

Abstract (de)
Zur Erzeugung eines Stahlflachprodukts mit einer Streckgrenze von #¥ 700 MPa und einem #¥ 70 Vol.-% bainitischen Gefüge werden erfindungsgemäß folgende Arbeitsschritte absolviert: a) Erschmelzen einer Stahlschmelze, die (in Gew.-%) aus C: 0,05-0,08%, Si: 0,015-0,500%, Mn: 1,60-2,00%, P: #¥ 0,025%, S: #¥ 0,010%, Al: 0,020-0,050%, N: #¥ 0,006%, Cr: #¥ 0,40%, Nb: 0,060-0,070%, B: 0,0005-0,0025%, Ti: 0,090-0,130%, sowie unvermeidbaren Verunreinigungen, Rest Fe besteht; b) Vergießen der Schmelze zu einer Bramme; c) Wiedererwärmen der Bramme auf 1200-1300 °C; d) Vorwalzen der Bramme bei 950-1250 °C und einer Gesamtstichabnahme #¥50 %; e) Fertigwarmwalzen der vorgewalzten Bramme mit einer Warmwalzendtemperatur von 800 - 880 °C; f) Kühlen des fertig warmgewalzten Stahlflachprodukts innerhalb von #¥ 10s nach dem Fertigwarmwalzen auf 550-620 °C mit einer Abkühlgeschwindigkeit von #¥ 40 K/s; g) Haspeln des fertig warmgewalzten Stahlflachprodukts.

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Citation (applicant)
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