

Title (en)

METHOD FOR THE PRODUCTION OF VERY-HIGH-STRENGTH MARTENSITIC STEEL AND SHEET OR PART THUS OBTAINED

Title (de)

VERFAHREN ZUR HERSTELLUNG VON MARTENSITISCHEM STAHL VON SEHR HOHER STÄRKE UND FOLIE ODER TEIL AUS DIESEM VERFAHREN

Title (fr)

PROCEDE DE FABRICATION D'ACIER MARTENSITIQUE A TRES HAUTE RESISTANCE ET TÔLE OU PIECE AINSI OBTENUE

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Application

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Abstract (en)

[origin: WO2012153008A1] The invention relates to a method for the production of a martensitic steel sheet having a yield point greater than 1300 MPa and mechanical strength greater than (3220(C)+958) megapascals, (C) denoting the carbon weight content of the steel. The method comprises the following steps consisting in: supplying a semi-finished steel product having a composition containing, expressed as weight, 0.15% = C = 0.40%, 1.5% = Mn = 3%, 0.005% = Si = 2%, 0.005% = Al = 0.1 %, 1.8% = Cr = 4%, 0% = Mo = 2%, wherein 2.7% = 0.5 (Mn)+(Cr)+3(Mo) = 5.7%, S = 0.05%, P = 0.1 % and, optionally, 0% = Nb = 0.050%, 0.01 % = Ti = 0.1 %, 0.0005% = B = 0.005%, 0.0005% = Ca = 0.005%, the remainder of the composition being formed by iron and the inevitable impurities resulting from production; heating the semi-finished product to a temperature T1 between 1050°C and 1250°C and, subsequently, subjecting the heated semi-finished product to rough rolling at a temperature T2 between 1000 and 880°C, with a cumulative reduction rate ea greater than 30%, such as to obtain a sheet having an austenitic structure that is totally recrystallised, with an average grain size of less than 40 micrometres and preferably less than 5 micrometres; and partially cooling the sheet, such as to prevent the transformation of the austenite, at a rate VR1 greater than 2°C/s to a temperature T3 between 600°C and 400°C in the metastable austenitic range, and, subsequently, subjecting the not completely cooled sheet to final hot rolling at temperature T3, with a cumulative reduction rate eb greater than 30%, such as to obtain a sheet that is cooled at a rate VR2 above the critical cooling rate.

IPC 8 full level

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