

Title (en)

METHOD FOR PRODUCING HIGH-STRENGTH SHEETS OR STRIPS FROM A LOW-ALLOY, HIGH-STRENGTH BAINITIC STEEL, AND STEEL STRIP OR STEEL SHEET MADE OF SAID STEEL

Title (de)

VERFAHREN ZUR HERSTELLUNG VON HOCHFESTEN BLECHEN ODER BÄNDERN AUS EINEM NIEDRIG LEGIERTEN, HOCHFESTEN BAINITISCHEN STAHL SOWIE EIN STAHLBAND ODER STAHLBLECH HIERAUS

Title (fr)

PROCÉDÉ DE PRODUCTION DE TÔLES OU DE BANDES À HAUTE RÉSISTANCE À PARTIR D'UN ACIER BAINITIQUE À HAUTE RÉSISTANCE FAIBLEMENT ALLIÉ, ET BANDE D'ACIER OU TÔLE D'ACIER FABRIQUÉE À PARTIR DE CET ACIER

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Abstract (en)

[origin: WO2021032858A1] The invention relates to a method for producing high-strength sheets or strips, having a thickness of at least 3 mm, a minimum tensile strength (Rm) of 1000 MPa, preferably 1075 MPa, a product of tensile strength (Rm) and elongation at break (A5) of at least 2000 MPa %, and a ratio of uniform elongation (Ag) to elongation at break (A5) of at least 25%, from a low-alloy steel having a portion of bainite or bainitic ferrite of at least 50 volume percent and a residual austenite content of at least 5 volume percent, the method comprising the following steps: producing a steel melt having the following chemical composition (in weight percent): 0.10-0.80 C, 0.25-4.00 Si, 0.05-3.00 Al, 0.25-4.00 Mn, 0.05-3.00 Cr, 0.001-0.025 N, max. 0.15 P, max. 0.05 S, at least one of the elements Ti, V, Nb in a content of at least 0.005 to 0.5 weight percent each and at most 0.75 weight percent in total, optionally one or more elements Mo, Ni, Co, W or Zr at up to 5.5 weight percent in total and/or rare earths Ce, Hf, La, Re, Sc and/or Y at up to 1 weight percent in total, the remainder iron with smelting-related impurities; casting the metal melt to form a slab, a block or a thin strip as a pre-product; hot-rolling the pre-product to form a sheet or strip, with a final rolling temperature (T-End) between 1150 and 600 °C; cooling the strip or sheet from the rolling heat to a temperature between 100 °C above martensite start temperature (Ms) and 200 °C below martensite finish temperature (Mf) at a cooling speed of 0.1 °C/min to 50 °C/min or reheating the strip or sheet to the austenitization temperature and subsequently cooling to a temperature between 100 °C above the martensite start temperature (Ms) and 200 °C below the martensite finish temperature (Mf) at a cooling speed of 0.1 °C/min to 50 °C/min, optionally holding the strip or sheet at a temperature between 100 °C above the martensite start temperature (Ms) and 200 °C below the martensite finish temperature (MF) for up to 24 h; cooling from this temperature range to room temperature. The invention further relates to a steel strip or steel sheet made of said steel and to an advantageous use therefor.

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