

Title (en)

MEDIUM-MANGANESE STEEL PRODUCT FOR LOW-TEMPERATURE USE AND METHOD FOR THE PRODUCTION THEREOF

Title (de)

MITTELMANGANSTAHLPRODUKT ZUM TIEFTEMPERATUREINSATZ UND VERFAHREN ZU SEINER HERSTELLUNG

Title (fr)

PRODUIT EN ACIER AU MANGANÈSE MOYEN POUR UTILISATION À BASSE TEMPÉRATURE ET SON PROCÉDÉ DE FABRICATION

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Application

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Abstract (en)

[origin: WO2018083035A1] The invention relates to a steel product for low-temperature use having a minimum notch impact work at -196 °C in the transverse direction of ≥ 50 J/cm², having the following chemical composition in wt%: C: 0.01 to < 0.3, preferably 0.03 to 0.15; Mn: 4 to < 10, preferably 4 to < 8; Al: 0.003 to 2.9, preferably 0.03 to 0.4; Mo: 0.01 to 0.8, preferably 0.1 to 0.5; Si: 0.02 to 0.8, preferably 0.08 to 0.3; Ni: 0.005 to 3, preferably 0.01 to 3; P: < 0.04; S: < 0.02; N: < 0.02; remainder iron including unavoidable steel-accompanying elements, wherein for the alloy composition the equation $6 < 1.5 \text{ Mn} + \text{Ni} < 8$ is satisfied, with optional addition of one or more of the following elements: Ti, V, Cr, Cu, Nb, B, Co, W, Zr, Ca, and Sn, or for the alloy composition, the equation $0.11 < \text{C} + \text{Al} < 3$ is satisfied, with the optional addition of one or more of the following elements: Ti, V, Cr, Cu, Nb, B, Co, W, Zr, Ca, and Sn, or the alloy composition, in addition to Ni, contains one or more of the elements B, V, Nb, Co, W, or Zr, with the optional addition of one or more of the following elements: Ti, Cr, Cu, Ca, and Sn, having a structure comprising 2 to 90 % by volume of austenite, less than 40 % by volume of ferrite and/or bainite and the rest martensite. Said steel product can be produced economically and exhibits an advantageous combination of strength and strain properties at low temperatures and, optionally, a TRIP and/or TWIP effect. The invention further relates to a method for producing a steel product in the form of a flat steel product or a seamless tube.

IPC 8 full level

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