

Title (en)
HOT-ROLLED FLAT STEEL PRODUCT AND METHOD FOR THE PRODUCTION THEREOF

Title (de)
WARMGEWALZTES STAHLFLACHPRODUKT UND VERFAHREN ZU SEINER HERSTELLUNG

Title (fr)
PRODUIT PLAT LAMINÉ À CHAUD EN ACIER ET PROCÉDÉ DE FABRICATION

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Abstract (en)
[origin: WO2020048599A1] The invention relates to a hot-rolled flat steel product having a tensile strength R_m of ≤ 550 MPa, a hole expansion ratio λ of $\leq 30\%$, and a microstructure consisting of ≤ 90 area % ferrite and, as the remainder, ≤ 10 area % perlite or cementite, with embedded carbonitride precipitates having an average diameter of ≤ 10 nm. The flat steel product consists of a steel containing (in wt%) 0.02-0.3% C, $\leq 0.7\%$ Si, $\leq 1.0\%$ Al, 0.2-2.5% Mn, 0.05-0.5% Cr, $\leq 0.02\%$ P, $\leq 0.005\%$ S, $\leq 0.01\%$ N, $\leq 0.1\%$ Cu and at least one element forming carbonitride precipitates from the group "Ti, Nb, V" and, as the remainder, Fe and unavoidable impurities, with the following provisos:- If V is present, the sum of the TiGEW and NbGEW contents is ≤ 0.01 wt%; - if Ti or Nb are present, VGEW is ≤ 0.01 wt%; - for $XGEW [wt\%] = TiGEW + (VGEW/1.06) + (NbGEW/1.94)$, the following applies: $0.02\% \leq XGEW \leq 0.5\%$; - for ratio = $(XAT + CrAT) / (CAT + NAT)$, the following applies: $0.5 \leq \text{ratio} \leq 2.0$, where $XAT = TiAT + VAT + NbAT$; wherein TiAT, VAT, NbAT, CrAT, CAT and NAT correspond to the Ti content TiGEW, the V content VGEW, the Nb content NbGEW, the Cr content CrGEW, the C content CGEW and NAT the N content NGEW respectively, each converted into atomic %, and the TiGEW, VGEW, NbGEW, CrGEW, CGEW and NGEW contents are given in wt%. The invention also relates to a method for producing such a flat steel product.

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