

Title (en)

Ferritic niobium-stabilised 14% chromium steel and its use in the car industry

Title (de)

Ferritisches Niobium-stabilisiertes 14% Chrom-stahl und dessen Verwendung in Kraftfahrzeugen

Title (fr)

Acier ferritique à 14% de chrome stabilisé au niobium et son utilisation dans le domaine de l'automobile

Publication

EP 1083241 A1 20010314 (FR)

Application

EP 00402447 A 20000906

Priority

FR 9911257 A 19990909

Abstract (en)

Niobium stabilized ferritic chromium steel strip is produced from a steel having specified molybdenum, silicon and tin contents and containing a cubic iron-niobium phase as the sole intermetallic phase at high temperature. A niobium stabilized ferritic 14% chromium steel strip is produced from a steel of composition (by wt.) $\leq 0.02\%$ C, $0.002\text{--}0.02\%$ N, $0.05\text{--}1\%$ Si, greater than 0 to 1% Mn, $0.2\text{--}0.6\%$ Nb, $13.5\text{--}16.5\%$ Cr, $0.02\text{--}1.5\%$ Mo, greater than 0 to 1.5% Cu, greater than 0 to 0.2% Ni, greater than 0 to 0.020% P, greater than 0 to 0.003% S, greater than 0.005 to 0.04% Sn, balance Fe and impurities, the Nb, C and N contents satisfying the relationship $\text{Nb}/(\text{C} + \text{N}) \geq 9.5$, by: (a) reheating before hot rolling at $1150\text{--}1250$ (preferably 1175) degrees C; (b) coiling at $600\text{--}800$ (preferably 600) degrees C; (c) cold rolling, optionally after pre-annealing; and (d) final annealing at $800\text{--}1100$ (preferably 1050) degrees C for $1\text{--}5$ (preferably 2) min. An Independent claim is also included for a niobium stabilized 14% chromium ferritic steel sheet obtained by the above process.

Abstract (fr)

Procédé de réalisation d'une bande de tôle en acier ferritique dit à 14% de chrome stabilisé au niobium, caractérisé en ce que l'acier de composition pondérale suivante : carbone $\leq 0,02\%$; azote $\leq 0,02\%$; silicium $\leq 1\%$; manganèse $\leq 1\%$; niobium $\leq 0,6\%$; chrome $\leq 16,5\%$; molybdène $\leq 1,5\%$; cuivre $\leq 1,5\%$; nickel $\leq 0,2\%$; phosphore $\leq 0,020\%$; soufre $\leq 0,003\%$; étain $\leq 0,04\%$; les impuretés inhérentes à l'élaboration la teneur en niobium, carbone, azote satisfaisant la relation: $9.5 \leq \text{Nb}/(\text{C}+\text{N})$ est soumis à : un laminage à froid de la tôle à chaud avec ou sans recuit préalable, un recuit final de la bande de tôle à une température comprise entre 800°C et 1100°C pendant une durée comprise entre 1 mn et 5 mn et de préférence à une température d'environ 1050°C pendant un temps d'environ 2 mn .

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