

Title (en)

Method of producing steel sheets having high strength, ductility and toughness and thus produced sheets.

Title (de)

Herstellungsverfahren von Stahlblechen mit hoher Festigkeit, Duktilität sowie Zähigkeit und so hergestellte Bleche.

Title (fr)

Procédé de fabrication de tôles d'acier à très hautes caractéristiques de résistance, de ductilité et de tenacité, et tôles ainsi produites

Publication

EP 1832667 A1 20070912 (FR)

Application

EP 06290386 A 20060307

Priority

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Abstract (en)

Hot rolled steel sheet comprises (in %): carbon (0.1-0.25); manganese (1-3); aluminum (≥ 0.015); silicon (1.985); molybdenum (= 0.3); chromium (= 1.5); sulfur (= 0.015); phosphorus (= 0.1); cobalt (= 1.5); boron (= 0.005); and iron and impurities (rest), where the sum of silicon and aluminum is 1-2 and the sum of chromium and molybdenum is greater than 0.3. The sheet has a strength of greater than 1200 MPa and a Re/Rm ratio of 0.75 (where Re is an elastic limit of the steel, and Rm is mechanical resistance of the steel) with elongation at rupture of greater than 25%. An independent claim is included for a process of manufacturing the steel comprising supplying the steel composition, casting the steel composition, heating the steel composition at greater than 1150[deg]C, hot rolling the semi-finished product until the microstructure of steel is entirely austenite in nature, cooling the obtained stainless steel at a temperature greater than the austenite transformation temperature i.e. at a cooling speed of 50-90[deg]C/second, a bainite transformation temperature or at Ms+50[deg]C, (where Ms is a transformation temperature of martensite) and cooling the stainless steel at a cooling speed of 0.08-600[deg]C/minute until the ambient temperature is reached, where the bainite transformation temperature is 0.08-2[deg]C/minute or is Bs+60[deg]C, when the speed is greater than 2-600[deg]C/minute.

Abstract (fr)

L'invention concerne une tôle d'acier laminée à chaud de résistance supérieure à 1200 MPa, de rapport Re/Rm inférieur à 0,75, d'allongement à rupture supérieur à 10%, dont la composition comprend, les teneurs étant exprimées en poids: 0,10% # C # 0,25%, 1%# Mn # 3%, Al #¥ 0,015 %, Si#1,985%, Mo # 0,30%, Cr # 1,5%, S # 0,015%, P# 0,1%, B # 0,005%, étant entendu que 1% #Si+Al #2%, Cr+(3 x Mo) #¥0,3%, le reste de la composition étant constitué de fer et d'impuretés inévitables résultant de l'élaboration, la microstructure de l'acier étant constituée d'au moins 75% de bainite, d'austénite résiduelle en quantité supérieure ou égale à 5%, et de martensite en quantité supérieure ou égale à 2%

IPC 8 full level

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