Title (en)

Process of manufacturing iron-carbon-manganese alloy strips and strips obtained thereby

Title (de)

Verfahren zum Herstellen von Eisen-Kohlenstoff-Mangan-Legierungbändern und also hergestellte Bändern

Title (fr)

"Procédé de fabrication de bandes en alliage fer-carbone-manganèse, et bandes ainsi produites"

Publication

EP 1067203 B1 20040303 (FR)

Application

EP 00401860 A 20000629

Priority

FR 9908758 A 19990707

Abstract (en)

[origin: EP1067203A1] 1.5-10 mm-thick strip is cast from molten metal containing (in wt. %) C 0.001-1.6; Mn 6-30, Ni ≤ 10 and (Mn+Ni) 16-30; Si ≤ 2.5; Al ≤ 6; Cr ≤ 10; (P+Sn+Sb+As) ≤ 0.2; (S+Se+Te) ≤ 0.5; (V+Ti+Nb+B+Zr+rare earths) ≤ 0.3%; (Mo+W) ≤ 0.5%; N ≤ 0.3%; Cu ≤ 5%; and Fe and production impurities. After cold rolling to 10-90% reduction in one or more stages, recrystallization annealing is carried out. Preferably, the content of carbon in the molten metal is 0.2-0.8 wt.%. The strip is obtained by rolling between two closely located, horizontal cylinders which rotate in opposite directions and are internally cooled. Between the casting and rolling stages the strip is hot rolled to 10-60 % reduction in one or more stages, and between the casting and hot rolling stages the strip is passed through a non-oxidizing zone. Before the hot rolling stage the strip is subjected to decarbonization. The strip is coiled after casting or hot rolling and uncoiled before cold rolling. Acidic pickling of the strip is preferably carried out before cold rolling. Recrystallization annealing comprises a high density annealing process carried out at 900-1100 degrees C, immediately followed by cooling at a rate of 100-6000 degrees C/second. The strip is pickled after the annealing stage, followed by a skin-pass stage. An Independent claim is given for the an iron-carbon-manganese strip produced by the above process.

IPC 1-7

C21D 8/02; C22C 38/04

IPC 8 full level

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CPC (source: EP US)

C21D 8/0205 (2013.01 - EP US); **C22C 38/04** (2013.01 - EP US); C21D 8/0215 (2013.01 - EP US); C21D 8/0236 (2013.01 - EP US); C21D 8/0273 (2013.01 - EP US)

Cited by

FR2857980A1; FR2878257A1; CN101956134A; FR2881144A1; EP1971701A4; CN113512686A; FR2876708A1; GB2385862A; KR101004268B1; EP3202941A4; US7806165B2; EP2208803A1; US10450624B2; WO02101109A1; US7794552B2; US9677146B2; US7799148B2; US7976650B2; WO2006048034A1; WO2006056670A3; WO2005061152A1; WO2005019483A1; WO2006042931A1; WO2006077301A1; WO2007074994A1; US9580786B2; WO2018036918A1; WO2012052626A1; WO2012052689A1; US8926772B2; US9873931B2; US11131011B2; EP2402472B2; EP1399598B2

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