

Title (en)

PRODUCTION METHOD OF GRAIN-ORIENTED SILICON STEEL WITH HIGH MAGNETIC FLUX DENSITY

Title (de)

HERSTELLUNGSVERFAHREN FÜR EINEN KORNIORIENTIERTEN SILIZIUM-STAHLE MIT HOHER MAGNETISCHER FLUSSDICHTE

Title (fr)

PROCÉDÉ DE PRODUCTION D'UN ACIER AU SILICIUM À GRAINS ORIENTÉS AYANT UNE DENSITÉ ÉLEVÉE DE FLUX MAGNÉTIQUE

Publication

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Application

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Abstract (en)

A method for manufacturing an oriented silicon steel product with high magnetic-flux density comprises the following procedures: 1) smelting and casting, wherein the oriented silicon steel is composed of, by weight, 0.035% to 0.065% of C, 2.9% to 4.0% of Si, 0.05% to 0.20% of Mn, 0.005% to 0.01% of S, 0.015% to 0.035% of Al, 0.004% to 0.009% of N, 0.005% to 0.090% of Sn, 0.200% to 0.800% of Nb, the rest being Fe; and after being smelted, molten steel is secondarily refined and continuously casted into steel slabs; 2) hot rolling; 3) normalizing; 4) cold rolling; 5) decarburization annealing; 6) MgO coating; 7) high temperature annealing: said sheets are firstly heated to 700°C to 900°C and then secondarily heated to 1200°C at temperature rise rate of 9°C/hr and maintained at 1200°C for 20hr; 8) coating an insulation layer. According to the present invention, steel sheets can be fully nitrided during high temperature annealing, which can ensure a secondary re-crystallization to take place perfectly, thereby, the oriented silicon steel sheets with high magnetic-flux density can be achieved. The present invention solves the problem of nitriding that is encountered in production of high-magnetic-induction oriented silicon steel by the technique to heat steel slabs to a lower temperature.

IPC 8 full level

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