Title (en)

PROCESS FOR PRODUCING LOW CORE LOSS, THIN, UNIDIRECTIONAL SILICON STEEL PLATE HAVING EXCELLENT SURFACE PROPERTIES.

Title (de)

VERFAHREN ZUR HERSTELLUNG VON DÜNNEN SILIZIUM-STAHLBLECHEN MIT GOSS-TEXTUR MIT NIEDRIGEN WATTVERLUSTEN SOWIE MIT AUSGEZEICHNETEN OBERFLÄCHENEIGENSCHAFTEN.

Title (fr)

PROCEDE DE PRODUCTION D'UNE MINCE PLAQUE D'ACIER AU SILICIUM UNIDIRECTIONNEL A FAIBLE PERTE DANS LE NOYAU, POSSEDANT D'EXCELLENTES PROPRIETES DE SURFACE.

Publication

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Application

EP 86902022 A 19860325

Priority

JP 8600138 W 19860325

Abstract (en)

This improved process for producing low core loss, thin, unidirectional silicon steel plate consists of the following steps. 1) a metal slab, containing Si(3.1-4.5 wt.%), Mo(0.003-0.1 wt.%), acid soluble Al(0.005-0.06 wt.%), S and/or Se (total amount 0.005-0.1 wt.%) is hot-rolled to a hot-rolled plate. 2) Primary cold-rolling, at 10-60 % rolling coefficient, is carried out. 3) Mid-annealing is carried out (the temperature raising from 500 to 900 deg.C, speed is less than 5 deg.C/sec; the temperature lowering, from 900 to 500 deg.C, speed is less than 5 deg.C/sec). 4)Secondary cold-rolling, at 75-90% rolling coefft. produces a plate of final thickness 0.1-0.25 mm. 5) The plate is de-carbonised and subjected to primary recrystallising-annealing in a wet hydrogen atmos. 6)The plate is finish annealed at high temperature. The starting slab can also contain Sb (0.005-0.2 wt.%). At step 5) a special pre-treatment, which leads to the formation, after step 6), of allomeric microzones on the surface of the steel plate can also be carried out. This special treatment can also be carried out after step (6).

Abstract (fr)

Procédé de production d'une mince plaque d'acier au silicium unidirectionnel à faible perte dans le noyau, présentant une épaisseur comprise entre 0,1 et 0,25 mm destinée à être utilisée dans la construction de transformateurs et permettant d'empêcher avantageusement toute détérioration des propriétés de surface par le choix des ingrédients chimiques de l'acier, l'optimisation des conditions de laminage, notamment des conditions de laminage à froid, et la formation de microzones allomères à la surface d'une plaque d'acier. Celle-ci ne subit pas de détérioration lors du recuit pour la relaxation des contraintes.

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IPC 8 full level

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CPC (source: EP)

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