

Title (en)
GRAIN-ORIENTED ELECTRICAL STEEL STRIP AND METHOD FOR ITS PRODUCTION

Title (de)
KORNORIENTIERTES ELEKTROBAND UND VERFAHREN ZU DESSEN HERSTELLUNG

Title (fr)
BANDE D'ACIER ÉLECTRIQUE À GRAINS ORIENTÉS ET SON PROCÉDÉ DE FABRICATION

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Abstract (en)
The invention relates to a grain-oriented electrical steel sheet having a peak magnetic polarization of ≥ 1.3 T at an external field of 100 A/m and an excitation of 1000 Hz and comprising: a cold-rolled steel core layer consisting of Fe, Si and optionally further alloying elements, the steel core layer having two outer surfaces, a forsterite layer on at least one of the two outer surfaces of the cold-rolled steel core layer wherein the grain-oriented electrical steel sheet has a bending radius of 9 mm or less, determined using a taper mandrel bending device and bending a specimen of the grain oriented electrical steel continuously 180° around a taper mandrel with a taper base of 30 mm and a taper tip of 5 mm, the bending radius being the radius at which visible cracks appear in the grain-oriented electrical steel sheet. The invention further relates to a method of producing a grain-oriented electrical steel sheet of the invention, to laminated stacks of grain-oriented electrical steel sheets, wherein the stack comprises at least two grain-oriented electrical steel sheets according to the invention laminated together with a resin and to the use of the grain-oriented electrical steel sheet of the invention as material for the production of parts for electric motors, for electric transformers or for other electric devices.

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Citation (applicant)

- DE 2247269 C3 19810514
- DE 102015012172 A1 20170323 - UNIV KASSEL [DE]
- DE 102008008781 A1 20090820 - THYSENKRUPP ELECTRICAL STEEL EBG GMBH [DE]
- US 3948786 A 19760406 - EVANS JAMES D
- JP S5328375 B2 19780814
- DE 19745445 C1 19990708 - THYSENKRUPP STAHL AG [DE]
- EP 1752549 B1 20160120 - THYSENKRUPP STEEL EUROPE AG [DE]
- WO 2007014868 A1 20070208 - THYSENKRUPP STEEL AG [DE], et al
- WO 9919521 A1 19990422 - THYSENKRUPP STAHL AG [DE], et al
- EP 2902509 B1 20180829 - THYSENKRUPP ELECTRICAL STEEL GMBH [DE]
- EP 2954095 A1 20151216 - THYSENKRUPP ELECTRICAL STEEL GMBH [DE], et al
- EP 2675927 A1 20131225 - THYSENKRUPP ELECTRICAL STEEL GMBH [DE]
- N. CHEN ET AL., ACTA MATERIALIA, vol. 51, 2003, pages 1755 - 1765
- K. GUNTHER ET AL., JOURNAL OF MAGNETISM AND MAGNETIC MATERIALS, vol. 320, 2008, pages 2411 - 2422

Citation (search report)

- [X] EP 3517646 A1 20190731 - JFE STEEL CORP [JP]
- [I] EP 3214188 A1 20170906 - JFE STEEL CORP [JP]
- [I] EP 3584331 A1 20191225 - JFE STEEL CORP [JP]

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