

ABSTRACT

**NON-ORIENTED ELECTRICAL STEEL SHEET AND METHOD FOR PRODUCING
THE SAME**

Provided are a non-oriented electrical steel sheet that achieves both low iron loss in the high-frequency range and high ductility, and a method for producing the same.

A non-oriented electrical steel sheet has a difference between an average Si content of a surface layer portion and an average Si content of an inner layer portion, and contains, in mass% in terms of an average content throughout an entire sheet thickness, particular amounts of C, Mn, Al, P, S, N, and O. The average Si content of the surface layer portion is 4.00% or more and 6.30% or less, the average Si content of the inner layer portion is 2.00% or more and 6.20% or less, ΔSi , which is the difference in average Si content between the surface layer portion and the inner layer portion, is 0.10% or more and 2.00% or less. The balance is Fe and unavoidable impurities, and formula (1) is satisfied:

$$\text{IB2}/\text{IFe} < 0.030 \cdots (1)$$

where, in formula (1), IB2 represents a diffraction peak intensity originating from a B2 phase of Fe_3Si detected at around $2\theta = 36.5^\circ$ as measured by X-ray diffraction, and IFe represents a diffraction peak intensity originating from a ferrite phase detected at around $2\theta = 77.6^\circ$ as measured by X-ray diffraction.

[FIG. 1]