

ABSTRACT

TITLE

NON-ORIENTED ELECTRICAL STEEL SHEET

5 Low iron loss and high magnetic flux density in a Si-gradient magnetic
material are achieved. A non-oriented electrical steel sheet is a multilayer
electrical steel sheet having a stacked structure of an inner layer and a surface
layer located on each of both sides of the inner layer, wherein the surface layer
and the inner layer have specific chemical compositions, ΔSi defined as a
10 difference $[\text{Si}]_1 - [\text{Si}]_0$ between a Si content $[\text{Si}]_1$ in the surface layer and a Si
content $[\text{Si}]_0$ in the inner layer is 0.5 mass% to 3.3 mass%, a ratio t_1/t of a total
thickness t_1 of both surface layers to a sheet thickness t of the electrical steel
sheet is 0.08 to 0.73, a ratio B_{50}/B_s of magnetic flux density B_{50} at a magnetic
field strength of 5000 A/m to saturation magnetization B_s is 0.825 or more,
15 and iron loss $W_{10/10k}$ at a frequency of 10 kHz and a maximum magnetic flux
density of 1.0 T and the sheet thickness t satisfy $W_{10/10k} \leq 25 + 6900 \times t$.

(FIG. 1)