

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 predetermined chemical compositions, ΔSi defined as
10 a 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 0.1 mass% to 0.5 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 0.04 to 0.78, 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
15 more, and iron loss $W_{10/800}$ at a frequency of 800 Hz and a maximum magnetic
flux density of 1.0 T and the sheet thickness t satisfy $W_{10/800} \leq 13 + 80 \times t$.

[FIG. 1]