

[Document Type]          Abstract

[Title of the Invention]    SURFACE-TREATED STEEL SHEET

A surface-treated steel sheet according to an aspect of the present invention includes: a steel sheet as a base metal and a coating layer, in which the coating layer includes a Ni-Co alloy coating layer, a Ni-Fe alloy layer, and a Ni layer, in the coating layer, a total adhesion amount of Co is  $0.2 \text{ g/m}^2$  to  $2.3 \text{ g/m}^2$ , and a total adhesion amount of Ni is  $8.9 \text{ g/m}^2$  or more, the Ni layer has a thickness of  $0.3 \text{ }\mu\text{m}$  to  $3.0 \text{ }\mu\text{m}$ , an atomic concentration of Co on a surface of the Ni-Co alloy coating layer is 20 at% to 70 at%, and a Co concentration gradient  $\gamma$  in the coating layer in a depth direction is 50 mass%/μm to 400 mass%/μm.

FIG. 1