

[Abstract]

What is provided is a surface-treated steel sheet including a steel sheet, a zinc-based plated layer formed on a surface of the steel sheet, and a chemical conversion treatment layer formed on a surface of the zinc-based plated layer, in which the chemical conversion treatment layer contains Si, C, O and P, the chemical conversion treatment layer has a C concentration of 20.0 mass% or more, an O concentration of 15.0 mass% or more, a Si concentration of 10.0 mass% or more, and a P concentration of 0.10 mass% or more, when t is a thickness of the chemical conversion treatment layer, an area starting from a surface of the chemical conversion treatment layer and ending at a position of $t/10$ from the surface of the chemical conversion treatment layer in a thickness direction is a surface layer region, an area starting from the position of $9t/10$ from the surface of the chemical conversion treatment layer in the thickness direction and ending at an interface between the chemical conversion treatment layer and the zinc-based plated layer is an interface side region, and a region sandwiched between the surface layer region and the interface side region is an intermediate region, a maximum value of a P concentration of the surface layer region is 1.5 times to 5.0 times the average P concentration of an intermediate region.

FIG. 3