

ABSTRACT

A steel sheet is immersed into a hot-dip Zn-Al alloy coating bath containing Al: 3 to 6%, Mg: 0.2 to 1.0%, Ni: 0.01 to 0.10%, and 0.10% or less of Fe in terms of percent by mass, withdrawn therefrom, and cooled to form a hot-dip Zn-Al alloy coating layer on surfaces of the steel sheet. During this process, the bath temperature of the coating bath is adjusted to be within a range of 420°C to 520°C and the sheet temperature of the steel sheet upon immersing into the coating bath is adjusted to be within a range of 420°C to 600°C but not less than the bath temperature of the coating bath. As a result, a hot-dip Zn-Al alloy coated steel sheet having high formability and high corrosion resistance and including a coating layer having an Fe content of 2.0 g/m² or less and a Ni-rich layer having a thickness of 0.05 to 1.0 μm at the interface between the coating layer and the steel sheet is obtained.