

ABSTRACT

A hot-dip Zn alloy plating layer is formed on a surface of a base steel sheet by immersing the base steel sheet in a hot-dip Zn alloy plating bath containing Al and Mg. An aqueous solution containing one of or two or more of polyatomic ions selected from the group consisting of a polyatomic ion including V^{5+} , a polyatomic ion including Si^{4+} , and a polyatomic ion including Cr^{6+} is then contacted with a surface of the hot-dip Zn alloy plating layer. The aqueous solution contains the polyatomic ion in a concentration of 0.01 g/L or more in terms of one of or two or more of atoms selected from the group consisting of V, Si, and Cr.