CLAIMS

[Claim 1] A hot-dip plated steel material comprising:

a steel material; and

a plated layer disposed on a surface of the steel material, wherein

the plated layer has a chemical composition including, in terms of mass%,

more than 10.0% and less than 45.0% of Al,

4.0% or more and 15.0% or less of Mg,

0.05% or more and 2.0% or less of Si, and

0.03% or more and 1.50% or less of Sr, and

further including

0% or more and 0.7% or less of Sn,

0% or more and 0.3% or less of Bi,

0% or more and 0.3% or less of In,

0% or more and 0.6% or less of Ca,

0% or more and 0.3% or less of Y,

0% or more and 0.3% or less of La,

0% or more and 0.3% or less of Ce,

0% or more and 0.3% or less of Li,

0% or more and 1.0% or less of Ni,

0% or more and 1.0% or less of Cu,

0% or more and 0.25% or less of Ag,

0% or more and 0.25% or less of Sb,

0% or more and 0.25% or less of Pb,

0% or more and 0.5% or less of B,

0% or more and 0.5% or less of P,

0% or more and 0.25% or less of Ti,

0% or more and 0.25% or less of Co,

0% or more and 0.25% or less of V,

0% or more and 0.25% or less of Nb,

0% or more and 0.25% or less of Mn,

0% or more and 0.25% or less of Zr,

0% or more and 0.25% or less of W,

0% or more and 5.0% or less of Fe, and

a remainder of Zn and impurities,

the plated layer contains a Zn-Sr-based compound, a Zn-Sr-Si-based compound and a Zn-Al-Sr-Si-based compound,

the Zn-Sr-Si-based compound and the Zn-Al-Sr-Si-based compound are contained in an area fraction of 5% to 30% in a cross section along a thickness direction of the plated layer, and

in a case where, in an elemental distribution profile obtained by a qualitative analysis using a glow discharge optical emission spectrometry in a direction from a surface of the plated layer toward the steel material, a thickness of the plated layer is denoted by t, an average value of a qualitative analysis value of Sr from the surface of the plated layer to 0.05 t is denoted by Sr (surf), a qualitative analysis value in a range of 0.05 t to 0.66 t starting from the surface of the plated layer is denoted by Sr (center), and a qualitative analysis value in a range of 0.66 t to t starting from the surface of the plated layer is denoted by Sr (deep), Expression (1) is satisfied,

$$Sr\ (surf) < Sr\ (deep) < Sr\ (center) \quad \ldots (1).$$

[Claim 2] The hot-dip plated steel material according to claim 1, wherein

in the chemical composition of the plated layer,

Sr is 0.10% or more and 1.50% or less, and

in a case where a diffraction intensity of the Zn-Sr-based compound in a X-ray

diffraction pattern of the surface of the plated layer is denoted by $I(SrZn_{13})$, the diffraction intensity being measured by using Cu-Kα radiation under conditions of 50 kV and 300 mA X-ray output, Expression (2) is satisfied,

$$\{I(14.48°) + I(32.74°)\}/2 \times I(12.50°)\} > 2.0 \quad \text{... (2)}$$

in Expression (2), I (n°) is the X-ray diffraction intensity at a diffraction angle n°, and n is a diffraction angle (2θ) indicated in Expression (2).

[Claim 3] The hot-dip plated steel material according to claim 1 or 2, wherein

in the chemical composition of the plated layer,

Si is 0.05% or more and 0.5% or less.