

STEEL SHEET HOT-DIP COATED WITH Zn-Al-Mg-BASED SYSTEM HAVING
EXCELLENT WORKABILITY AND METHOD FOR MANUFACTURING SAME

[ABSTRACT]

The objective of the present invention is to provide a steel sheet hot-dip coated with a Zn-Al-Mg-based system, which has strength, ductility and hole-expandability suitable for working processes, such as press working and stretch flanging, and which also has high corrosion resistance. The invention relates to a high-strength steel sheet hot-dip coated with a Zn-Al-Mg-based system and having a tensile strength of 400 MPa or greater and excellent workability. A steel sheet material thereof has a predetermined chemical composition; a Ti/C equivalent ratio represented by Formula (1) below is 0.4 to 1.5; a bainitic ferrite single phase or a phase comprising a bainitic ferrite phase and a ferrite phase exists as a main phase; the area ratio of a hard second phase and cementite is 3% or less; the ratio of small-angle boundaries with a difference in crystal orientation of 2° to 15° is 30% to 75%; and Ti-containing carbides having an average particle size of 20 nm or less are dispersed and precipitated.

$$\text{Ti/C equivalent ratio} = (\text{Ti}/48)/(\text{C}/12) \quad (1)$$

Fig. 3