

Abstract:

This paper describes the development concept and quality properties of a high lubrication galvanized steel sheet (GA), "GAN," in which the sliding property of GA is greatly improved, securing the high formability required in hard-to-form automotive body panels. The developed product displays press formability equivalent to that of GA with an Fe-Zn alloy electroplated layer on the GA surface (double-layered GA), and spot weldability and adhesive compatibility superior to those of GA. High lubricity is obtained in the developed product by

properties equivalent to those of double-layered GA, together with other required properties equal or superior to those of GA, has been strongly desired.

JFE Steel carried out research and development to meet these needs over a period of many years. As a result, the company developed²⁻⁴⁾ and commercialized an inorganic high lubrication GA sheet, “GAN,” which possesses high lubricity equivalent to that of double-layered GA, together with improved spot weldability and adhesive compatibility, and can also be manufactured at low cost.

This paper discusses the concept of the coating design and the quality properties of the developed product. An organic-type solid lubricant treatment technology⁵⁾

4- Nqf` mhb Rnkhe Ktaqhb`ms Sqd`s Idms Sdbgmknfx⁴

GAN is a lubrication technology for expanding the formable range within which wrinkles and fracture do not occur to a range that is completely free of problems from the viewpoint of practical use by imparting a sliding property equivalent to that of double-layered GA. JFE Steel has also succeeded in developing a lubrication technology which imparts an even higher sliding property to double-layered GA. This steel sheet was developed to enable more complex, severe press forming. The lubricant coating is a technology in which the strength and toughness of the coating are improved by increasing the T_g