

FOREWORD

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Iron and steel have responded to diverse social demands, including environmental protection, safety and so forth, as essential materials in a wide range of applications. In the variety of steel products, steel sheets are widely applied to the industrial products and constructions that are closely related to everyday life, such as passenger vehicles and trucks in the automotive usage, household and office appliances in electrical appliances usage, steel houses and metal roofing products and other building materials. JFE Steel Corporation supplies the various latest steel sheet products to customers in all demand fields, by making full use of the world's most advanced manufacturing equipment and technologies. This Special Issue of the JFE Technical Report, "Special Issue on Steel Sheet Products," introduces state-of-the-art sheet products and technologies developed in recent years by JFE Steel Corporation.

In the automotive applications, high strength steel sheets are aggressively adopted for automobile body parts in order to realize both passengers' safety during collisions and reduction of CO₂ emissions for the preservation of the global environment. JFE Steel Corporation, as a top maker of automotive steel sheets, has continuously developed many kinds of advanced high strength steel sheets and completed a systematic lineup of the JEFORMA™ Series, the advanced high strength products series for automobile body structural parts. This report also introduces "High formability 780-980 MPa grade hot-rolled steel for automobile suspension," which contributes to weight reduction and improved durability of automobile chassis parts, and "High carbon hot-rolled sheet with excellent formability SUPER-HOT™-G" for drive train parts, which are improved in formability by optimizing chemical compositions. The company is also contributing to expanded application of high strength steel sheets by the development of original forming and welding technologies for high strength steel sheets through EVI (Early Vender Involvement) activities. Together with new forming and welding technologies, this Special Issue also introduces the "Monitoring system for hydrogen absorption into steel," which is effective for avoiding hydrogen embrittlement, one of the key technical issues for the use of high strength steel sheets.

Another trend of the automobile industry is expanding globalization. Auto makers are shifting their production systems to various countries throughout the world. To respond to this change in the business environment, JFE Steel Corporation is also creating a global system for local manufacturing and is commercializing products which meet the demands of European and US auto makers, who have been supplied a limited amount of products from us in the past. In particular, the “High lubricity Zn-coated steel sheet GI JAZ™” is the product for European and US makers, to which the technology of “High lubricity galvanized (GA) steel sheet JAZ™,” which is widely used by Japanese auto makers and enjoys an excellent evaluation, is applied. GI JAZ is considered to be a product that can make a large contribution to improving and stabilizing the press-formability of GI coated steel sheets.

In the electrical appliances usage, as seen in digital home appliances, higher functionality is progressing and chromate-free products have become common in the market, and low-cost chromate-free steel sheets with high functionality are now demanded. To meet this need, JFE Steel Corporation newly developed and has started selling the high functional chromate-free electrolytic zinc-coated steel sheet “Eco Frontier™ JN2”, which simultaneously satisfies high corrosion resistance and electrical conductivity, and also provides a satisfactory sliding property and other desirable features.

In the construction usage, durability under indoor and outdoor environments, long life, workability and maintenance-free property have been required. According to the increasing demand for high corrosion resistant Zn-coated steel sheets, JFE Steel Corporation developed and commercialized the high corrosion resistant 5% Al-Zn coated steel sheet “ECOGAL-Neo™”. To meet various customer’s needs, “ECOGAL-Neo™” has excellent surface appearance and newly developed chromate-free coating with high functionality can be applied. This product is expected to be used not only in the construction usage, but also in the electrical appliance and automotive usages. Also, to assure the quality of these new products, “Quantification technique of surface appearance for hot-dip zinc-coated steel sheets” was developed and introduced.

In the field of the steel sheets for building, JFE Galvanizing & Coating Co., Ltd., a company in the JFE Group, comprehensively developed and produces distinctive products and technologies based on the concept of “Buildings made completely of steel.” Those new products and technologies are also introduced here.

In the future, JFE Steel Corporation and its Group companies will continue to contribute to social progress by developing and manufacturing new steel products and new technologies as a good partner for the automotive, electrical appliances and building industries. We sincerely request the guidance and encouragement of all concerned.