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# Effect of Heat Treatment on Columnar Grain Growth and Goss Texture on Surface in Grain-Oriented Electrical Steels

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**Abstract :** In this study to find a replacement for expensive secondary recrystallization in GO electrical steel production, effect of heat treatment on the formation of columnar grain and Goss texture is investigated. The composition of the sample is Fe-2.0Si-0.2C. This process involves repeating of cold rolling and decarburization as a replacement for secondary recrystallization. By cold-rolling shear band is made and Goss grain grows from shear band by decarburization. By doing another cold rolling, some Goss texture is newly formed from the shear band, and some Goss texture is retained in microbands. To determine whether additional heat treatment with H2 atmosphere is needed on decarburization process for growth of Goss texture, comparing between decarburization and heat treatment with H2 atmosphere is performed. Also, to find optimum condition for heat treatment, heat treatment with various time and temperature is performed. It was found that increase in the number of cold rolling and heat treatment increases Goss texture. Both high Goss texture and good columnar structure is achieved at 900℃, and this temperature is within a+r phase region. Heat treatment at a temperature higher than a+r phase region caused carbon diffusion and this made layer with Goss grain decrease.

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