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Recrystallization of alumina dispersion strengthened copper strips

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Abstract

A study has been made of recrystallization behavior of boron added alumina dispersion strengthened copper strips subjected to single-pass cold rolling and multi-pass warm rolling. The cold and warm rolled strips had the microstructure characterized by a band-like substructure and the texture characterized by a well developed rolling texture with high intensities of Brass {011}ã€ˆ211ã€‰ and S components {123}ã€ˆ634ã€‰, though the warm rolled strip had the larger band boundary disorientation and the smaller fraction of low angle boundaries than the cold rolled strip. Upon annealing at 1123 K, the cold rolled strip underwent recrystallization. The recrystallization texture was approximated by the {112}ã€ˆ312ã€‰ orientation, which is supposed to result from a superposition of recrystallization texture of Brass component, {236}ã€ˆ385ã€‰, and S texture, {123}ã€ˆ634ã€‰. The warm rolled strip, which must have assumed a particle stabilized structure, retained the deformation microstructure and texture after annealing

at 1123 K. Annealing at 1318 K transformed the warm rolled strip to assume a recrystallized grain structure through continuous recrystallization accompanied by particle coarsening without texture change.

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Keywords

Alumina dispersion strengthened copper; Rolling; Recrystallization; Continuous recrystallization; Microstructure; Texture

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