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著者	OBINATA Ichiji, IZUMI Osamu, OELSCHLAGEL D., NAGATA Akihio
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On the Nature of Cell Boundaries in Rapidly Cast Al-Alloys*

Ichiji OBINATA, Osamu IZUMI, D. OELSCHLÄGEL and Akihio NAGATA

The Research Institute for Iron, Steel and Other Metals

Abstract

The impurity cell structure of rapidly cast Al-Si, Al-Mg and Al-Ag alloys is investigated with respect to the occurrence of second phase and dislocations as a function of solute concentration. Considering the dislocation arrangement, three types of cell boundaries corresponding to various concentration ranges could be distinguished. Comparison of the three alloys leads to the conclusion that the dislocations are introduced by constitutional stresses, which depend only on the severity of segregation and the difference in atomic size between solvent and solute atoms.

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