Appliciation of Heat Treatment for Elimination of Iron in Secondary Al-Si Alloy

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This paper deals with possibility of changing of shape of iron based phases in the secondary alloy AlSi7Mg0.3 microstructure by heat treatment. The Al-Si alloy usually has some other coexisting elements such as copper, magnesium, manganese, zinc, and iron. The solubility of these elements in aluminum usually increases with increasing temperature. This decrease from high concentrations at elevated temperatures to relatively low concentrations during solidification and heat treatment results in the formation of secondary intermetallic phases. For instance, the precipitation of Si, Mn, and Fe forms an $Al_{12}(Fe,Mn)_3Si$ phase. The wide variety of intermetallic phases in aluminum alloys occur because aluminum is highly electronegative and trivalent. The main attention of this research is paid on possibility of changing the shape of iron based particles with heat treatment and on using heat treatment together with iron corrector. Realization of experiments and results shows new view on effect of heat treatment on iron based phases in castings with higher iron content.

Keywords: secondary AlSi7Mg0.3 alloys, intermetallic phases, heat treatment

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