Influence of Selected Iron Correctors to Solidification of Secondary AlSi10MgMn Alloy

Maria Zihalova¹, Dana Bolibruchova¹, Jaromir Cais²

¹Department of Technological Engineering, Faculty of Mechanical Engineering, University of Zilina, Univerzitna 8215/1, 010 26 Zilina. Slovak Republic. E-mail: maria.zihalova@fstroj.uniza.sk, danka.bolibruchova@fstroj.uniza.sk

²Faculty of Production Technology and Management, J. E. Purkyne University in Usti nad Labem. Pasteurova 3334/7, 400 01 Usti nad Labem. Czech Republic. E-mail: cais@fvtm.ujep.cz

Secondary (recycled) aluminium alloys are still not widely used in the foundry industry, because of the higher amounts of impurities that require more strictly control of the manufacturing process. The most problematic impurity of aluminium cast alloys is iron, which is in alloy mostly present in form of hard and brittle intermetallic phases. Such phases are thought to be detrimental to alloy mechanical and foundry properties and have to be removed or modified to eliminate negative effects. Several techniques might be used to this purpose, from which the most beneficial seems to be addition of some elements, so-called “iron correctors”. Influence of the iron correctors can be also analysed by thermal analysis that serve as a tool to prediction of solidification behaviour of the alloy. Influence of V, Cr and Ni (alone and in selected combinations) to solidification behaviour of AlSi10MgMn alloy with increased iron level is presented in this article. Selected iron correctors influenced temperatures of thermal arrests representing formation of primary aluminium, iron intermetallics and also eutectic silicon.

Keywords: AlSi10MgMn alloy, Intermetallic phase, Iron correctors, Thermal analysis

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References


