

THE EFFECT OF CERIUM ADDITION ON THE MICROSTRUCTURE OF AlSiMgCe ALLOY

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ABSTRACT

In this study the effect of cerium addition on the microstructure and microhardness of Al-12.5Si-4Mg alloy was investigated. Experiments have been conducted on Al-12.5Si-4Mg alloys with cerium content in the alloy was varied from 0.5 to 3wt%. The alloys were produced by casting in a permanent mould. Optical microscopy, scanning electron microscopy and energy dispersive X-Ray spectroscopy, X-ray diffractometry and Vickers microhardness were used in this investigation. The results show that the addition of 0.5 to 3.0wt% of cerium led to the formation of precipitation of Al₄Ce phase in the Al-matrix. The microhardness of as cast alloy increases with the increase in cerium content as a result of the precipitation. Heat treatment at 200°C led to the increase in microhardness of as cast alloys due clustering of Si and precipitation of fine Al₄Ce phase.

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