

عنوان مقاله:

Effect of the rotation speed on distribution of primary Si and mechanical properties of the ring (A390 alloy) by centrifugal casting

محل انتشار:

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نویسندگان:

M. Mohammadi rahvard - Associate professor of School of Material Science and Engineering, Iran university of Science and Technology, Narmak, Tehran

M Tamizifar

E Rezaee kheibaree - M.S student of School of Material Science and Engineering, Iran university of Science and Technology

خلاصه مقاله:

Necessity and achievement to high wear resistance and toughness components which have gradient properties in industry is improved. In this work, centrifugal casting with gradient controlling approach on A390 alloy (piston) has been studied. Casting rings at various rotation speeds 400,700 and 1000 rpm with thickness of 2cm were obtained. Microstructure characteristics and distribution of the Primary Si were assessed by optical microscopy (OM) and image analyzer software. Significant enrichment zones of primary Si particles were observed in the external and internal zone of the casting in the radial direction of the centrifugal caster, but; in the middle layer, a few reinforcement particles were observed. Furthermore; it is found that, with increasing of the rotation speed, the thickness and volume fraction of particles in the outer layer increase. Corresponding increases in surface micro hardness as well as smaller wear volume loss in pin-on-disk wear tests in the outer layer in comparison with other layer were observed. The process provides a viable approach for high wear resistance aluminum alloy components, particularly in piston part

کلمات کلیدی:

A390 Alloy, functionally graded material, centrifugal casting

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