

عنوان مقاله:

On the microstructure evolution and mechanical properties of the A390 alloy tubes produced via horizontal centrifugal casting

محل انتشار:

سومین کنفرانس بین المللی علوم و مهندسی (سال: 1395)

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خلاصه مقاله:

Three kinds of functionally graded tube using A390 alloy at various rotation speeds 400,700 and 1000 rpm with thickness of 2cm were produced by horizontal centrifugal casting, and their microstructure and mechanical properties were investigated and compared. Characteristics and distribution of the primary particles were assessed by the optical microscopy (OM), scanning electron microscopy (SEM), and image analyzer software. The hardness and pin-on-disk wear tests along the thickness of samples were performed to investigate the variation in the mechanical properties corresponding to the variation in microstructure. Also, the worn surfaces of the material were examined by scanning electron microscopy (SEM) to study the dominant wear regime. 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 the outer layer in comparison with other layer were observed

کلمات کلیدی:

A390 Alloy, functionally graded material, centrifugal casting, various speed

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