Microstructural and mechanical properties (hardness) investigations of 0.61%Al-1.11%Si austempered ductile iron

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Abstract

The effect of aluminium as a strong graphitizing element is known. A lot of investigations have been made by researchers to replace silicon with aluminium in gray and ductile cast irons. The aluminum increases the oxidation resistance at high temperatures and also improves the hardness and strength of the cast iron. Therefore, in this research, by adding a few values of aluminium in presence of silicon, it is tried to determine the microstructure of the experimental samples by using optical and electron microscopes. Thus, the phase transformations are investigated by applying suitable heat treatments by austenitising at 890°C and austempering at 350, 400 and 450°C. Furthermore, hardness measurements are used for determining the mechanical properties of the material.

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