

THE EFFECT OF ISOTHERMAL HEAT TREATMENT ON MICROSTRUCTURE OF CU CONTAINING DUCTILE IRONS

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Abstract

In this article, the pearlitic and ferritic transformations during isothermal heat treatment were studied for ductile cast iron and Cu containing ductile iron under different holding times. The austenitising time and temperature were selected to be 120 min and 920 °C, respectively, referring to previous studies. The isothermal heat treatments were performed at 486 °C and 586 °C for different durations. Microstructures have been examined by optical microscopy and scanning electron microscopy. The microstructure of treated ductile cast iron consists of spheroidal graphite which is randomly dispersed in a matrix consisting of bainitic-ferrite, pearlite and carbon enriched retained austenite. It has been shown that the former austenite grain boundaries are the preferred sites for pearlite and ferrite nucleation.

Keywords: Ductile cast iron, copper, isothermal, phase transformation

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