

Influence of the furfuryl moulding sand on the flake graphite formation in the surface layer of ductile iron castings

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The results of investigations of the influence of molding sand with furan resin, prepared both with fresh sand and reclaimed matrix, on the formation of microstructure and flake graphite formation in the surface layer of ductile iron castings, are presented in this paper. A series of experimental melts of ductile iron in molds made of molding sand, characterised by different levels of surface-active elements (sulphur, oxygen) were performed. The effect of the wall thickness, and the initial temperature of the metal in the mould cavity on the formation of the flake (and compacted) graphite formation in the surface layer of the casting, is shown in the paper. Investigations carried out by Energy Dispersive Spectroscopy (EDS) and Wavelength Dispersive Spectroscopy (WDS), showed concentration gradient profiles of surface-active elements in the surface layer of castings which are responsible for their quality. Finally it has been shown that there exist a significant effect of the quality of the sand on the formation of the flake graphite layer and the surface characteristic of ductile iron castings.

Keywords: ductile iron, casting skin, graphite degeneration, moulding sand, reclaimed matrix.