

Microstructure and Fatigue Properties of Nodular Cast Iron at Low Frequency Cyclic Loading

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The paper deals with the influence of charge composition on microstructure, mechanical and fatigue properties of synthetic nodular cast irons and their micromechanisms of failure. The basic charge of experimental melts was formed by a different ratio of pig iron and steel scrap. Chemical composition of individual melts was regulated alternatively by silicon carbide (SiC) or ferrosilicon (FeSi) and carburizer. The specimens from three melts of nodular cast iron with different microstructure and mechanical properties were used for experiments. Fatigue tests were realised at low frequency sinusoidal cyclic push-pull loading (stress ratio $R = -1$) at ambient temperature ($T = 20 \pm 5$ °C). They were carried out with using the fatigue experimental machine Zwick/Roell Amsler 150HFP 5100 at frequency $f \approx 120$ Hz.

Keywords: Nodular cast iron, Metallographic analysis, Mechanical tests, Fatigue tests, Microfractographic analysis

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