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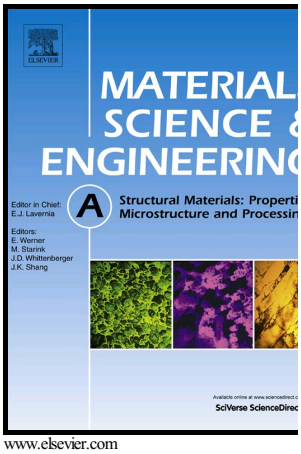




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# Effect of inoculation and casting modulus on the microstructure and mechanical properties of ductile Ni-resist cast iron

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**Abstract**

Ductile Ni-resist cast iron (type D-5S) which is normally used in exhaust manifold in automotive industries mainly contains up to 29 wt% nickel, 4.9 wt% silicon and 1.7 wt% chromium. In this study, the microstructure and mechanical properties of as cast ductile Ni-resist cast iron have been investigated at room temperature. The microstructure consists of graphite nodules embedded in austenitic matrix and carbides. The $FeNi_3$ phase also found in the austenitic matrix. By adding inoculant, carbide formation tendency decreased and led to subsequent decrease of the hardness. Furthermore, tensile properties improved by inoculation exhibiting ultimate tensile strength and yield strength from the range of 273-303 MPa and 207-255 MPa for samples without inoculant to respectively 285-449 MPa and 260-334 MPa for inoculated samples.

**Keywords**: Ductile Ni-Resist Cast Iron; Microstructure; Inoculation; Graphite

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