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INFLUENCE OF GRAPHITE MORPHOLOGY ON THERMAL CONDUCTIVITY

Students: Nizama Baručija, Armin Čaušević, Merjem Delibašić

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Abstract

The research relates to the determination of the coefficient of thermal conductivity on samples of nodular and lamellar cast iron at different temperatures. Nodular cast iron is a pseudobinary alloy of iron and carbon, which is mainly excreted in the form of spherical graphite, while in cast iron with lamellar graphite, carbon is found in the form of free graphite plates (lamellar scales) after solidification. The thermal conductivity of nodular cast iron is strongly influenced by the graphite morphology. Nodular cast iron contains spherical inclusions dispersed in the metal matrix, which results in relatively high strength and ductility and a lower value of thermal conductivity. Cast iron with lamellar graphite contains graphite inclusions in the form of lamellae or flakes that form an interconnected network, and the connected network of graphite results in a material with higher thermal conductivity. The obtained results show the difference in the coefficient of thermal conductivity of the tested samples. The coefficient of thermal conductivity of cast iron with lamellar graphite is significantly higher compared to the coefficient of thermal conductivity of cast iron with nodular graphite.

Keywords: *Coefficient of thermal conductivity, Cast iron, Spherical graphite, Lamellar graphite*

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