Temperature gradient in cooling down Fe-C-Cr alloy casting

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The fragment of investigations of primary crystallization process of casting made from chromium cast steel and chromium cast iron contain about 17% chromium was described in the article. The analysis of change in temperature gradient on cross-section of cooling model casting was introduced. To the investigations was applied TGDA (thermal gradient and derivative analysis) method worked out in the Department of Foundry in Silesian University of Technology in Gliwice which consists in multi-drop measurement of cooling temperature in casting using thermocouple locate on the direction of transferring warm from the casting to mould. On the basis of registered cooling curves were worked out graphs of temperature gradient and its first derivative (curves TGDA). The changes of course of TGDA curves describe the kinetics of primary crystallization process on cross-section of the studied casting and provides of created primary structure. At the analysis of temperature gradient curves also was used TDA (thermal and derivative analysis) method.

Keywords: chromium cast steel, chromium cast iron, crystallization, TDA, TGDA

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