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As-cast microstructures of aluminium containing ductile cast iron

Kiani-Rashid, A.R.[a], Shayesteh-Zeraati, A.[b], Naser-Zoshki, H.[c], Yousef-Sani, M.R.[a]

[a] **Department of Materials Engineering, Faculty of Engineering, Ferdowsi University of Mashhad, P.O.Box. 91775-1111, Mashhad, Iran**

[b] **Department of Materials Science and Engineering, Sharif University of Technology, Tehran, P.O. Box 11365-9466, Tehran, Iran**

[c] **Department of Materials and Metallurgical Engineering, Iran University of Science and Technology, Tehran, Iran**

Abstract

In this paper, the effect of aluminum content on the formation mechanism, volume fraction, morphology and particle size distribution of graphite has been investigated. Addition of aluminum on ductile iron causes some fundamental changes in iron-carbon phase-diagram and as a result, improves the graphite formation during eutectic transformation. The results reveals that aluminum compounds have been formed in the core of graphite nodules, thus aluminum plays an important role in the formation of graphite nodules. Furthermore, it is indicated that an increase in the aluminum content also leads to an increase in the number of graphite nodules and a decrease in the nodules size. By using EPMA, the segregation of aluminum and silicon between graphite nodules has been studied.

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Kiani-Rashid, A. R.; Department of Materials Engineering, Faculty of Engineering, Ferdowsi University of Mashhad, P.O.Box. 91775-1111, Mashhad, Iran; email:fkiana@yahoo.com

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