

Influence of Pouring Temperature on the Formation of Spheroidal and Lamellar Graphite in Cast Iron

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Abstract : The objective of this research is to investigate the effect of pouring temperature on the microstructure of the cast iron. The pattern was designed with 300 mm of width, and the thickness variations are 1.25 mm and poured at five different temperatures; 1300, 1325, 1350, 1375 and 1400°C. Several cast irons, prepared with different chemical compositions and microstructures (three lamellar and three spheroidal structures) have been examined by extensive mechanical testing and optical microscopy. The fluidity of spheroidal and lamellar graphite in cast iron increases with the pouring temperature. The numbers of nodules were decreased by increasing pouring temperature for spheroidal structures. Whereas, the numbers of flakes of lamellar structures changed by both pouring temperature and chemical composition. In general, with increasing pouring temperature, the amount of pearlite in the internal structure of both lamellar and spheroidal graphite cast iron materials were increased.

Keywords : spheroidal graphite cast iron, lamellar graphite in cast iron, pouring temperature, tensile test and impact test

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