Undercooling, nodule count and carbides in thin walled ductile cast iron

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Ductile cast iron has been cast in plate thicknesses between 2 to 8 mm. The temperature has been measured during the solidification and the graphite nodule count and size distribution together with the type and amount of carbides have been analysed afterwards. Low nodule count gives higher undercooling and primary carbides will then be formed in the first part of the solidification. Inverse chill carbides are formed at the final part of the solidification if the undercooling is too high at that point. A high number of graphite nodules nucleated in the last part of the solidification process decreases the risk of formation of inverse chill. Low undercooling in the first part of the solidification process increases the risk of formation of inverse chill.