

## **Local chill as a mean of increasing strength in grey cast iron**

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The influence of a chill on the mechanical properties and microstructural features in grey cast iron has been studied. Some of the main findings were that the chill refined the microstructure and modified the graphite distribution from A to D/E. Eutectic cell size was reduced by 60-70 %. The Brinell hardness increased while the Vickers hardness, measured in dendrite arms, was unaffected. Fatigue testing in four point bending showed that the fatigue limit was increased by 20-30 % in the chilled samples. An increase in tensile strength, proof strength and Young's modulus was also observed in the chilled samples. The increase in fatigue limit was approximately twice as high as the increase in tensile strength. A possible explanation could be that the eutectic cell size had a more pronounced effect on the fatigue limit than on the tensile strength.

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