

Effects of microstructure and strength on tool wear in rough milling of austempered ductile iron

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The machinability of various grades of austempered ductile iron (ADI) has been investigated for rough milling operations. ADI 900, ADI 1050 and ADI 1200 grades were commercially produced, commercially heat treated, and machined under controlled conditions using coated carbide inserts with coolant in the laboratory. The milling performance of the various grades was compared to that of AISI/SAE 4340 with similar hardness. In this study, machinability characteristics relative to wear rate (ISO 8688-2) and machining forces were measured and related to initial microstructure and properties. These preliminary results have been used to establish initial rough milling machining guidelines for machining ADI with coated carbide milling inserts.

Keywords: austempered ductile iron, machinability, tool life, cutting forces

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