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# Effects of Ti, V and Nb carbide on the properties of ICDP cast iron finishing rolls

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**Abstract.** Conventional ICDP (Indefinite Chill Double Pour) cast iron rolls had been in use for many years in the last finishing stands of conventional hot strip mills. They are now largely replaced by carbide enhanced ICDP cast iron rolls of different alloying concepts and performance– as well as safety levels. The idea behind those carbide enhanced ICDP cast iron rolls is to enhance wear resistance (conventional ICDP cast iron rolls present a lower wear resistance than high Chromium grades) and surface quality of the rolls, to allow for longer campaigns and to improve the efficiency of the entire mill (ICDP cast iron rolls are characterized by an excellent resistance to slippage and stickage). This increase in performance is due to an improved wear resistance triggered by the introduction of high hardness special carbides, compacted graphite (instead of coarse lamellar graphite). This work presents a comparison between a conventional ICDP cast iron roll and an Nb, V and Ti carbide enhanced one. Various laboratory heat treatments such as quench and temper were realized to observe the behavior of both the released austenite and the tempering of the martensite. Results of optical and SEM microstructures, Vickers hardness measurements and dilatometric curves are presented.

***Keywords:*** *Carbide enhanced ICDP, microstructure, hardness.*