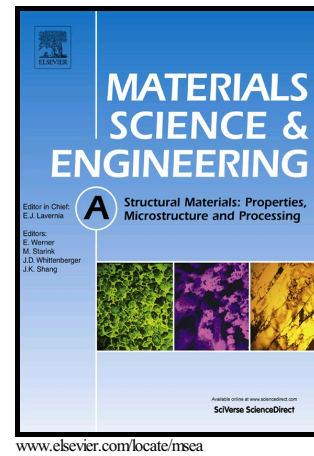


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# Effect of intercritical rolling temperature on microstructure-mechanical property relationship in a medium Mn-TRIP steel containing $\delta$ ferrite

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## Abstract

We elucidate the influence of intercritical rolling temperature on the microstructural evolution, mechanical properties and work-hardening behavior of a hot-rolled Fe-0.2C-6.5Mn-3Al-0.1V medium Mn transformation-induced-plasticity (TRIP) steel containing  $\delta$ -ferrite. Tensile strength of 966 MPa, total elongation of 42.6 % and yield strength of 705 MPa was obtained in the annealed steel subjected to a low intercritical rolling temperature. Rolling at a high intercritical rolling temperature promoted the partitioning of Mn from  $\delta$  ferrite to prior austenite grains, and led to a martensitic matrix characterized by a fine lath structure. Subsequently, after intercritical annealing, the reversed austenite transformed from the martensitic matrix had high stability and small size. However, the reversed austenite with a high degree of Mn

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