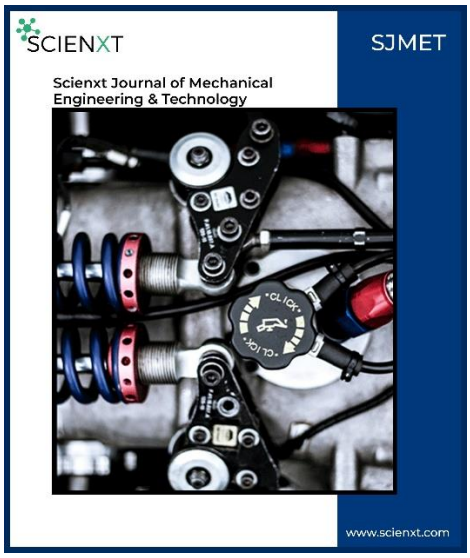

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Study of mechanical properties of pearlitic rail steel by modeling

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Abstract:

Since mass and product movement are increasingly dependent on trains, tracks must be stronger and last longer. Rail steel's mechanical characteristics, especially strength and hardness, must be increased. Pearlitic rail steel grade 900A offers good tensile and impact qualities. Steel tested had good dividend and tensile strengths but limited elongation. Using an RVE model, the impact of the bainitic phase on pearlitic rail steels was examined. The phases' ultimate shear curves were defined by chemical composition. Thus, the relationship between predicted elastic modulus and tensile strengths as a function of bainite phase fraction was determined. This model determines rail steel's microstructure.

Keywords:

Rail Steel, Microstructure, Accelerated Cooling, Cooling Curves, Microstructure, Mechanical Properties, Pearlitic Steel, RVE Model, Bainite.