

عنوان مقاله:

Controlling the Mechanical Properties and Corrosion Resistance of Mild Steel by Intercritical Annealing and Subcritical Tempering

محل انتشار:

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خلاصه مقاله:

The effects of intercritical annealing and subcritical tempering on the mechanical properties and corrosion resistance of mild steel were studied. It was revealed that intercritical annealing followed by quenching resulted in the development of a ferritic-martensitic dual phase (DP) microstructure with high tensile strength, disappearance of the yield-point phenomenon, superior work-hardening behavior, and decreased corrosion resistance. Subsequent tempering of the intercritically annealed steel resulted in the formation of carbide particles in a tempered martensitic microstructure, which led to the decline of the strength and hardness, reappearance of the yield-point elongation, and enhanced corrosion resistance. Accordingly, this work demonstrated the possibility of controlling the mechanical properties and corrosion resistance of commercial mild steels by simple heat treatments.

کلمات کلیدی:

Mild steel, Intercritical annealing, Subcritical tempering, Mechanical properties, corrosion resistance

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