

WORK HARDENING CHARACTERISTICS OF TWIP STEEL COLD ROLLING AND ANNEALING

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Abstract

There are a current and growing need for the automotive industry for materials that combine high formability, high strength and low specific weight in order to reduce fuel consumption and increase passenger safety. In this context, appears the TWIP steel (Twinning Induced plasticity), defined as a steel with high content of manganese and, yet, silicon and aluminum (2 to 4%) in its composition. Its main feature is the formation of twinning under stress. In this study, it was investigated how the characteristics of work hardening of the steel C-0.06, Mn-25, Al-3, Si-2, Ni-1, with TWIP effect influences their mechanical properties. This research used optical micrographs and scanning electron (SEM) for assessment of grain size and volume fraction of recrystallized grains. To complement this study, tensile tests were performed.

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