

عنوان مقاله:

STRAIN INDUCED AUSTENITE-TO-FERRITE TRANSFORMATION BEHAVIOR OF PLAIN CARBON STEELS THROUGH SINGLE PASS ROLLING

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خلاصه مقاله:

In principal, a proper combination of strength and ductility is achieved through micro component refinement in steels. This is particularly empowered with ferrite refinement down to micron sizes in ferrite pearlite engineering steels. The latter is achieved through various well-defined methods in which strain induced transformation (SIT) has shown spectacular capabilities. In the present study, to address the effect of thermo mechanical processing parameters on the (SIT) behavior, two plain carbon steels were studied through single pass rolling. This was carried out at the corresponding $Ar_3 + 20^\circ\text{C}$ temperature of the steels. The results indicated that the transformation behavior and ferrite morphology would be strongly influenced by both the chemical composition (i.e., carbon content) and the amount of applied strain. Furthermore, a high volume fraction of very fine ferrite with mean grain size of less than $2 \mu\text{m}$ was obtained. This was attributed to the ferrite nucleation at deformation bands and serrated austenite grain boundaries.

کلمات کلیدی:

Strain Induced Transformation (SIT), Plain Carbon Steels, Critical Strain

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