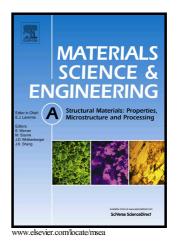
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Abstract

The stretch flangeability of a medium Mn steel prepared by quenching and partitioning was examined using a hole-expansion test. Samples were heat-treated at quenching temperatures 90 °C $\leq T_Q \leq 170$ °C, at which no secondary martensite is formed upon final quenching. The hole-expansion test used a 60° conical punch. The hole at the center of the specimens was prepared by punching or wire cutting. In both sample preparation conditions, hole expansion ratio (HER) increased as T_Q decreased. The dependence of HER on T_Q was more pronounced in the samples prepared by punching than in samples prepared by wire cutting. While there is no clear correlation between HER and tensile properties, the HER decreased as retained austenite increased. By punching, the retained austenite transformed to strain-induced martensite in the shear-affected zone near the hole edge. This martensite has a negative impact on the HER. Download English Version:

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