Influence of heat-treatment conditions on tensile properties of triple-phase steel

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Abstract

In this research, first, 4140 steel specimens were heated at 850˚C for 1 hour. Then, they were placed at 720˚C for 3 min and transferred into a salt bath with different temperatures of 380¸ 400¸ 420 and 450˚C for 4 min and finally were quenched in water. Tensile test revealed that increasing the salt bath temperature (austempering temperature) decreases the yield strength, the ultimate tensile strength and the elongation. Fractography of the tensile specimens by stereo microscope showed that with increasing the austempering temperature, the fracture surface changes from ductile to brittle.

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