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Temperature dependence of transgranular fatigue crack resistance in interstitial-free steel and Fe-C steels with supersaturated carbon: effects of dynamic strain aging and dynamic precipitation

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## Abstract

Tension tests at different temperatures were conducted for two ferritic steels: Fe-0.017C with 0.017% solute carbon content and interstitial-free (IF) steels. It is verified the occurrence of dynamic strain aging (DSA) in Fe-0.017C at high temperatures. Tension tests for the Fe-0.017C, following corresponding heating treatments, demonstrated the transition process of dynamic precipitation from under-aging to over-aging. Moreover, the threshold stress intensity factor ranges ( $\Delta K_{th}$ ) of a small crack for these two steels both decrease with temperature growth. However, the  $\Delta K_{th}$  of Fe-0.017C was always larger than that of IF steel

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