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# Effects of Frequency Temperature and Loading Waveform on Fatigue Crack Growth Rate in Steel 15Kh13MF

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The tests were carried out on bimaterial single edge notch tension specimens made of steels 15Kh13MF/25Kh1M1F. The test temperature was 293, 668, 873 K, stress ratio $R = 0$, loading frequencies 0.1 and 0.01 Hz. The load waveform was triangular and trapezoidal with hold time 10 sec. Decrease of the loading frequency from 0.1 to 0.01 Hz leads to the decrease of the fatigue crack growth (FCG) rate for the SIF range $K < 26$ MPa·m$^{0.5}$ In coordinates $da/dN - K$ fatigue crack growth rate in 15Kh13MF steel is not sensitive to the testing temperature. But FCG rate increases in 5–7 times, when the temperature raises from 293 to 873 K depending on the CTOD and of J-integral ranges. Tempering causes the increase of creep-fatigue crack growth rate at 668 K, tempering at 873 K causes the decrease of it in 5–6 times as compared with the triangle form of loading cycle.

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