

HIGH TEMPERATURE LOW CYCLE FATIGUE OF ALLOY 800H

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ABSTRACT

Low-cycle fatigue tests have been carried out on Alloy 800H in the temperature range 22°C to 760°C with either diametral strain measurement with conversion to axial strain or direct axial strain measurement. The axial strain was cycled between equal positive and negative values in the range of 2% to 0.3%. The number of cycles to failure as a function of the plastic strain range deviated from the Coffin-Manson Law at the lower strain ranges. At one temperature where tests were interrupted for intermittent SEM examination of the specimen surfaces, cracks were detected very early in the test. Determination of crack propagation rates by measurement of striation widths on the fracture surfaces allowed comparison of these rates with ΔJ values for the stress-strain hysteresis loops.

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