304-168 Strengthened Creep Parameters and Related Microstructure in 316 Stainless Steel.

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Stainless steels, particularly of austenitic type, are being extensively used in systems that operate in high temperature conditions. Under these conditions the steel is subjected to creep strengthening with proper mechanical parameters and characteristics microstructures. In the present work, the strengthened creep parameters, obtained from constant load tests in the interval from 600 to 800°C as well as the related dislocation structure observed by transmission electron microscopy, were investigated in an AISI 316 stainless steel. The results showed a decrease in the strain rate sensitivity exponent to the stress, which indicates a tendency of acceleration of creep strain with increasing temperature. The dislocation substructure is apparently formed owing to the interaction with solute atoms that diffuse more efficiently above 600°C.