

Hot Compressive Flow Behavior of Inconel 600 Superalloy

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Abstract

The flow behavior and associated structural changes of an Inconel 600 superalloy were analyzed by using hot compression tests in the temperature and strain rate ranges of 850 - 1200 °C and 0.001 to 10 s⁻¹, respectively. The stress - strain curves exhibited the trend typical of materials in which deformation is recovery-controlled at high strain rates and low temperatures, while at low strain rates and high temperatures, the flow curves exhibited a softening typical of recrystallization phenomena. Constitutive analysis was carried out to investigate the hot deformation mechanism using the hyperbolic sine law.

Keyword : Inconel 600 super alloy, Dynamic recovery, Dynamic recrystallization, Flow behavior.