

Effect of double-hit deformation on the onset of critical stress for the initiation of dynamic transformation

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May 5, 2020

Abstract

Double-hit hot compression tests were carried on medium-carbon low-alloy steels using Gleeble 3800® thermomechanical simulator. The tests were performed at strain rates of 0.25 and 0.5 s⁻¹ and temperatures of 1150 and 1200 °C with an interpass time of 5s. The onset of critical stress for dynamic transformation (DT) were detected using the double-differentiation method. This metallurgical phenomenon was initiated under all testing conditions. The results show that the critical stress for DT increases with decrease in temperature and increase in strain rate.

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