

Effect of temperature and strain rate on microstructure and mechanical properties of ASTM L415 steel after hot deformation

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Abstract

Regarding the wide range of applications of microalloyed steel in industrial structures and pipeline industries for oil/gas transmission, optimization of their properties, they were very important. microalloyed steel production techniques is controlled rolling, which is a kind of thermomechanical treatment and it is considered as a grain refining methods. thermomechanical treatment increases strength and toughness in steels. In this paper the effects of temperature and strain rate on final microstructure and mechanical properties of ASTM L415 steel after thermomechanical treatment are investigated. For this purpose the hot compression test was performed. Results show that reduction in deformation temperature and increase of strain rate improves mechanical properties.

Keywords: ASTM L415 steel, thermomechanical treatment, mechanical properties, deformation temperature, strain rate.