

Abstract

During forming, thickness reduction and thermal treatment affect the recrystallization and evolution of the crystallographic texture of metallic materials. The present study focuses on the consequences of rolling reduction of a widespread aluminum alloy with numerous automotive, marine and general-purpose applications, namely Al 5182. Emphasis is laid on the crystallographic texture and mechanical properties on both hot and cold-rolled semi-final products. In particular, a 2.8 mm-thick hot-rolled product was examined in the as-received condition, while two cold-rolled sheets, one 1.33 mm and the other 0.214 mm thick, both originating from the 2.8 mm material, were examined in both as-received and annealed (350 °C for 1 h) conditions. Electron back-scatter diffraction indicated the presence of a large percentage of random texture as well as a weak recrystallization texture for the hot-rolled product, whereas in the case of cold rolling the evolution of β -fiber texture was noted. In addition, tensile tests showed that both the anisotropy as well as the mechanical properties of the cold-rolled properties improved after annealing, being comparable to hot-rolled ones.