

Influence of Casting Methods on Microstructure Development of Al-Li Alloy During Constrained Groove Pressing

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Abstract. Al-Li-based alloys are applied in aerospace industry. Constrained groove pressing (CGP) is one of the severe plastic deformation methods that preserves the material dimensions but introduces significant grain refinement up to the sub-micrometer range. The influence of two different casting methods – conventional direct chill casting and twin-roll casting - on subsequent constrained groove pressing was studied. The distribution of Vickers microhardness was measured through a sheet cross section to monitor the inhomogeneity in strain imposed by CGP. LOM, SEM (EBSD), and TEM were used to reveal microstructure development after one cycle of CGP and subsequent homogenization and aging treatment.