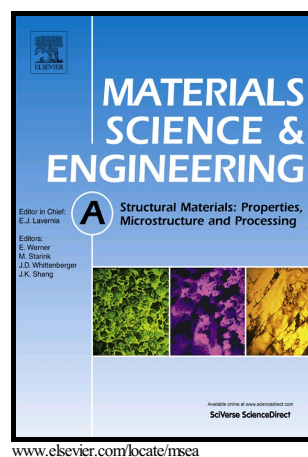


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The effect of hot rolling regime on texture and mechanical properties of an as-cast Mg–2Zn–2Gd plate

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Abstract: In this work, the microstructure and texture evolution of an as-cast Mg-2Zn-2Gd alloy subjected to different hot rolling regimes (cross rolling (CR) and unidirectional rolling (UR), CR+UR and UR+UR, respectively) and subsequent annealing at 400 °C were systematically investigated. The hot CR helps to develop relatively homogeneous distribution of (0002) poles in a circle inclining about 40° away from the ND in the annealed sample. However, this type of texture cannot be retained after subsequent unidirectional rolling along the RD and annealing, forming a texture with (0002) poles inclining approximately 40° from the ND toward the TD. It is found that the (0002) poles of recrystallized grains generally distribute along the direction perpendicular to the rolling direction, irrespective of the orientations of parent grains. There is a intense in-plane anisotropy of yield strength in plates containing a TD-tilted texture, while the homogeneous

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