

Anisotropy Influence on the Mechanical and Failure Characteristics of AZ31B Sheets Deformed at Room and Elevated Temperature

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Abstract. The objective of the present study is to evaluate the anisotropy influence on the mechanical and failure characteristics of AZ31B sheets deformed at room and elevated temperature. To this aim, uniaxial tensile tests were carried out along the rolling, transverse and diagonal direction in the range of temperatures from room temperature to 300°C at 0.1s⁻¹. The Lankford coefficients, UTS, diffuse necking strain and fracture strain values were evaluated as a function of the testing temperature and sample orientation. Furthermore, microstructural and fracture surface features as well as nano-hardness were evaluated for each testing condition to assess the post-deformation mechanical characteristics.