

연성파괴이론을 이용한 AZ31합금 판재의 사각컵 드로잉 공정에서의 파단예측

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Failure prediction in square cup drawing processes of AZ31 sheet by ductile fracture criterion

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Abstract

In this work, in order to predict the forming failure of AZ31 magnesium alloy sheet in drawing process at elevated temperatures, a series of square cup tests at various temperatures and the FE analyses were carried out. The critical damage values and the mechanical properties dependent on strain rates and temperatures were evaluated from uniaxial tensile tests and those were utilized to the forming failure prediction using FE analysis. Based on the plastic deformation history obtained from FE analysis and Cockcroft and Latham's ductile fracture criterion, the fracture initiation time and location were predicted and verified with the experimental results

Key Words : Magnesium, FEM, Ductile fracture, Drawing

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