

알루미늄 합금판재의 소성변형 특성

박진기¹ · 신호동² · Kuwabara³ · 김영석[#]

Plastic Deformation Characteristic of Aluminum alloy sheet

J. G. Park, H. D. Shin, T. Kuwabara, Y. S. Kim

Abstract

In recent years, there has been a remarkable increase in the use of aluminum alloy sheets in automotive industry. In industry, there are so many studies to predict and improve the formability of aluminum alloy sheets using the CAE simulation. However, it is difficult to predict formability of aluminum alloy sheets using Mises yield criterion adapted in CAE input data. In this study, uniaxial and biaxial tensile tests were performed. Lankford values and stress-strain curve were obtained. The yield loci were calculated by adapting plastic work theory. The results are compared with the theoretical predictions based on the Hill, Logan-Hosford, and Barlat model. In this study, Hill's 1979 yield criterion for the case of $m=1.8$ and Barlat yield criterion for the case of $h=1.04$, $c=0.76$, $a=1.24$, and $m=8$ give good agreements with experimental results.

Key Words : Aluminum alloy sheet, Biaxial tensile test, Yield locus, Hill, Logan-Hosford, Barlat

1. 경북대학교 기계공학부
2. 신영금속㈜
3. 일본 도쿄농업공업대학 기계공학부
교신저자: 경북대학교 기계공학부
E-mail: caekim@knu.ac.kr