

AZ31합금의 부풀림 성형성에 미치는 변형이력의 영향

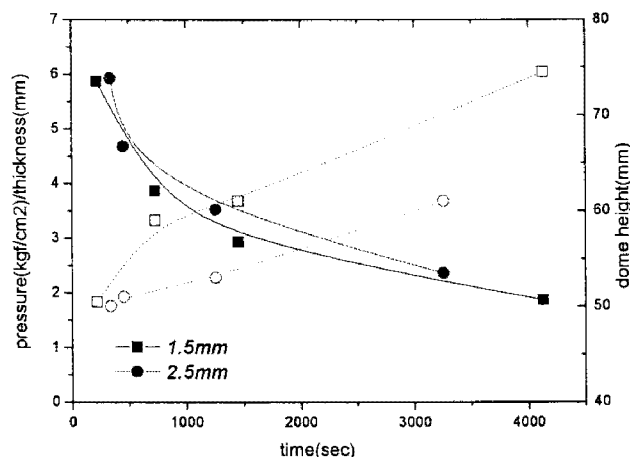
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Effect of Deformation History in Blow Forming of AZ31 Alloy

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ABSTRACT

In the present study, blow forming characteristics of AZ31 alloy were investigated in terms of forming speed and deformation history. For this purpose, two AZ31 alloy sheets with different thickness were used. Even though these two sheets were fabricated with different level of rolling strain, grain size did not show much difference at all. A series of tensile tests were carried out to take the flow behavior response in terms of temperature and strain rate. Elongation increased with temperature increment as well expected. Blow forming with the use of cylindrical cup was carried out at different forming pressure at constant level. As forming pressure got decreased, dome height became increased as shown in the figure below. When the sheet thickness was considered, forming stresses seemed to be maintained almost at the same level irrespective of sheet thickness. However, the higher dome height was recorded with the 1.5mm-thick sheet. Also, an interesting feature was that formability of AZ31 alloy showed different trend with stress condition, which meant that biaxial stress condition might result in lower temperature and strain rate dependencies compared to uniaxial tension results. Microstructure along with texture observation has shown that grain boundary sliding seemed to be accommodated with slip as well as twinning activity.



Keyword: Mg alloy, Blow forming, Twinning

- 본 연구는 지식경제부 지방기술혁신사업(RT104-01-03)지원으로 수행되었습니다.

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