عنوان مقاله:

A Finite Element Simulation of deep drawing process of a ۶۰۸۲-T۶ Aluminum alloy workpeice

محل انتشار:

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خلاصه مقاله:

In this paper, using finite element method, the effect of clearance on deep drawing of a cylindrical workpiece is investigated. The ۰.۵ mm wall thickness of the workpiece, made of ۶۰۸۲-T۶ Aluminum alloy, and the height to diameter ratio which exceeds ۱.۴, creates numerous problems in the process. Generally the drawing of such a part requires more than on stage. However, optimizing the die parameters may reduce the number of production stages. An Explicit ABAQUS model embedding the elasto-plastic behavior of the material, is created to simulate the process. Mesh independence analysis and model verification is carried out. Using FE simulation of the process the effect of different clearances on wall thinning and overall drawing load is investigated. It is shown that the extra thin wall thickness of the part makes the drawing process severely sensitive to wall thinning and fracture. In the end the optimized parameters which result in one stage draing of the workpiece without the risk of fracture, is suggested

کلمات کلیدی:

Deep drawing, clearance, Finite element Analysis