An upper-bound analysis for equal-channel angular extrusion

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Abstract

Deformation of the material during a 90° equal-channel angular extrusion (ECAE) process is analyzed using upper-bound theorem. The model suggested includes the effect of friction between the sample and the die walls, radius of inner corner of the die and the dead metal zone on the deformation patterns during ECAE. The parameters of the model is explored in relation to the deformation of the material during the process. Further directions for progress in deformation analysis in severe plastic deformation processes are outlined.