

Experimental and Numerical Processes of Open Die Forging of Multimetallic Materials with the Usage of Different Lubricants

Authors : Isik Cetintav, Cenk Misirli, Yilmaz Can, Damla Gunel

Abstract : This work investigates experimental and numerical analysis of open die forging of multimetallic materials. Multimetallic material production has recently become an interesting research field. The mechanical properties of the materials to be used for the formation of multimetallic materials and the mechanical properties of the multimetallic materials produced will be compared and the material flows of the use of different lubricants will be examined. Furthermore, in this work, the mechanical properties of multimetallic metallic materials produced using different materials will be examined by using different lubricants. The advantages and disadvantages of different lubricants will be approached with the bi-metallic material to be produced. Cylindrical specimens consisting of two different materials were used in the experiments. Specimens were prepared as aluminum sleeve and copper core and upset at different reduction. This metal combination present a material model of which chemical composition is different. ABAQUS software was used for the simulations. Simulation and experimental results have also shown reasonable agreement.

Keywords : multimetallic, forging, experimental, numerical

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