

Simulation of Kinetic Friction in L-Bending of Sheet Metals

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Abstract : This paper aims at experimental and numerical investigation of springback behavior of sheet metals during L-bending process with emphasis on Stribeck-type friction modeling. The coefficient of friction in Stribeck curve depends on sliding velocity and contact pressure. The springback behavior of mild steel and aluminum alloy 6022-T4 sheets was studied experimentally and using numerical simulations with ABAQUS software with two types of friction model: Coulomb friction and Stribeck friction. The influence of forming speed on springback behavior was studied experimentally and numerically. The results showed that Stribeck-type friction model has better results in predicting springback in sheet metal forming. The FE prediction error for mild steel and 6022-T4 AA is 23.8%, 25.5% respectively, using Coulomb friction model and 11%, 13% respectively, using Stribeck friction model. These results show that Stribeck model is suitable for simulation of sheet metal forming especially at higher forming speed.

Keywords : friction, L-bending, springback, Stribeck curves

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