

# Prediction of forming limit curves of sheet metals using Hill's 1993 user-friendly yield criterion of anisotropic materials

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## Abstract

A user-friendly yield criterion was proposed by Hill in 1993, which utilizes five independent material parameters in representing the yield locus. In the present investigation, an attempt is made to analyze forming limits in sheet metals based on this yield criterion and the M-K approach. Comparison of the predicted results with experimental data indicates that Hill's 1993 yield criterion is able to characterize the localized necking of both aluminum and AK steel. A parametric study is carried out to investigate the influence of material parameters ( $r_0$ ,  $r_{90}$ ,  $\sigma_0$ ,  $\sigma_{90}$  and  $\sigma_b$ ) on forming limits, which shows that the shape of the yield locus has a significant influence on limit strains.