

Failure of DP and TRIP steel sheets in different deformation modes

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Abstract. Advanced high strength steel (AHSS) sheets have gained major attention from research groups across the world especially in last two decades. The exact description of the forming behavior of these steels has several challenges associated with it. The origin of these challenges is related to the complexity of the forming behavior and the failure characteristics of AHSS sheets at macro and micro scales. In present study, deformation behavior and failure characteristics of two important AHSSs, DP and TRIP steels, subjected to different deformation modes are investigated at different scales. It is shown that these steels fail mostly by shear localization and an attempt to calculate the critical failure strains is proposed.