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# The Effect of Elasto-Plastic Properties of Materials on their Formability by Flow Forming

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## Abstract

FEA process modelling, which has seen plenty of development in recent decades, has significantly simplified and broadened our capabilities for designing and optimising metal forming processes. It has become relatively easy to find the stress-strain state at any point and instant in the process, analyse the kinematics of metal flow or test different fracture criteria. However, it is frequently the case that all this information cannot compensate for the lack of a fundamental understanding of the process. Flow forming is a case in point. Although much research has been carried out since the 1960's and has resulted in considerable industrial experience, still many aspects remain as "know how" and many basic questions do not have exact answers. This work reported herein is focused on the role of the elasto-plastic properties of a material with respect to its use in flow forming. Can the flow formability of a material be assessed using data from a uniaxial tensile test? If there exists the possibility of tailoring mechanical properties by heat treatment, what should be prioritised?

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