



## Hydrostatic Stress Effect on the Yield Behavior of Inconel 100

By Phillip A. Allen

BiblioGov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 40 pages. Dimensions: 9.7in. x 7.4in. x 0.1in. Classical metal plasticity theory assumes that hydrostatic stress has no effect on the yield and postyield behavior of metals. Recent reexaminations of classical theory have revealed a significant effect of hydrostatic stress on the yield behavior of notched geometries. New experiments and nonlinear finite element analyses (FEA) of Inconel 100 (IN 100) equal-arm bend and double-edge notch tension (DENT) test specimens have revealed the effect of internal hydrostatic tensile stresses on yielding. Nonlinear FEA using the von Mises (yielding is independent of hydrostatic stress) and the Drucker-Prager (yielding is linearly dependent on hydrostatic stress) yield functions was performed. In all test cases, the von Mises constitutive model, which is independent of hydrostatic pressure, overestimated the load for a given displacement or strain. Considering the failure displacements or strains, the Drucker-Prager FEMs predicted loads that were 3 to 5 lower than the von Mises values. For the failure loads, the Drucker-Prager FEMs predicted strains that were 20 to 35 greater than the von Mises values. The Drucker-Prager yield function seems to more accurately predict the overall specimen response of geometries with...



[READ ONLINE](#)  
[ 1.22 MB ]

### Reviews

*A top quality pdf and also the font applied was fascinating to read. It can be full of knowledge and wisdom I am effortlessly could possibly get a delight of studying a created ebook.*

-- **Oceane Stanton DVM**

*Comprehensive guide for ebook fanatics. It really is rally fascinating throug reading time. Its been designed in an exceptionally simple way and is particularly only following i finished reading this ebook through which really changed me, modify the way in my opinion.*

-- **Frederique McClure**