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Engineering : Solid Mechanics

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Correction Formulae for the Stress Distribution in Round Tensile Specimens at Neck Presence

- **Presents methods to determine mechanical properties and evaluate the flow curve of ductile materials** **Revises classical hypotheses concerning the onset of neck creation and completes them with new solutions**

The monograph deals with methods to determine mechanical properties and evaluate the flow curve of ductile materials from the tensile test. It presents classical hypotheses concerning the onset of neck creation as well as the state of the art in determining the mechanical properties from the tensile test, with emphasis on the consequences of the neck formation. It revises derivations of formulae for the stress distribution in the minimal cross-section of the axisymmetrical specimen in the classical approaches proposed by Bridgman, Davidenkov / Spiridonova and Siebel as well as in the less famous formulae derived by Szczepinski and Malinin / Petrosjan. The revision is completed with solutions evaluated by the authors. In the monograph, the simplifying assumptions utilised in the classical approaches were carefully verified by numerical simulations accompanied by theoretical analysis. Errors imposed in the evaluation of the average axial stress acting on the minimal cross-section as a result of every particular simplification are estimated. The accuracy of all formulae to evaluate the flow curve is discussed.

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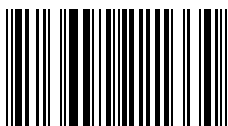
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