

**Puzrin, A. M.; Houlsby, G. T.**

**Fundamentals of kinematic hardening hyperplasticity.** (English) Zbl 0987.74021

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Summary: We present a hyperplastic (thermomechanical) framework for the modelling of kinematic hardening of plastic materials. The advantage of this approach is that it allows a compact development of plasticity theories, which are guaranteed to obey thermodynamic principles. Starting with a model which employs a single kinematically hardening yield surface, we generalize this first to multiple surfaces, and then to the case of an infinite number of yield surfaces. At each stage of generalization, the link with conventional plasticity is demonstrated, and examples of one- and multidimensional hyperplastic models are presented, together with their interpretation in terms of conventional plasticity theory.

**MSC:**

**74C15** Large-strain, rate-independent theories of plasticity (including nonlinear plasticity)

Cited in 14 Documents

**74C05** Small-strain, rate-independent theories of plasticity (including rigid-plastic and elasto-plastic materials)

**74A15** Thermodynamics in solid mechanics

**Keywords:**

hyperplasticity; multiple yield surfaces; kinematic hardening; thermodynamic principles

**Full Text:** [DOI](#)