

**Aron, M.**

**On certain deformation classes of compressible Hencky materials.** (English) Zbl 1141.74013  
*Math. Mech. Solids* 11, No. 5, 467-478 (2006).

Summary: For the case of plane strain and in the absence of body forces an exact solution that describes the straightening of annular cylindrical sectors composed of compressible Hencky materials is obtained and, using the energy criterion, its stability is investigated. The most general class of isotropic, compressible, hyperelastic materials for which a solution of this type is possible is also determined. Under certain restrictions, an inequality that may be regarded as a universal relation is shown to hold for all materials in this class as well as for all isotropic, compressible, hyperelastic materials that satisfy the Baker-Ericksen inequality. We also establish some other inequalities, showing that certain deformations of bodies composed of Hencky materials are necessarily accompanied by an overall volume increase (which may also be viewed as universal relations for Hencky materials).

**MSC:**

[74B20](#) Nonlinear elasticity

[74G05](#) Explicit solutions of equilibrium problems in solid mechanics

Cited in **9** Documents

**Keywords:**

[energy criterion](#); [stability](#); [hyperelastic materials](#); [Baker-Ericksen inequality](#)

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

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