

**Halm, D.; Dragon, A.; Charles, Y.**

**A modular damage model for quasi-brittle solids-interaction between initial and induced anisotropy.** (English) [Zbl 1084.74543](#)

[Arch. Appl. Mech.](#) 72, No. 6-7, 498-510 (2002).

Summary: This paper proposes a three-dimensional thermodynamically controlled damage model for a wide class of quasi-brittle materials, the modelling strategy being a continuation of the earlier work. The purpose is to keep an existing modular structure and to introduce new features to its framework. These are: (i) a thrifty insertion of initial orthotropy, (ii) the absence of irreversible strain after loading/unloading cycles (in opposition to rock-like materials described by the initial model) and especially (iii) the competition between initial orthotropy and anisotropy induced by mesocrack growth. The proposed innovation consists in adding second-order fabric tensors in conjunction with a damage tensor in the expression of the thermodynamic potential. Experimental data for a test composite material are simulated by this approach.

**MSC:**

[74R05](#) Brittle damage

[74E10](#) Anisotropy in solid mechanics

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[second-order fabric tensors](#); [damage tensor](#); [thermodynamic potential](#)

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