

Abstract Submitted
for the SHOCK11 Meeting of
The American Physical Society

Incorporation of the Deshpande-Evans Mechanism-Based Damage Model into the EPIC Code TIMOTHY HOLMQUIST, Southwest Research Institute — This article presents the incorporation of a mechanism-based failure model into the EPIC code. The model was developed by Deshpande and Evans (DE) and is based on micromechanics and wing-crack theory. The model includes the effects of flaw size, flaw density, fracture toughness, friction, crack shape, and crack growth rate. It is also fully 3-dimensional and covers both compression and tension. This work incorporates the DE model into the Johnson-Holmquist-Beissel (JHB) ceramic model and provides an optional, micromechanical, approach for computing damage. A discussion of the DE damage model including the theory and its incorporation into the JHB model is provided. Computations are also presented for several ballistic impact experiments into 99.5 alumina ceramic including some parametric effects.

Timothy Holmquist
Southwest Research Institute

Date submitted: 22 Feb 2011

Electronic form version 1.4