

Abstract Submitted
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Prediction of Ignition of High Explosive When Submitted To Impact¹ DIDIER PICART, FRANCK DELMAIRE-SIZES, CYRIL GRUAU, HERVE TRUMEL, CEA — High explosive structures may unintentionally ignite and transit to deflagration or detonation, when subjected to mechanical loadings, such as low velocity impact. We focus our attention on ignition. The Browning and Scammon [1] criterion has been adapted. A concrete like constitutive law is derived, with an up-to-date experimental characterization. These models have been implemented in Abaqus/Explicit [2]. Numerical simulations are used to calibrate the ignition threshold. The presentation or the poster will detail the main assumptions, the models (Browning et al, mechanical behavior) and the calibration procedure. Comparisons between numerical results and experiments [3] will show the interest of this method but also its limitations (numerical artifacts, lack of mechanical data, misinterpretation of reactive tests...). [1] R. Browning and R. Scammon, *Shock compression of condensed matter*, pp. 987-990, (2001). [2] C. Gruau, D. Picart *et al.*, 17th *Dymat technical meeting*, Cambridge, UK, (2007). [3] F. Delmaire-Sizes *et al.*, 3rd *International symposium on energetic materials*, Tokyo, Japan, (2008).

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