

Abstract Submitted
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Predicting the effect of explosive porosity on sensitivity using CREST CAROLINE HANDLEY, AWE — CREST is a reactive-burn model that uses entropy-dependent reaction rates to model shock initiation and detonation behaviour in plastic bonded explosives. A CREST model for the TATB-based high explosive PBX9502 was published previously at this conference. It is well known that changing the porosity of an explosive, like PBX9502, can dramatically influence its sensitivity. The equation of state used in CREST incorporates the snow-plough model, allowing the porosity of the explosive to be selected at will, while keeping the reaction model constant. In this paper, it will be shown that CREST can predict the change in explosive sensitivity with porosity, as demonstrated by the experimentally determined Pop-plots for TATB. In contrast, it will be shown that pressure-dependent reactive-burn models are unable to predict this porosity effect.

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