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Prediction of Detonation in Non-Ideal Energetic Materials ELIZABETH CART, RICHARD GRANHOLM, VASANT JOSHI, RICHARD LEE, PHILLIP MILLER, HAROLD SANDUSKY, NSWC-Indian Head Division — A predictive model of large-scale behavior for non-ideal energetic materials, based on measurements in small-scale tests is being developed using Dyna 2D. The growth criterion is based on the recently developed small-scale shock reactivity test (SSRT), whereas the time to reaction and the ignition conditions are derived from the newly developed hybrid split Hopkinson bar experiments. The reactivity tests measure the potential of a material to be an explosive regardless of its sensitivity, thus avoiding the problem of scale, inherent in most small-scale explosive tests. Large-scale test results are compared to calculations using the developed rate equation. The results of initial modeling work on a non-ideal PBX explosive will be validated using experimental results from two types of small-scale tests.

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