

Abstract Submitted
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Effects of temperature, humidity, sample geometry, and other variables on Bruceton Type 12 impact initiation of HMX-based high explosives GABRIEL AVILUCEA, LANL, DANIEL ARAGON, New Mexico State University, PAUL PETERSON, LANL, DYNAMIC AND ENERGETIC MATERIALS DIVISION, LOS ALAMOS NATIONAL LABORATORY TEAM — The drop weight impact test, developed at Bruceton Naval Research Laboratory 60 years ago, is still the most commonly used configuration for evaluating sensitivity of explosives to non-shock ignition. The standard drop weight impact test is performed under ambient conditions for temperature and humidity - variations in which are known to significantly affect the probability of reaction. We have performed a series of impact tests in an attempt to characterize the effect of temperature, humidity, sample geometry (height, mass, L/d, and pressed density), sample confinement, and impact surface properties (strength and coefficient of friction) on the probability of reaction in a drop weight impact test. Differences in the probability of reaction have been determined across a range of drop heights for each configuration. The results clearly show significant shifts in the probability of reaction and in the slope of the reaction probability curve for each of the variables.

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