

Abstract Submitted
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Evaluation of Aluminum Participation in the Development of Reactive Waves in Shock Compressed HMX¹ ROBERT PAHL, WAYNE TROTT, SHANE SNEDIGAR, JAIME CASTANEDA, Sandia National Laboratories — A series of gas gun tests has been performed to examine contributions to energy release from micron-sized and nanometric aluminum powder added to sieved (212-300 μm) HMX. In the absence of added metal, 4-mm-thick, low-density (64-68% of theoretical maximum density) pressings of the sieved HMX respond to modest shock loading by developing distinctive reactive waves that exhibit both temporal and mesoscale spatial fluctuations. The complex transmitted wave profiles have been recorded using both single-point VISAR and a line-imaging optically recording velocity interferometer system. Parallel tests have been performed on samples containing 10% (by mass) aluminum in two particle sizes: 2- μm and 123-nm mean particle diameter, respectively. Observed effects of these materials in reactive wave development will be discussed.

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